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PROBLEM FACED BY WOMEN ENTREPRENEUR (With a Special Reference to Coimbatore City)

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ABSTRACT

Women entrepreneurs face a multitude of challenges that are unique to their gender. These challenges can range from societal and cultural biases, lack of access to funding and capital, difficulty in balancing work and family life, limited access to networks and mentors, and discrimination in the workplace. Additionally, women entrepreneurs often face a lack of support from their male counterparts, limited representation in leadership positions, and a lack of resources and training to help them succeed. These challenges can hinder women entrepreneurs' ability to start and grow their businesses, leading to lower rates of entrepreneurship and economic growth. It is important to address these issues and create a more inclusive environment for women entrepreneurs to thrive and contribute to the economy.

1.1 INTRODUCTION

Entrepreneurs play a key role in any economy. These are the people who have the skills and necessary initiatives to take some new ideas to market or provide a service and make the right decisions to make their ideas profitable. The educated Indian women have to go a long way to achieve equal rights and position because traditions are deeply rooted in Indian society where the sociological and psychological factors set up have been a male dominated one. Indian culture made them only subordinates and executors of the decisions made by other male members, in the basic family structure. The traditional set up is changing in the modern era. The transformation of social fabric of the Indian society, in terms of increased educational status of women and varied aspirations for better living, necessitated a change in the life style of Indian women both in urban as well as in rural areas.

1.3 STATEMENT OF PROBLEM

Entrepreneurship is one of the important factors of industrialization in the absence of entrepreneurship, industrialization cannot take place. Entrepreneurs are playing an important role in the economic development of underdeveloped country. Women's skills and knowledge, their talents and abilities in business and a compelling desire of wanting to do something positive are some of the reasons for the women entrepreneurs to organize industries. According to World Bank, investing more in business of women rather in men leads to greater development of a nation. Empowering women in entrepreneurship leads to break the inequalities and reduces the poverty. Entrepreneurship plays an important role in developing society of a fast-developing country like India

1.4 OBJECTIVES OF STUDY

- To study the socio economic status of the women entrepreneurs.
- To know the major factors affecting the development of women entrepreneurs.
- To identify the problems faced by women entrepreneur.
- To give suggestions based on result of the study

1.5 RESEARCH METHODOLOGY

Research methodology is a way of explaining how a researcher intends to carry out their research. Methodology is a systematic way to resolve a problem.

Research Design

The results of the study were obtained by descriptive analysis. Descriptive analysis is the process of using current and historical data to identify trends and relationships.



Source of Data

The data required for the study is collected from both Primary data and Secondary data.

- **Primary Data** – Primary data has been collected by preparing structured questionnaire interview method has been followed to ascertain the information from the women entrepreneurs through google form.
- **Secondary Data** – In the present study the secondary data has been collected from different sources of literature like Magazines, News papers, Books, Journals, Internet.

Sample Design

For the present study purpose, simple convenient random sampling has been selected. This particular survey has been directed only in Coimbatore City by collecting information from women entrepreneurs.

Sample Size

The sampling size is of 120 respondents consisting of women entrepreneurs.

Period Of Study

The study has been conducted for a period of three months from August 2022 - November 2022.

Area Of Study

The study has been undertaken only in Coimbatore City.

1.6 TOOLS USED FOR STUDY

Based on the data collected from the women entrepreneur, a master table was prepared from which sub tables were prepared. The statistical technique used in the analysis includes the following.

- Percentage analysis

PERCENTAGE METHOD

Percentage refers to a special kind of ratio. Percentages are used in making comparison between two or more series data. Percentages are used to describe relationship, since the percentage reduces everything to a common base and thereby allows meaningful comparisons to be made.

1.7 LIMITATIONS OF THE STUDY

- This study is restricted to Coimbatore city only due to cost and time constraints.
- The researcher has selected only 120 samples for their research, such small quantity of respondents can not represent the characteristics of women entrepreneurs as a whole in Coimbatore city.
- Time of study limit was only 5 months

REVIEW OF LITERATURE

Prasad and Rao (2018) [1] 'Financial foundation of women entrepreneurship-A contextual analysis of Andhra Pradesh' finding the accompanying reality: (1) First era entrepreneurs are less successful (2) Units set up by the entrepreneurs before marriage are less successful (3) Units advanced by entrepreneurs after marriage and having grown up kids are progressing nicely (4) Units advanced by in fact taught are increasingly successful and non-specialized however instructed are likewise successful (5) Electronic, brick making and other specialized/mechanical units are not so much successful (6) Fabrics, home products and other associated units are successful (7) ask for the status and involvement in a similar line are two essential factors for the success of the unit.(8) loan, premium sponsorships and marketing offices offered by the organizations are lacking.

Sharma K. L. (2018) [2] in his book Entrepreneurial Performance in Role Perspective investigated the rising example of growth of entrepreneurs, their performance and problems. Against the foundation of government help with different structures, entrepreneurs and their problems call for sincere consideration, for the solid and supported financial growth of Indian society. The examination was directed to handle some hypothetical and methodological issues worried about the investigation of the entrepreneurial job of similarity and to toss light on some connected parts of entrepreneurial growth in the territory of Uttar Pradesh. The investigation exposed the absence of reaction of entrepreneurs to the offices made accessible by the government. One may get a kick out of the chance to investigate its reasons, which might be recognized as the insufficiency of entrepreneurs, the lacking terms and states of the offices, the ineffectualness of the foundations giving the offices, and the inefficiency of the personnel employed in that.

Sivalognatham, (2018) [3] led an investigation on problems of women entrepreneurs in Chennai uncovered that among the socio-individual problems, 70% confronted absence of family and network support and 60% had managerial experience. Production problem as accessibility of land, plots and premises was looked by 70% respondents. Absence of knowledge about



marketing the product was the serious problem looked by 76% of the respondents. 74% confronted budgetary problems with respect to loan and sponsorship while insufficient government help was accounted for as problem by 70% respondents. An examination expresses that problems looked by women entrepreneurs in India are inequality, family foundation, low wages, insufficient training, government strategies, misuse by middlemen, problem of account, shortage of crude materials, solid challenge, mind-boggling expense of production, low portability, social attitudes, low capacity to manage chance, absence of education, low requirement for achievement, venture related problems, family ties, lack of intensity, deficient framework offices and financial limitations

Rajani, (2018) [4] directed an examination on "Management Training Needs of Women Entrepreneurs " looks at the nature of smaller scale venture management by women in socio-social milieu and to extend the management training needs of women entrepreneurs. Information was gathered from the example of 100 women entrepreneurs. The investigation presumed that training needs are recognized in the territory of certainty building, ability associations and capital. It is discovered that the most regular boundaries looked by women entrepreneurs were absence of hard to get assistance from the money related foundation, acquiring trade license, tax certificate, and so forth. Different obstructions are nonappearance of legitimate women business network to raise the issue to the policy creators of the nation and nonattendance of business training foundation to show them how to begin the business.

Masuda and Chowdhury, (2018) [5] done an examination in Bangladesh, governmental and non-governmental development for women entrepreneurship ought to be actuated so as to expand the commitment of women towards the national economy. She likewise properly distinguished the serious problem of women entrepreneurship which incorporated the absence of credit offices, skill training, market openings, troubles in procurement of crude materials and transportation. She additionally called attention to that some middlemen made problems by offering low costs. The review of literature on women entrepreneurship uncovers that the phenomenon of entrepreneurial exercises has pulled in the intrigue and research consideration of a wide scope of management disciplines. Entrepreneurship is a generally new field of research, not more than 20-25 years old. The majority of the investigations have concentrated upon the male entrepreneurs as correlation with women entrepreneurs. Amid the most recent decade, it has increased broad enthusiasm past the standard regions of management thinks about.

WOMEN ENTREPRENEUR AN OVERVIEW

A survey shows the following reasons for women to become the entrepreneur

- Due to high education, they are entering into entrepreneurial activities
- Family background of having business
- Lack of job opportunity
- A lot of opportunities in a market
- A lot of opportunities in a market

Growth of women entrepreneur in India

- a) Total number of self-employed women were engaged in an organized sector like handicraft, Agriculture, Handloom, Cottage base industry.
- b) Though women are entering into business activities they constitute 47.7% of the total population but women workforce constitute only 28% of the female population.
- c) 1988-89 survey shows there was 153000 women entrepreneur which are 9% of a total of 1.7 million in India. Thus 1980 onwards India has shown positive growth among women entrepreneurship during 95-96 there were 300000 women entrepreneurs in India.

In India women, entrepreneurs are classified as follows

1. Women who take up a business enterprise who face financial difficulties.
2. Women with adequate education & professional qualification get engaged in the Business.
3. Middle-class women who have an education but lack training.

Government of India has made certain efforts through industrial policies

1) Small Industries Development Organization (SIDO)

The office of the Development Commissioner of Small Scale Industries [DC (SSI)] is commonly known as the small Industries Development Organization (SIDO). This nodal organization working under the Ministry of Small Scale and Agro and Rural Industries, Government of India, helps in laying down the policies of the Central government and plays a constructive role in strengthening the small scale sector. SIDO is engaged in evolving and implementing various programmes of training and management consultancy, economic investigation and survey, development of different types of small scale industries and development of backward areas. Moreover, the main functions of SIDO are;

- i) Coordination,



ii)Industrialdevelopment iii)Extension

2)Rashtriya Mahila Kosh

In 1993, Rashtriya Mahila Kosh turned into installation to furnish micro credit to pore women at affordable quotes of interest with very low transaction expenses and simple methods. The main objective of the research was to establish the challenges faced by women entrepreneurs that restrained their growth the research findings. International Journal of Development and Sustainability Eighty percent of women entrepreneurs faced financial difficulties, 78% competition, 74% work - family balance conflicts and 70% networking problems. Otherchallenges cited were education and skills (62%), risk taking 55%, traditional roles (40%), technology 38% and access to markets 28%.

3)7-5 year plan

This plan has included a special provision for the development of women.1991 industrial policy highlights a special training programme to develop women entrepreneur. The objective of these plans was to increase the number of women in the field of small industry & to create self-employment.

4)Mahila Vikas Nidhi

SIDBI has evolved this fund for the entrepreneurial development of women mainly in rural regions. Under Mahila Vikas Nidhi presents loan to women are given to start their task within the subject like spinning, weaving, knitting, embroidery products, block printing, handlooms handicrafts, bamboo merchandise etc.

5)8-5 years plan

This plan gave importance to the development of the SSI sector. Before the implementation of this plan, the percentage of women entrepreneur was 9 % & was targeted to 20% In 1996 the Department of SSI under the ministry of industry had taken initiative to train lakh women entrepreneurs.

CRITERIA	OPTIONS	NO. OF RESPONDNETS	PERCENTAGE
AGE	Below 25	57	47.5%
	25-30	32	27%
	31-50	22	18%
	Above 50	9	7.5%
EDUCATIONAL QUALIFICATION	School level	20	17%
	Degree level	69	57.5%
	Professional	23	19%
	Diploma	8	7%
MARITAL STATUS	Married	49	41%
	Unmarried	71	59%
NATURE OF FAMILY	Nuclear Family	68	57%
	Joint Family	52	43%
AREA OF RESIDENCE	Rural	42	35%
	Urban	78	65%
NO.OF.MEMBERS IN THE FAMILY	2 Members	14	12%
	3 Members	35	29%
	4 Members	27	22.5%
	Above 4	44	37%
INCOME PER YEAR	Below 2,00,000	30	25%
	2,00,001-3,00,000	20	17%
	3,00,001-4,00,000	17	14%
	Above 4,00,001	53	44%
NATURE OF ENTERPRISE	Tailoring	19	16%
	Beauty parlour	9	7.5%
	Food production	17	14%
	Embroidery	9	7.5%
	Computer service	7	6%
	Others	59	49%



MOBILISE FUND TO START YOUR OWN BUSINESS	RELATIVE	29	24%
	BANK	34	28%
	WOMEN SELF HELP GROUP	11	9%
	OTHER	46	38%
PRESENT LINE OF BUSINESS	POSSESSION OF PARENTAL VALUE	14	12%
	TRANSPORT ACCESSABILITY	32	27%
	LABOUR FACILITY	19	16%
	ABOUT TO YOUR KNOWLEDGE	55	46%
CURRENT LINE OF BUSINESS	NEAREST PLACE	32	27%
	CENTER TO CITY	49	41%
	EASY ACCESSABILITTY	39	32.5%
EXPANSION	BANKS	50	42%
	CO-OPERATIVE	12	10%
	FRIENDS & RELATIVES	29	24%
	OWN INTEREST	29	24%
EXPANSION	LABOUR	31	26%
	MACHINES	14	12%
	BUILDING	21	17.5%
	NOT APPLICABLE	54	45%
WORK TIME	SELF EMPLOYED	30	25%
	Part time	35	29%
	Full time	55	46%
HEALTH PROBLEM	Back Pain		38%
	Eye Strain		47.5%
	Mental Stress		67.5%
	Heavy Schedule		32.5%
	Problem Of Joints		34%
PROBLEMS FACED	Poor funding prospectus	21	17.5%
	Lack of industrial knowledge	18	15%
	Lack of safety	48	40%
	Lack of social & institutional support	24	20%
	Lack of mobility	9	7.5%
SATISFACTION	Highly Satisfied	30	25%
	Satisfied	36	30%
	Neutral	42	35%
	Dissatisfied	6	5%
	Highly Satisfied	6	5%
SATISFACTION	Strongly disagree	16	13%
	Disagree	17	14%
	Neutral	56	47%
	Agree	24	20%
	Highly Agree	7	6%
SATISFACTION	Strongly disagree	10	8%
	Disagree	23	19%
	Neutral	56	47%
	Agree	19	16%
	Highly Agree	12	10%



SATISFACTION	Strongly disagree	8	7%
	Disagree	18	15%
	Neutral	52	43%
	Agree	27	22.5%
	Highly Agree	15	12.5%
SATISFACTION	Strongly disagree	12	10%
	Disagree	14	12%
	Neutral	48	40%
	Agree	29	24%
	Highly Agree	17	14%

5.1 FINDINGS

In this study, Mostly (47.5%) of the respondents are below 25.
 In this study, Majority (57.5%) of the respondents are Degree level.
 In this study, Majority (59%) of the respondents are Unmarried.
 In this study, Majority (57%) of the respondents are from nuclear family.
 In this study, Majority (65%) of the respondents are from the Urban area.
 In this study, Mostly (37%) of the respondents are above 4 members.
 In this study, Mostly (44%) of the respondents annual income is above 4,00,001.
 In this study, Mostly (49%) of the respondents nature of enterprise is other business.
 In this study, Mostly (38%) of the respondents have attended any entrepreneurial program.
 In this study, Mostly (46%) from about to your knowledge.
 In this study, Mostly (41%) from center to city.
 In this study, Mostly (42%) from banks.
 In this study, Mostly (45%) for not applicable.
 In this study, Mostly (46%) of the respondents were full time.
 In this study, Majority (67.5%) of the respondents frequently face the problem of Mental Stress.
 In this study, Mostly (40%) of the respondents frequently face of lack of safety.
 In this study, Mostly (35%) of the respondents were neutral with their business.
 In this study, Mostly (47%) of the respondents were neutral with their business.
 In this study, Mostly (47%) of the respondents were neutral.
 In this study, Mostly (43%) of the respondents were neutral.
 In this study, Mostly (40%) of the respondents were neutral.

5.3 CONCLUSION

It sincerely show that these days we are residing 21st century, the participation of women in all fields more and more specially within the field of entrepreneurship is growing at a widespread fee Indian charter is developing the identical opportunity in all locations identical rights of participation in political and same rights in schooling and employment. Women are in 48% of Indian populace but a totally few women are executed in our country, so the authorities need to offer entrepreneurial attention orientation and skill improvement programmes for women. In this look at it has been genuinely shows that women are superb marketers and prefer to pick out the family, that allows you to keep the family and business in a balanced way. Even though we've proper successful women entrepreneurs in our country, however others can't capable of gain because male domination and our conventional tradition. These demanding situations are faced by means of women marketers from family and society.

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EFFECTS OF ISOMETRIC STRENGTH TRAINING ON SELECTED STRENGTH VARIABLES AMONG COLLEGE LEVEL VOLLEYBALL PLAYERS

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ABSTRACT

This research aims to assess the Effects of Isometric Strength Training on Selected Strength Variables among College Level Volleyball Players. To achieve the purpose of the study thirty volleyball players were selected as subjects from Bharathiar University affiliated colleges, Coimbatore, Tamilnadu. The age of the subjects was ranged from 21 to 25 years. The subjects were further classified at random into two equal groups of 15 subjects, Group- I underwent isometric strength training and group-II acted Control Group (CG). Training period limited with three days in a week for six weeks of training. The selected criterion variables leg strength and core strength were assessed by wall squat and plank before and after the training period. The collected data were statistically analyzed by using dependent 't' test. From the results of the study, it was found that there was a significant enhancement on leg strength and core strength among college level men volleyball players.

KEYWORDS: Isometric Strength Training, Volleyball, Leg Strength and Core Strength

INTRODUCTION

Isometric strength training is a type of exercise that has been gaining popularity among volleyball players recently. Isometric exercises involve static contractions of the muscles, meaning that the muscle remains in the same position while the force is applied. These exercises are beneficial to volleyball players as they help to improve strength and stability, while also reducing the risk of injury. The primary benefits of isometric strength training for volleyball players include increased strength, improved balance, better stability and more efficient movement (Senthil Kumaran, 2023). They can be used to target specific muscles or muscle groups, or can be used as part of a full-body workout. The benefits of isometric strength training include increased muscle strength, increased muscular endurance, improved joint stability, improved posture and balance, and enhanced muscle coordination. Isometric exercises can also be used to increase the range of motion in joints and help to reduce pain associated with certain types of arthritis. Additionally, isometric strength training can help to reduce stress levels, improve heart health, and increase bone density.

Isometric exercises are typically done by pushing or pulling against an immovable object, such as a wall or a piece of furniture. When performing isometric exercises, it is important to maintain proper form and to use proper breathing techniques to ensure that the exercise is being done safely and effectively. Additionally, it is important to focus on maintaining good form throughout the entire exercise. When performing isometric exercises, it is important to start off with lighter weights and progress gradually. This will help to ensure that the muscles are not overworked and that the workout is being done safely. Additionally, it is important to focus on proper technique and posture throughout the exercise to ensure that the exercise is done correctly. Isometric strength training is a great way to improve leg and core strength in volleyball players. It involves using body weight or light resistance exercises to work the muscles without actually moving the joint or body part involved. This type of exercise has been shown to be effective in increasing strength, power, and endurance without the risk of injury associated with more traditional exercises.

For volleyball players, isometric strength training can be used to improve performance in the sport by increasing power and explosiveness. Some examples of exercises that can be used for isometric strength training for volleyball players include wall sits, squat holds, and abdominal planks. These exercises help to strengthen the muscles of the legs, core, and upper body, which are essential for powerful, explosive movements on the court. Additionally, they can be done with or without weights to help customize the workout to the individual's needs. By incorporating isometric strength training into a volleyball player's workout routine, they can improve their performance and reduce the risk of injury. It is important to keep in mind that all exercises should be done with proper form and that any exercise that causes pain should be discontinued immediately.



STATEMENT OF THE PROBLEM

The experimental study was to find out the Effects of isometric strength training on selected strength variables among college level volleyball players.

METHODS

EXPERIMENTAL DESIGN

The study was formulated as pre test and post test randomized groups design, from the players initially for the study, based on the voluntary response to participate in thirty intercollegiate men volleyball players were selected from Bharathiar university affiliated colleges further process in which thirty volleyball players were randomly selected. The age ranged from 21 to 25 years and they were divided into two groups namely isometric strength group and control group. The selected subject (N=30) was divided into two groups (n=15) which group I underwent isometric strength training and group II was consider as control group (CG). The isometric strength training group underwent the specific training in the evening session for a period of six weeks. Group II was not treated with any special training they were doing their regular activity.

TRAINING PROGRAM

The total duration of isometric strength training. The load was increased one in two strength training progress and lasted for 60 minutes. During the training period the subject were treated with isometric strength training for three alternative days (Monday Wednesday Friday) per week.

PHASE I

During the 1 to 2 weeks of training isometric strength training the subjects were treated with warm up for 10minutes. Followed by isometric strength training namely plank wall sit isometric push up hollow body hold goblet squat and bridge underwent 1 (30 sec) repetitions with 3 sets Further the session ended with warming down for 10minutes.

PHASE II

During the 3 to 4 weeks of training, isometric strength training the subjects were treated with warm up for 10minutes Followed by isometric strength training namely plank wall sit isometric push up hollow body hold goblet squat and bridge underwent 1 (35 sec) repetitions with 4 sets Further the session ended with warming down for 10minutes. Further the session ended with warming down for 10minutes

PHASE III

During the 5th to 6th weeks of training, isometric strength training the subjects were treated with warm up for 10minutes. Followed by isometric strength training namely plank, wall sit, isometric push up, hollow body hold, goblet squat and bridge underwent 1 (40 sec) repetitions with 4 sets. Further the session ended with warming down for 10minutes.

STATISTICAL ANALYSIS

The collected data were systematically processed, assemble around subject to tabulation on completion of analysis results derived from dependent 't' test was used to find out the effects of isometric strength training on leg strength and core strength variables. In all cases the criterion for statistical significance was set at 005 level of confidents ($P < 0.05$)

RESULTS

Table 1: Computation of 't' ratio between pre and post-test means of Experimental group on Selected Strength variables

Experimental Group					
Strength Variables	Pre/ Post Test	Mean	S D	Std Error Mean	't' Ratio
Leg Strength	Pre-Test	1.43	0.71	0.05	5.25*
	Post-Test	1.72	0.71		
Core Strength	Pre- Test	0.96	0.31	0.05	5.44*
	Post-Test	1.27	0.12		

*Significant at 0.05 level of confidence (2.145), 1 & 14.

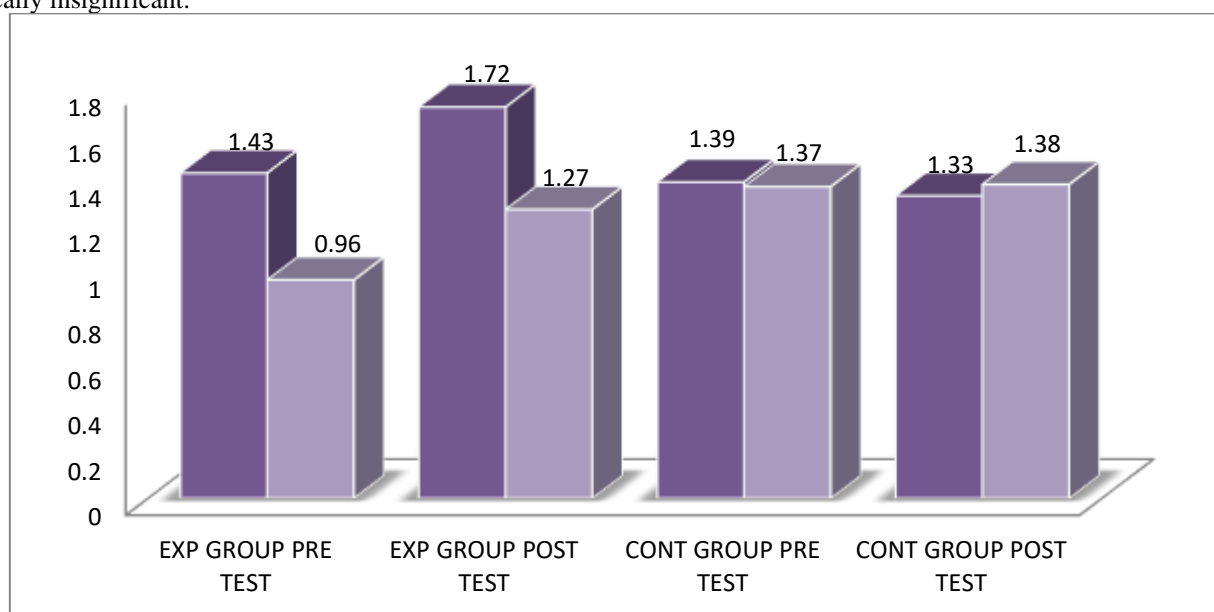
Table 1 reveals that the Computation of 't' ratio between pre and post-test means of experimental group on selected strength variables. The 't' ratio on leg strength and core strength are 5.25 and 5.44 respectively. The required table value was 2.14 for the degrees of freedom 14 at 0.05 level of significance. Since the obtained 't' ratio values were greater than the table value, it was found statistically significant.

**Table 2: Computation of 't' ratio between pre and post-test means of Control group on Strength variables**

Control Group					
Strength Variables	Pre/ Post Test	Mean	S D	Std Error Mean	't' Ratio
Leg Strength	Pre-Test	1.39	0.38	0.06	0.90
	Post-Test	1.33	0.47		
Core Strength	Pre- Test	1.37	0.31	0.00	0.95
	Post-Test	1.38	0.31		

Significant at 0.05 level of confidence (2.14) 1 & 14

Table 2 reveals that the Computation of 't' ratio between pre and post-test means of Control group on selected strength variables. The 't' ratio on leg strength and core strength are 0.90 and 0.95 respectively. The required table value was 2.14 for the degrees of freedoms 14 at 0.05 level of significance. Since the obtained 't' ratio values were lower than the table value. It was found statistically insignificant.



DISCUSSION ON FINDINGS

The results of the study indicated that the selected strength variables such as leg strength and core strength were improved significantly after underwent the effects of isometric strength training. The changes in the selected parameters were attributed proper planning, preparation and execution of the training package given to the players.

The Isometric strength training is a fantastic training which has been to be beneficial for the volleyball players. To study the isometric strength training on selected strength variables among college level men volleyball players, it was tested under, to differentiate between isometric strength training group and control group. The isometric strength training includes on leg strength and core strength. The Isometric strength training. The obtained result proved positively the isometric strength training group significantly improved. The results of the present study indicates that the isometric strength training programme is effective method to improve leg strength and core strength of college level men volleyball players. The results of the study indicates that the control group was insignificantly improved.

CONCLUSIONS

Based on the findings and within the limitation of the study, it was noticed that practice of isometric strength training helped to improved leg strength and core strength of college level men volleyball players. It was also seen that there is progressive improvement in the selected strength variables of isometric strength training group of college level men volleyball players after six weeks. Further, it also helps to improve leg strength and core strength

1. It was concluded that individualized effects of isometric strength training group showed a statistically significant positive sign over the course of the treatment period on selected strength variables of college level men volleyball players.
2. It was concluded that individualized effects of control group showed a statistically insignificant over the course of the period on selected strength variables of college level men volleyball players.



The results of effects lead to conclude that the isometric strength training group had been better significant improvement on selected strength variables (leg strength and core strength) of college level men volleyball players as compared to their performance with control group.

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DESIGN AND CONSTRUCTION OF A PERSONAL COMPUTER-CONTROLLED PICK AND PLACE ROBOT WITH MATLAB SIMULATION

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ABSTRACT

As the industrial sector faces great pressure due to the high demand for goods and services, most industries have switched their operations from manned operations to full-scale Automation and Control Engineering, and the heart of this automation is the Robot. The Robot's arm will be controlled by a human operator using a GUI designed with Matlab and running on a PC. The operator will have the ability to input the exact coordinates of the object to be handled by the arm or to use sliding bars on the GUI to control the extent of movement of the arm. The robotic arm was simulated using a GUI designed with Matlab. The simulation was such that the arm could be rotated to any direction within its allowable range of operation by sliding the bars provided for each servomotor at each joint. This study explains how to design and construct a robotic arm to simulate simple movements like pick and place operations. Research can be made on other available faster Microcontrollers that can be used straight away without the need for conversion or step down of signal. A breakthrough in this area would greatly increase the speed of movement of the robot.

KEYWORDS: *Robotic Arm, Matlab GUI, Microcontrollers, Sliding Bars, Movement Co-Ordinates.*

INTRODUCTION

Over the years, robots have been applied in different areas of life, ranging from defence and security to industrial applications. This surge in the need for robots has widened the range of research in the field of robotics. Today, many robots serve various practical purposes and perform jobs that are hazardous to people such as defusing bombs, and mines and exploring shipwrecks.

Robots are now more than machines, as they have become the solution to the future rise in industrial labour. As the industrial sector faces great pressure due to the high demand for goods and services, most industries have switched their operations from manned operations to full-scale Automation and Control Engineering, and the heart of this automation is the industrial robot. Even though the cost of acquiring most robotic systems is high, the increase in the standard of the quality of operation and products set by the International Standard Organisation (ISO) has made industrial processes less human and more robotic.

In industries today, most of the operations are run by automated robots, to deal with the daily production activities, especially in the automobile and chemical firms. Although there are many robotic products available in the market, none of them is cheap in terms of price and are mostly expensive to run especially when considering the cost of fuelling their power sources. The existing robotic arms are bulky and are designed for specific purposes and functions. This means that the input and output are fixed and cannot be reprogrammed for any other purpose or application. This is to prevent any alterations to their design. Also, the robotic arm movements of these existing manipulators are not well synchronized and the coordinates of the object to be handled are not precisely calculated and these result in operations that are not precise. So for this project, the above problems of cost, fixed design, uncoordinated movement, and inaccurate operations will be neutralized. We will design and implement a robotic arm that will be cheap, suitable for a wide range of applications- educational, and research and can serve as a model for future industrial robotic manipulators. Finally, this design will be capable of precise operations.



A special kind of industrial robot which is very common and used by most industries for a wide range of operations is the robotic manipulator or robotic arm. This robotic arm is used by the automobile industry for precise operations like spraying, drilling, part assembly, and welding. Its range of operation is limited only by the range of flexibility in its design and control.

This study is titled “Design and Construction of a Personal Computer Controlled Pick and Place Robot with Matlab Simulation”, which is meant to be designed and implemented on a software and hardware bases. The project is to design a robotic arm that is capable of picking an object, through the coordinates sent to it and placing the object in the coordinated place. The system will be built in three different phases: the software running on a personal computer (PC), a microcontroller, and a robotic arm. To create a systematic, efficient, and faster operation, software is used. The user interface of the software makes the system more user-friendly, thereby enabling easier operations. Also, due to the image processing ability of the software, more precision in terms of material handling will be offered by the whole system. The robotic arm has four Degrees of Freedom (DOF) thereby making it more manoeuvrable.

2.0 LITERATURE REVIEW

Robotics is the branch of mechanical engineering, electrical engineering, and computer science that deals with the design, construction, operation, and application of robots, as well as computer systems for their control, sensory feedback, and information processing. Many of today's robots are inspired by nature, contributing to the field of bio-inspired robotics [1].

A Robot is a virtually intelligent agent capable of carrying out tasks robotically with the help of some supervision. Practically, a robot is an electro-mechanical machine that is guided using a computer and electronic programming. Robots can be classified as autonomous, semiautonomous, and remotely controlled. Robots are widely used for a variety of tasks such as service stations, cleaning drains, and tasks that are considered too dangerous to be performed by humans [1]. The concept of creating machines that can operate autonomously dates to classical times, but research into the functionality and potential uses of robots did not grow substantially until the 20th century. The word ROBOTICS comes from the word ‘robots’ which was introduced to the public by the Czech writer Karel Cepak, in his play R.U.R (Rossum's Universal Robots), which was published in 1920. The word robot comes from the Slavic word ‘robot’, which means labour [1].

In 1948, Norbert Wiener formulated the principles of Cybernetics, which are the basis of practical robotics. Fully autonomous robotic arms only appeared in the second half of the 20th century. The first digitally operated and installed robotic arm was installed in 1961, to lift hot pieces of metal from a die-casting machine and stock them [1].

This section of the study is concerned with the fundamentals and concepts of robotic manipulator design, including kinematics, motion planning, computer interfacing, and control. It introduces the most important concepts in these subjects as applied to industrial robotic manipulators. The majority of applications of robot deal with industrial robotic arms (manipulators), operating in structured factory environments. Therefore, any study of robotics must include a rigorous treatment of the different configurations and methods of control of the robotic arm.

2.1 COMMON CONTROL CONFIGURATIONS OF THE ROBOTIC ARM

Robotic manipulators have been designed in several ways, but one remarkable difference in their design is the technique used in the control of these intelligent systems. Some of the most popular of these techniques include RF control from a remote location and the Use of Software Running on a Personal Computer [2].

2.1.1 RF CONTROL FROM A REMOTE LOCATION

Radiofrequency refers to alternating current having characteristics such that if the current is sent to an antenna, an electromagnetic field is generated suitable for wireless broadcasting and communication. These frequencies range from 9 KHz to thousands of gigahertz (GHz). When a radio frequency is applied to an antenna it gives rise to an electromagnetic field that propagates through space called RF [2].

The Radio Frequency control of robotic arms is due to the need to use robots at a safe distance, far from the human operator. It makes use of a transmitter at the operator's end and a receiver at the arm to send and receive signals. This signal is then sent into the microcontroller part of the robotic arm for subsequent processing. H-bridge is normally used as a driving motor. The remote controller uses an encoder that converts the serial data (text, numbers) on the remote controller into parallel data (an 8-bit binary address). This data is now sent using the ASK transmitter to the receiver. The ASK receiver receives the signal, and the decoder decodes the signal.



This decoded signal is now sent into the microcontroller which enables the manipulator to respond accordingly [2]. This design is limited in distance to a few miles as the radio frequency used is very low and cannot exceed a short distance. Also, the maneuverability of the arm is low [2, 3].

2.1.4 USE OF SOFTWARE RUNNING ON A PERSONAL COMPUTER (PC)

This technique was adapted for this study. It is very versatile in application and has a very easy-to-use graphic user interface (GUI). It involves three major parts: a robotic arm, a dedicated servo-microcontroller, and a well-written software running on a Windows operating system personal computer (PC).

The coordinates of the object to be picked will be inputted into the PC through the graphic user interface of the software. This location is sent into the microcontroller, which now adjusts the position and movement of the robotic arm to locate the objects through its sensors, pick the object and place it exactly at a location also inputted through the user interface of the software.

To enhance ease of operation, this control technique makes use of a camera that is attached to the arm. This camera captures the image of the object to be picked and its surroundings which is sent back to the PC. The software uses its image processing ability to process the image sent. This processed image is shown in the GUI, such that all an operator needs to do is to click the object and the arm automatically adjusts to the location, picks it, and places it at any location within its surrounding chosen by just clicking at a location in the user interface [4, 5].

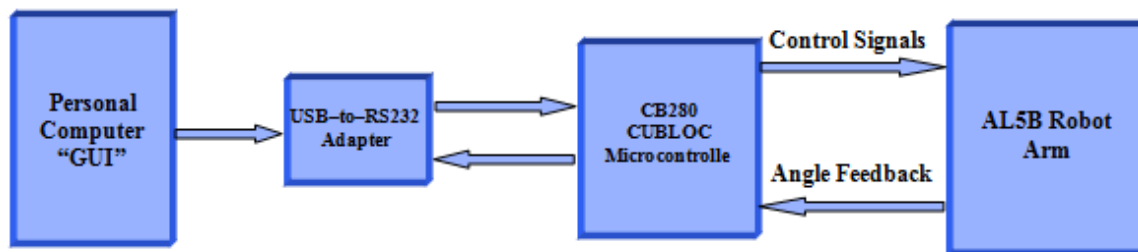


Fig 2.1: System block diagram [5].

2.2 OVERVIEW OF THE ROBOTIC ARM/MANIPULATOR

The manipulator consists of segments that may be joined and move about, allowing the robot to do work. The manipulator is the arm of the robot that must move materials, parts, tools, or special devices through various motions to provide useful work. The manipulator is made up of a series of segments and joints much like those found in the human arm. Joints connect two segments and allow them to move relative to one another. The joints provide either linear (straight line) or rotary (circular) movement. The muscles of the human body supply the driving force that moves the various body joints. Similarly, a robot uses actuators to move its arm along programmed paths and then to hold its joints rigid once the correct position is reached [6].

There are two basic types of motion provided by actuators: linear and rotary. Linear actuators provide motion along a straight line; they extend or retract their attached loads. Rotary actuators provide rotation, moving their loads in an arc or circle. Rotary motion can be converted into linear motion using a lead screw or other mechanical means of conversion. These types of actuators are also used outside the robot to move workpieces and provide other kinds of motion within the work envelope [6].

A robotic arm is usually programmable, with similar functions to a human arm. It has about the same degree of freedom as in the human arm [7]. Humans pick things up without thinking about the steps involved. For a robot or a robotic arm to pick up or move something, someone has to tell it to perform several actions in a particular order from moving the arm to rotating the “wrist” to opening and closing the “hand” or “fingers” [8]. Some tasks of robot arms may relate to simple mechanisms of picking an object and placing it somewhere. An automated pick-and-place robot arm, which can reach an object in a given domain or range of space, grip it precisely, change its orientation, and place it in a given position will ease the functions mentioned earlier. Thus, it could be named as a Robot Arm with a Three-Dimensional Reach. Robotic arms are mechanically controlled devices designed to replicate the movements of a human arm [9]. These devices are used for lifting heavy objects and carrying out tasks that require extreme concentration and expert accuracy. Robotic arms are often used for industrial and nonindustrial purposes. Robotic arms by definition have multiple degrees of freedom that must be all directed in a kind of electromechanical ballet. The feedback required to motivate sensitive robotic manipulators to become responsive



enough to the environment, to be of practical use is something of a new possibility [9]. Therefore, it's been many years since the first practical manipulators went into production for real industrial applications. Modern industrial farms have increased their capability and performance through the use of microcontrollers and computer interfaces. The robotic arm can handle materials through the use of an end device called the End-Effector/Gripper [10].

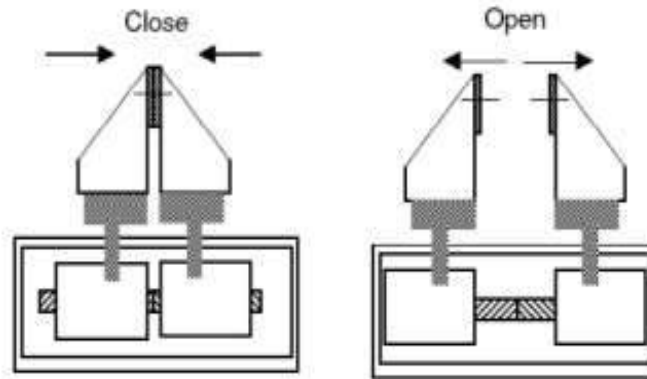


Fig 2.2: A Parallel Jaw Gripper [3].

2.3 THE SERVO-MICROCONTROLLER

A microcontroller is an entire computer manufactured on a single chip. Microcontrollers are usually dedicated devices embedded within an application e.g., as engine controllers in automobiles and as exposure and focus controllers on cameras. To serve these applications, they have a high concentration of on-chip facilities such as *serial* ports, parallel input/output ports, timers, *counters*, interrupt *control*, analog-to-digital converters, random *access* memory, *read-only* memory, *etc.* The *I/O*, memory, and on-chip peripherals of a microcontroller are selected depending on the specifics of the target application. Since microcontrollers are powerful digital processors, the degree of control and programmability they provide significantly enhances the effectiveness of the application [18]. Embedded control applications also distinguish the microcontroller from its relative, the general-purpose microprocessor. Embedded systems often require real-time operation and multitasking capabilities. Real-time operation refers to the fact that the embedded controller must be able to receive and process the signals from its environment as they are received. Multitasking is the capability to perform many functions in a simultaneous or quasi-simultaneous manner [19].

Many types of servo motor microcontrollers could be found in the market such as ASC-16 serial servo controllers, POLULU serial servo controllers, SV203 RC Servo Motor Controller, and PARALLAX serial servo controllers. All of these types of controllers use serial communication technology that lets the user control the servo motor via the serial communication port of the PC. ASC-16 is one of the serial servo-motor controllers that have been developed by Medonis Engineering. This controller can be used to control the actuator of the robot arm. The new controller has a few more fancy features such as a move buffer, position feedback, and speed/ acceleration control in hardware. This will free up some resources on the PC because the software motion controller used with the GUI will no longer be needed. Also, the ASC-16 has an onboard DC-DC connection- which means that the board only needs a single DC power supply [18].

However, the microcontroller adapted for the project is a PIC-based servo controller. This allowed for flexibility of the design made it easy to interface with software written in MATLAB, and generally reduced the cost of the project.

A PIC-based servo controller is a small circuit that has been designed to allow easy control. The Servo Controller uses a PIC89F51 microcontroller to drive servo motors and digital outputs. It receives commands from a host computer via a standard RS232 serial interface. The PIC program can be downloaded which contains a HEX file that most PIC programmers can read; and a PIC Assembler code (ASM) file.

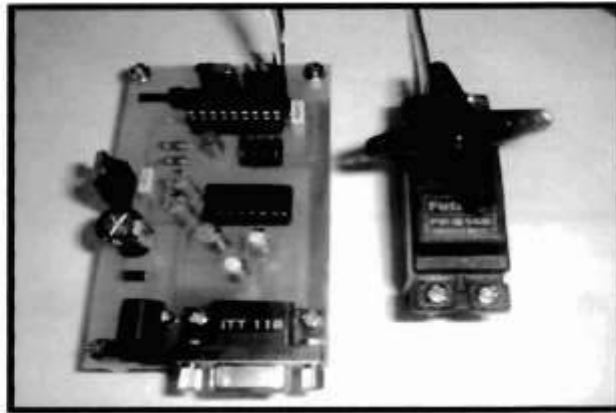


Fig2.7: AT89S51-based servo-microcontroller Board [18].

This circuit can be used to control the angle of rotation of the servo motor in serial communications using Matlab software.

2.4 THE MATLAB SOFTWARE

There are various types of software control or interface control software for the robotic arm and their difference from each other depends on the manufacturer of the software. The software adapted for the graphic user interface is Matlab based. Matlab gives the user the ability to interface the Graphic User Interface into one's code and applications. The programming code has been integrated into Matlab and the Matlab application installed on the host PC, will then execute the code and allow the robot arm to move in any specified direction [20].

The three main things which can be accomplished through the use of Matlab are:

1. Execute and perform the tasks correctly.
2. Create a user-friendly GUI that allows any person with little technical knowledge to successfully use the application.
3. Write an application that runs more efficiently and faster than the previous designs.

Matlab is one of the basic and most popular simulation tools in Engineering. Its user graphic interface is very user-friendly. Programming in Matlab is less complex when compared to other programming and simulation tools. Most of the functions have already been coded, all the programmer needs to do is to call up the function. For simulations, Matlab offers a very high degree of flexibility unmatched by any other simulator. Its Simulink tool carries all the components and resources needed for the simulation on board. With a click on the object in its object window and the proper arrangement of these objects, any kind of simulation can be carried out [21]. Due to the level of versatility offered by Matlab, we decided to choose Simulink as our simulation tool for the project. Furthermore, its image processing capability enabled us to carry out image processing operations, which is very critical for the project.

3.0 DESIGN AND METHODOLOGY

For the design methodology, the system design objectives, considerations, and specifications will be given in detail, to serve as a guide towards actualization of the project design. The primary aim of this study is to design and implement a PC-controlled Pick and Place Robotic Arm. The Arm will be controlled by a human operator using a GUI designed with Matlab and running a PC. The operator will have the ability to input the exact coordinates of the object to be handled by the arm or to use sliding bars on the GUI to control the movement of the arm. A servo-driver circuit will be implemented, to enable communication between the Arm and the Software running on the PC. The arm will be designed to be of the revolute type with 4 degrees of freedom (DOF).

3.1 DESIGN SPECIFICATIONS

The following specifications were put into consideration during the design of the Robotic arm:

1. ARM
 - a) Material = Acrylic Material (it is very hard, but very light)
Thickness = 5mm
 - b) Height of the Arm = 73CM
 - c) Gripping Force = 75N
 - d) Lifting Force (dependent on the base servomotor) = 250N
 - e) Acceleration = 2cm/s^2



f) Mass of Object to be the handled, M

$$F = Ma$$

$$M = F/a = 250/2 = 125g$$

2. SERVOMOTOR

a) Voltage = 4.8v

b) Speed = 0.18sec/60deg

c) Torque = 2.80kg/cm

d) Weight = 41g

e) Size = L*W*H = 39.5*20.0*35.6mm

f) Current consumption = 2amp/hr

3. BATTERY (POWER SOURCE)

a) Current = 7amps

b) Voltage = 6volts

c) Capacity of battery = 2hrs.

3.2 COMPLETE SYSTEM DESIGN

The design of the project consists of the hardware design phase and software design phase. The hardware design consists of the electrical and mechanical sections. Below is a flow-chart detailing the design process of the project:

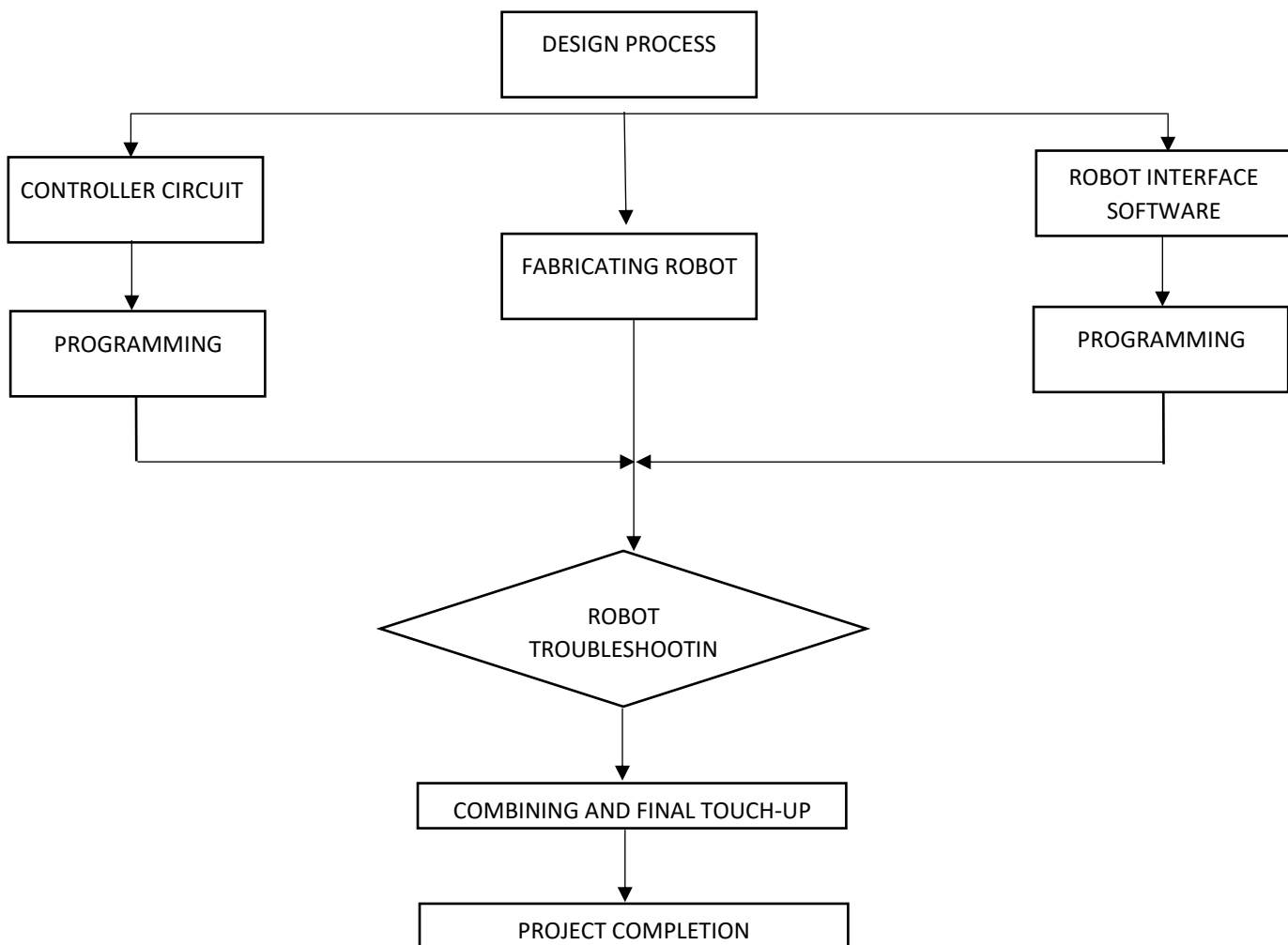


Fig 3.2.1 Flow chart of the design process for the PC Controlled Pick and Place Robotic Arm

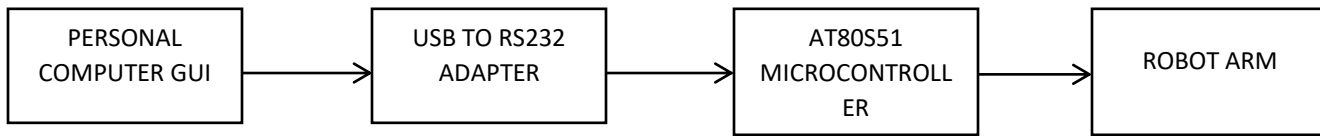


Fig 3.2.2: System Block Diagram of a PC-Controlled Pick and Place Robot.

3.3 HARDWARE DESIGN

The hardware design of the system is made up of two parts: the servo-driver circuit and the mechanical part (the arm).

3.3.1 THE SERVO-DRIVER CIRCUIT DESIGN

The servo-driver circuit provides the means through which the PC communicates with the servomotors placed on the arm. The servo-driver receives the data sent by the software through the USB port of the PC. It then processes the data (angles of rotation of the servos), into digital pulses of varying duration (depending on the value of the angle set for the servos). These digital pulses are sent to the servos causing them to respond and rotate accordingly.

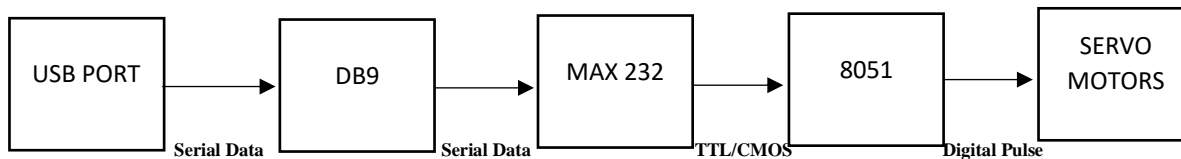


Fig 3.3 Block diagram of the servo-driver circuit

From the block diagram of the servo-driver, the PC communicates to the DB9 ports of the servo-driver through the USB port of the PC. The function of the DB9 is to convert the serial data from the PC from its Universal Serial Bus protocol to the RS232 protocol. This is because the PC is much faster than the servo-driver, hence the need to convert the PC's much faster USB protocol to the slower RS232 protocol, which is compatible with the speed of the microcontroller. From the DB9 Port, the serial data now in the much slower RS232 protocol is passed to the MAX232 converter. The MAX232 now converts the data into the TTL (Transistor-Transistor Logic) standard which is the power standard the microcontroller works with. The microcontroller now processes the data into digital pulses which are then sent to the servomotors.

3.3.1.1 MODULES OF THE SERVO-DRIVER CIRCUIT

Various modules make up the servo-driver circuit of the project. These modules include the following:

- Microcontroller (AT80S51)
- MAX 232 Converter
- The USB Connector
- RS 232 DB9 Connector
- The Servomotors.

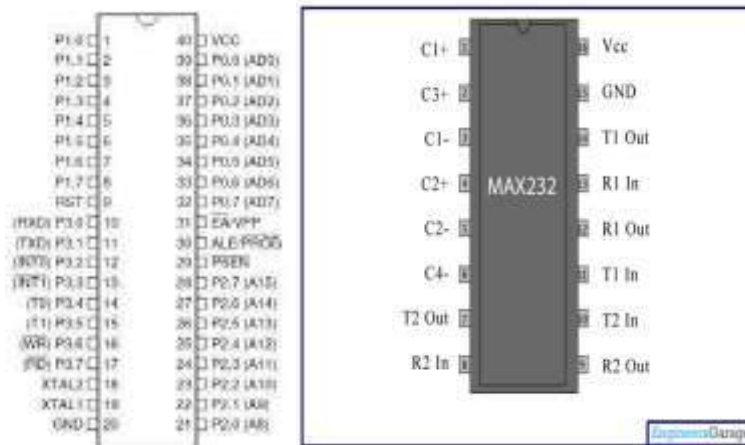


Fig 3.3.1.1 AT89S51

Fig 3.3.1.2 A MAX 232 Schematic



Fig 3.3.1.3 Servomotor

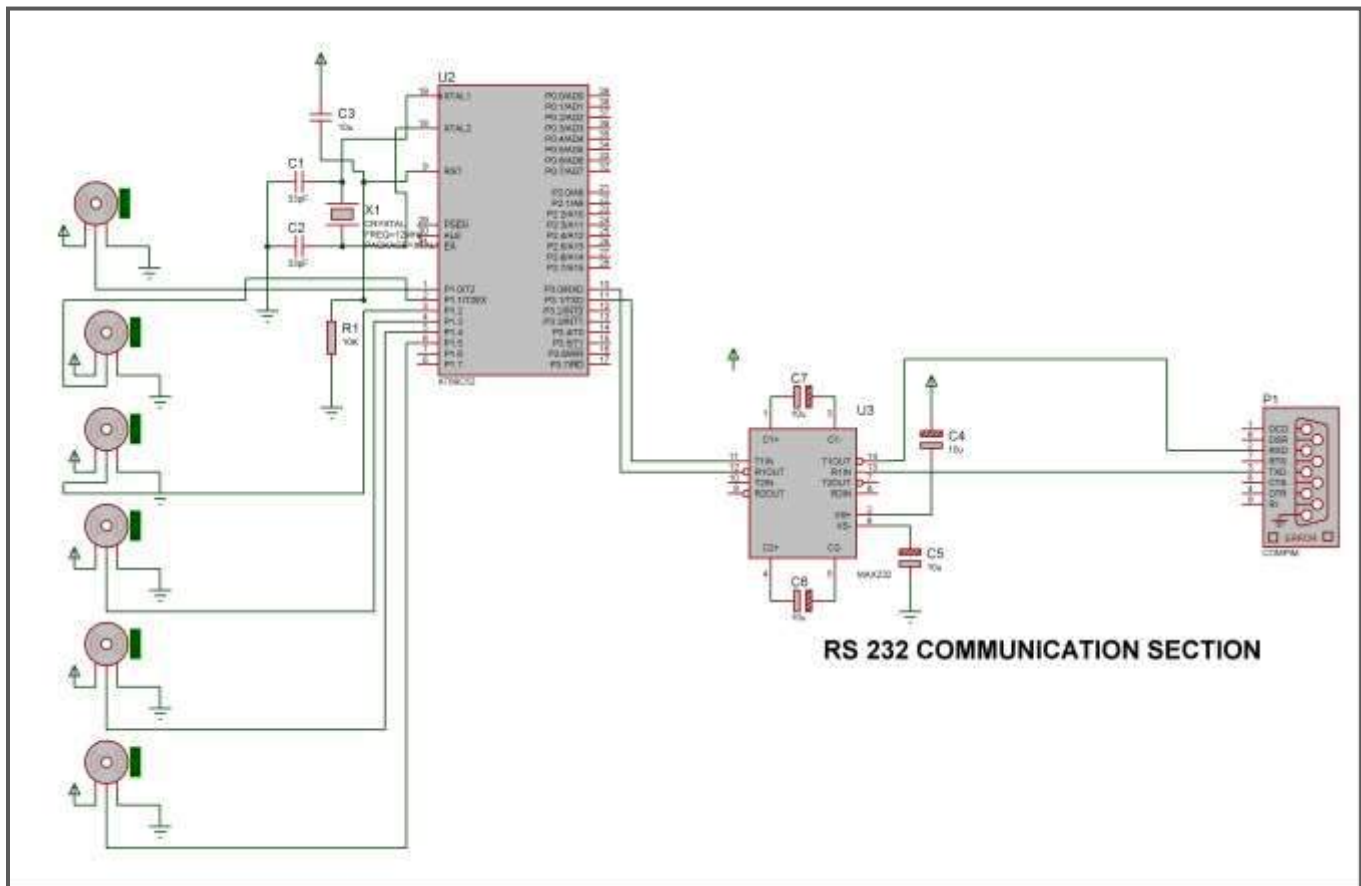


Fig 3.3.1.4 Completed Servomotor Driver Circuit.



3.3.2 THE MECHANICAL DESIGN

The mechanical design of the project consists of the design and construction of the arm. The arm consists of frame linkages which are connected using revolute joints, controlled with servomotors.



Fig 3.3.2 The Robotic Arm

An Acrylic Composite material was chosen for the frame/body of the arm because of the following reasons:

- **Lightweight:** The acrylic component is very light in weight. It has a thickness of 5mm which is too small to sufficiently reduce the force required to lift the object.
- **Ease of Coupling:** The material chosen for the body is very easy to couple together. With a few screws and nuts, the various linkages making up the body frame can easily be coupled together according to the specifications.
- **The Acrylic material is resistant to corrosion.** Since the acrylic material is non-metallic, it neither rusts nor corrodes.
- **Finally, the acrylic material produces smooth rotation of the Arm joints.** Equally, it is easy to bend to shapes and cut to sizes.

3.4 SOFTWARE DESIGN (GUI RUNNING ON MATLAB)

To effectively control the movement of the robotic arm, a Graphic User Interface (GUI) was developed. The program codes were written using MATLAB.

The choice of Matlab was made because of the following reasons:

- It is easier and less time-consuming to write.
- It is easier to modify and update.
- Matlab offers overwhelming flexibility as it is compatible with any operating system.
- Matlab provides an easy way of developing GUI by using the drop-down approach, making it possible for someone to develop a GUI of choice without being an expert programmer.

This GUI gives the operator the ability to test the physical system (the robotic arm) without ever having to set up the physical environment and also operator can practice without having to be on site. Another benefit of using a GUI is that we can create any representation needed for the operator. To control the robot in the real world, as well as the virtual world, we use MATLAB/Simulink to numerically analyze the inverse dynamics of the system. This allows us to specify the robot's position that we want and then the software automatically calculates the joint angles that will move the robot to that desired position. The robot will be used to manipulate several objects with known positions within the system, real-world or virtual. We will use trajectory planning techniques to move the robot within the environment; this gives the robot a level of semi-autonomy and allows the user to only have to initiate a single command instead of having to control the robot the entire time it is in use.

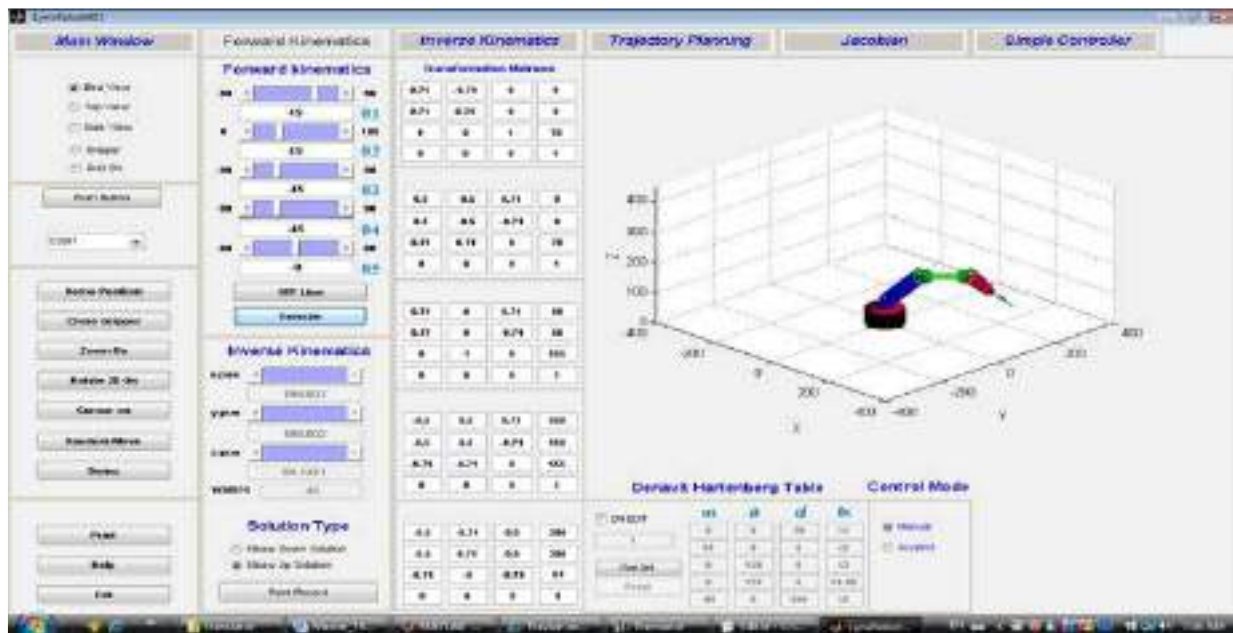


Fig 3.4: Screenshot of the Software GUI Developed Using MATLAB.

3.4.1 CONTROLS ON THE SOFTWARE GUI

- **DEMO:** The demo button when initiated, makes the Robotic Arm move randomly. It is mainly to be used to test the operational readiness of the arm.
- **CLEAR TRAIL:** The Clear trail button removes completely the trail which shows the trajectory path taken by the arm during its demo movement.
- **HOME:** The Home button when clicked, initializes the arm to move to its rest position.
- **CHECK BOX:** The Check Box when clicked produces a drop-down window with options for Real-time and non-real-time motion.
- **SEND:** The Send button when clicked sends the coordinates of the arm or the data from the sliding window to the software process control codes, which makes the arm respond accordingly.

There are two ways the Arm can be controlled using the software, these are:

- SLIDING WINDOW:** Through the sliding window, all the operator needs to do is slide the bars corresponding to each servomotor accordingly, and then press the SEND button. The arm responds according to the angles each servomotor is slid.
- TEXTBOXES:** Each coordinate of the robotic arm is represented by a textbox on the GUI. The operator can choose to enter the exact coordinates of the object to be picked on the textboxes (X, Y, Z), and by clicking the send button, the software converts the coordinates to appropriate signals and these cause the arm to respond.

Also, the software GUI has a simulation window, which enables to operator to have a first-hand view of the arm movement before the arm moves. The simulation window can be made to work simultaneously with the arm movement, by selecting the REAL-TIME option. Finally, in developing proper software for arms control, a Flow Chart was developed.

3.4.2 DESIGN OF FLOW CHART

The flowchart shows the sequence of events, which the software carries out before sending the appropriate signals to the servo driver. It is as shown below:

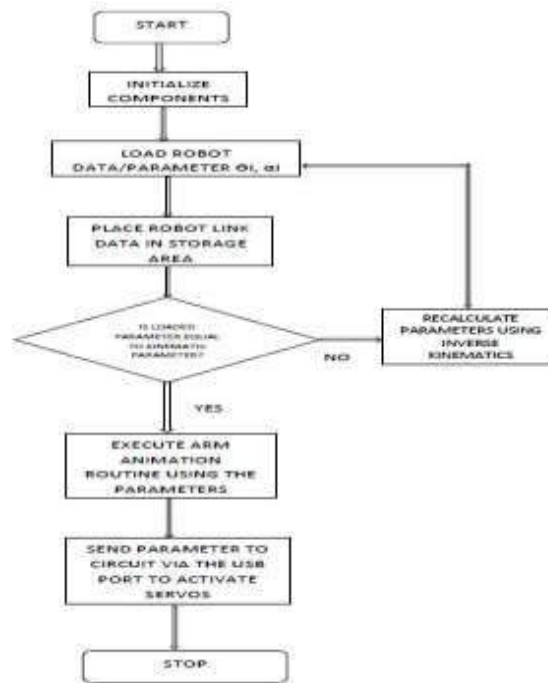


Fig 3.4.2 Flowchart showing the sequence of software events.

4.0 DISCUSSION

In the following sections, the results of the simulation of the pick and place operations, the relationship between the torque, current, voltage, and speed characteristics of the arm, as well as the testing of the different parts of the project will be presented.

4.1 SIMULATION OF THE ROBOTIC ARM

The robotic arm was simulated using a GUI designed with Matlab. The simulation was such that the arm could be rotated to any direction within its allowable range of operation; by sliding the bars provided for each servomotor at each joint on the GUI.

4.1.1 SIMULATION RESULTS

The robotic arm was able to carry out real-time pick and place operations. It moved its joints in the direction of sliding the bars. The figures below are the screenshots of the pick and place operation carried out by the simulated arm:

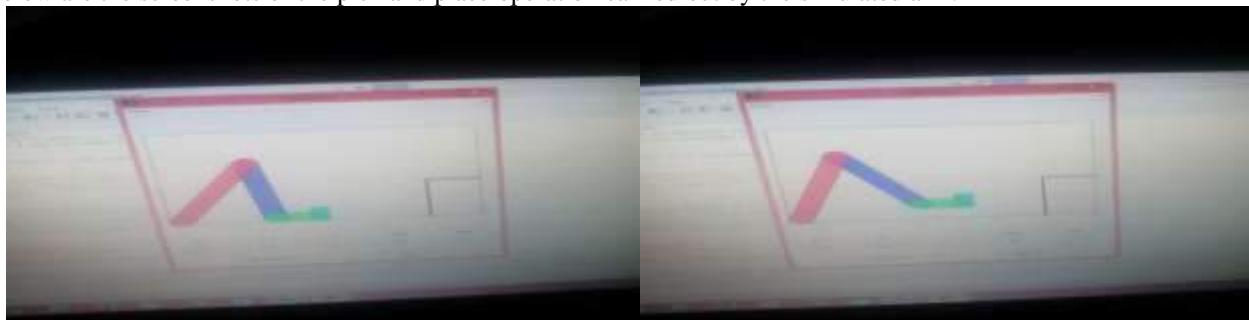
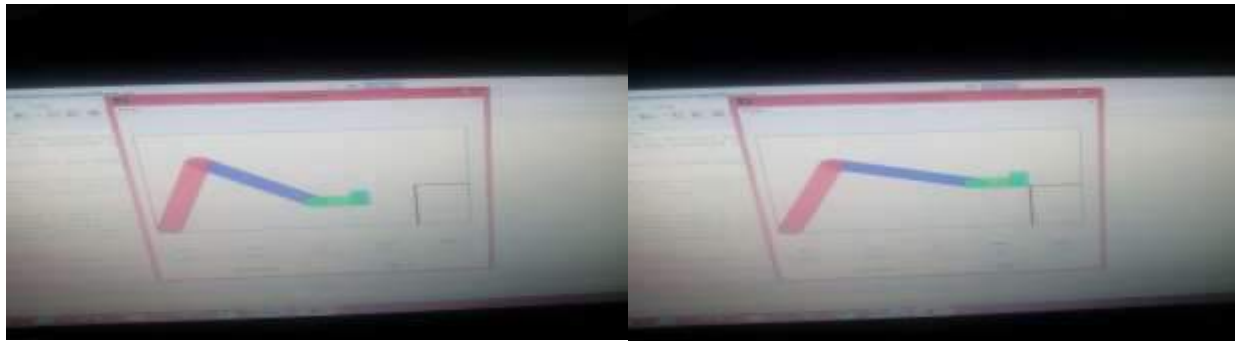
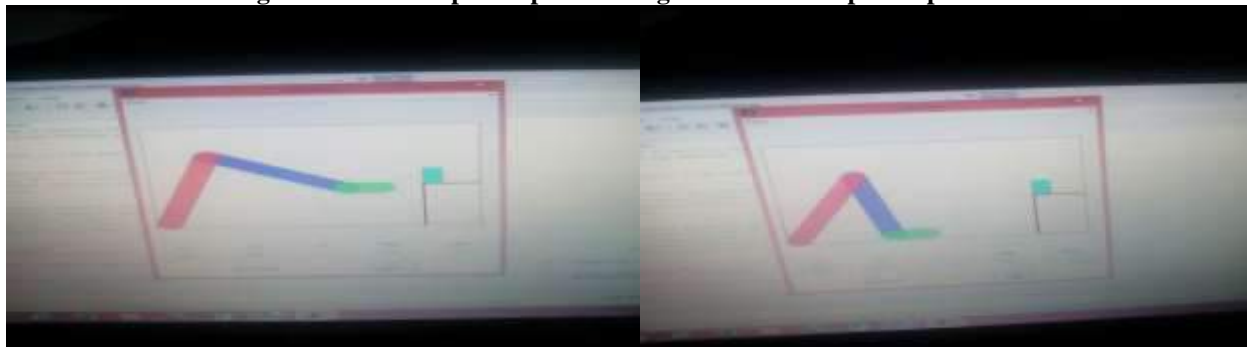


Fig 4.1a: Pick and place operation **Fig 4.1b: Pick and place operation**

**Fig 4.1c: Pick and place operation Fig 4.1d: Pick and place operation****Fig 4.1e: Pick and place operation Fig 4.1f: Pick and place operation**

From the screenshots of the simulation of the arm; it was able to pick the set object from a pre-set coordinate and place the object at a particular point. This means that the simulation is rigid and the position of the object is constant as well as the exact place the object will be placed. Also, the object the arm was able to handle was exactly 125g. This weight of the object confirms the accuracy of the theoretical analysis of the arm; which gives the maximum weight of the object as 125g.

4.2 TEST AND RESULTS FROM THE ARM MOVEMENT

Tests were carried out to ascertain that the project met the desired specifications. A multimeter was used to test for various electrical parameters such as voltage, current, and continuity at each stage of the implementation of the servo-driver circuit, to ensure that the desired inputs and outputs were to specification.

Also, the angles of rotation of the servomotor were tested and measured to ascertain that the servomotor rotated in a synchronized manner. The serial port connected with the microcontroller and the PC was tested to ensure proper connection. The software was tested to ensure it works with the Robotic Arm. Finally, every sub-system of the project was built to specification.

This section presents the data obtained by measuring the parameters of the gripper and base servos, which are the main servomotors that produce the lifting force, and torque, and determine the speed and distance covered by the arm.

4.2.1 Measuring the Torque and Distance covered by the Arm

These data were obtained by applying equation 1: $T_{APP}=F*D$

Where: T_{APP} is the torque produced by the gripper servomotor (NM);

F is the lifting force of the gripper servomotor= 250N.

D is the distance covered by the arm in M.

The maximum torque produced by the gripper, $T_{max}=F*D_{max}$

$T_{max}= 250N * 0.73M=182.5NM$

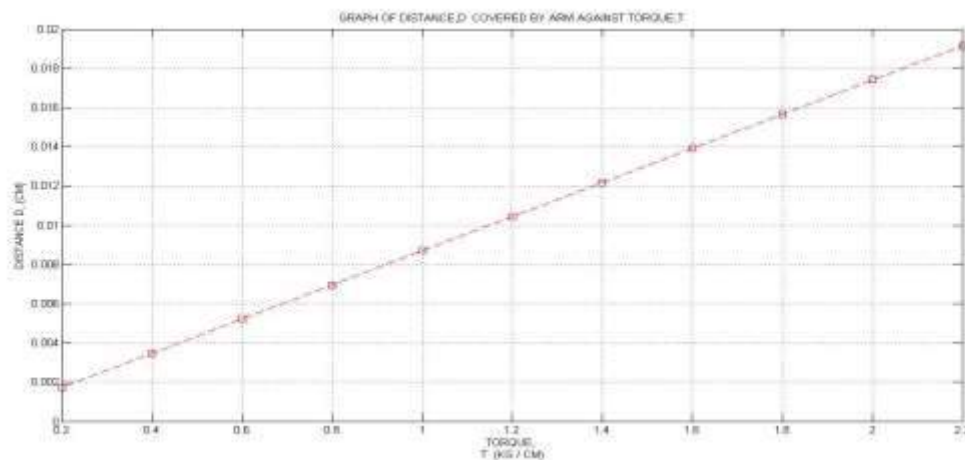
Where D_{max} = Maximum distance (total length of the arm).

From the datasheet of the servomotor, the Lifting force was given as 250N. By varying the distance and applying the above equation the following results were obtained, as shown in Table 4.2.1 below:

**Table 4.2.1 Data showing values of Object distance with variation in gripper Torque.**

TORQUE, T_{APP} (NM)	DISTANCE (M)
50	0.20
55	0.22
60	0.24
65	0.26
70	0.28
75	0.30
80	0.32
85	0.34
90	0.36

Figure 4.2.1 shows a graphical plot of the distance covered by the arm against the torque for the shoulder servomotor from the data in Table 4.2. From the graph, it is evident that as the torque of the servomotor increases the distance of the arm increases linearly. This is because as the current in the coil increases, the strength of the electromagnetic field increases, thereby producing a greater force. Since torque is equal to the product of the force due to rotation and distance of the shaft, therefore the torque increases as the distance covered by the object increases.

**Fig 4.2.1: Plot of Distance covered by the object against Torque.**

4.2.2: Measuring the Torque and Angular Speed.

Equally by using equation 2: $P_m = T \cdot W$

Where: P_m is the power of the motor.

T is the electromechanical torque (Nm)

W is the angular velocity in rad/ sec.

From the datasheet of the base servomotor, the power of the servomotor was given, then by varying the torque and applying the above equation the following results were obtained, as shown in Table 4.3 below:

Table 4.2.2 Data showing values of Angular speed with variation in Torque.

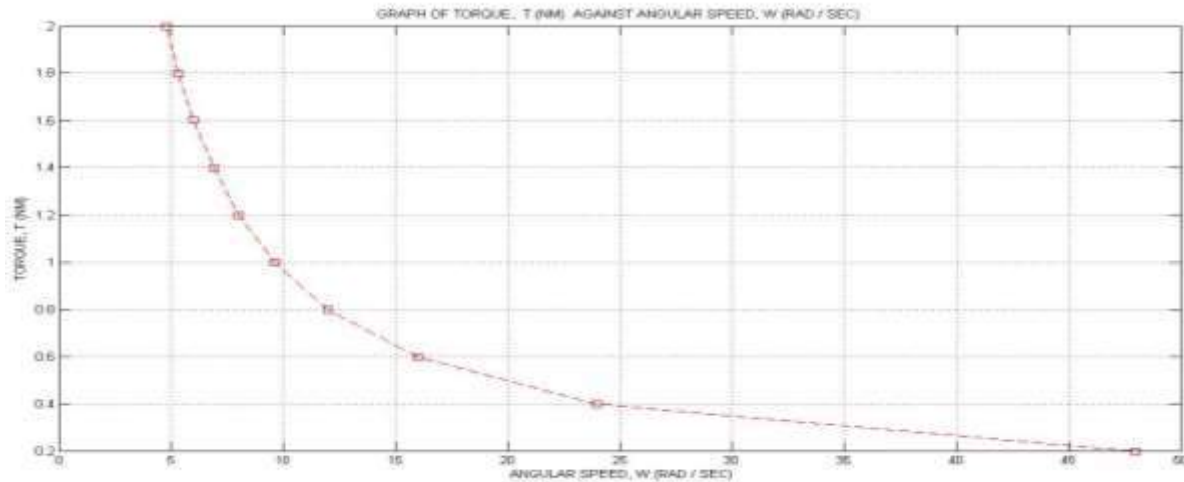
TORQUE (NM)	ANGULAR SPEED, W (rad/sec)
50	0.192
55	0.175
60	0.160
65	0.148
70	0.137
75	0.128
80	0.120
90	0.107



Figure 4.2.2 shows a graphical plot of Torque against Angular Speed for the shoulder servomotor from the data in Table 4.2.2. From the graph, it is evident that as the torque increases, the angular speed of the servomotor decreases linearly.

Fig 4.2.2: Plot of Torque against Angular speed

4.3 Comparison of Simulated Arm Movement and Prototype Operation



The simulation of the movement of the arm provided all the necessary details in line with its design and movement of the arm. Data such as speed of movement, torque, distance, gripping force, and lifting force were painstakingly analyzed. From the simulation, the arm was able to show flexibility in its 3 DOF design. It was able to pick up the 125g object, move it towards the set platform and place it accurately at a set point on the platform.

Also, in the actual test of the prototype's operation, the arm movement was not as accurately synchronized as the simulated arm movement. The joints showed time lapses (delay) before responding to control signals. The prototype was not able to carry the stipulated maximum weight of 125g, although the simulated arm was able to handle objects up to 125g in weight.

The inability of the prototype to carry up to 125g object can be attributed to the material used in making the arm frames (acrylic material), they are very light and could fracture when carrying heavy objects. Also, the shoulder servomotor could not produce a lifting force of 250N required to lift the maximum weight of 125g.

In summary, the simulated arm worked perfectly and produced results by the stipulated theoretical analysis of the arm, when compared to the prototype which was able to lift objects less than 125g in weight. This can be attributed to limitations in the design such as battery voltage drop, materials chosen for the body frame, and weakening of arm joints.

5.0 CONCLUSION

For the development and future related studies of this project, the following recommendations are given:

1. The Pick and Place algorithm can be enhanced using other techniques such as neural networks, fuzzy logic, etc.; to produce a more efficient system that can precisely pick and place objects.
2. The number of servomotors can be increased especially for industrial applications to ensure greater movement and rotation of the arm.
3. Research can be made on other reliable and faster Microcontrollers that can be used straight away without the need for conversion or step down of signal. A breakthrough in this area will greatly increase the speed of movement of the robot.
4. Use of other high-level languages like Hardware Description Language (HDL) and more efficient compilers can be used to produce more efficient programs and hex code.
5. Since the designed system is dependent only on a 7V dc source, it is much recommended that future researchers should provide alternate power sources in case of brownouts such as batteries or solar power systems.



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EMAIL ALERTS ON WHATSAPP

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ABSTRACT

Emails have become one of the most used digital communication mediums. The concept of email alerts on WhatsApp involves linking an email account to WhatsApp account to receive email notification directly on the messaging app. This feature provides convenience and efficiency by allowing users to stay updated on important emails without switching between apps. This abstract discusses the benefits of email alerts on WhatsApp, the process of implementing this feature, and how it can improve productivity and communication. The abstract also addresses privacy and security concerns and offers tips for customizing and integrating email alerts with other apps. Overall, email alerts on WhatsApp provide a valuable solution for managing email notification and improving communication on the messaging app.

KEYWORDS: *Convenience, efficiency, productivity, privacy, security concerns, customization, integration, managing email notification.*

INTRODUCTION

Email alerts on WhatsApp refers to a feature that allows users to receive email notification on their WhatsApp account. This feature is useful because it enables users to receive important email updates without leaving the WhatsApp app. With email alerts on WhatsApp, users can stay updated on important emails and respond to them quickly and conveniently. To implement email alerts on WhatsApp, users need to link their email accounts with their WhatsApp accounts. The purpose of this project is to design an automation bot using WhatsApp where we can view our mails and can send mails consisting of text.

EXISTING PROBLEMS

WhatsApp is a popular messaging app used by millions of people around the world. While the app primarily focuses on instant messaging, it also offers email alerts to stay notified about new messages, calls, and other updates. Many users have reported that they are not receiving email alerts on time or at all. This can be frustrating, especially if you rely on email alerts to stay updated on important messages. Opening another application and checking for mails has been biggest headache over time because we spend a lot of time on social media apps like WhatsApp and we never wish to open some other application and check for mails. So, in order to save the time which increase the productivity of our time we can make use of WhatsApp and search for mail account in WhatsApp.

DISADVANTAGE

- Important mails are unread and not brought to our knowledge.
- Need not spent time on check mails on the separate application.
- While comparing the mails and WhatsApp, it is considered WhatsApp has been predominantly used by the people.
- The mail which is stored in the spam and junk folder are not seen and missed out the notification.

PROPOSED SYSTEM

With the help efficient platform of WhatsApp sandbox and its features needed to accomplish the mail, message, and notification without missing them. Utilizing the sandbox features through this project. The sandbox for WhatsApp is a preconfigured environment available through the toolbox console in which can prototype sending outboard message, replying to incoming message and configuring things



like message delivery call backs. IMAP is an email retrieval protocol which does not download the emails. It just reads them and display them. This is very useful in low band width condition.

ADVANTAGES

- WhatsApp is the application that is widely used by the people.
- People are likely to respond to WhatsApp message than to email.
- With the help of WhatsApp, the email can be know easily without missing.
- Now a days people find it more convenient to receive information in real time and quick messenger like WhatsApp rather than email.
- It can able to see the email which is received through the WhatsApp.
- It shows the shortest form of email (i.e.) from address, To address, and the Subject.
- The mail which is received and stored in the spam and junk box are able to see with the help of WhatsApp.

SOFTWARE REQUIREMENTS JAVASCRIPT

JavaScript is a text-based programming language used both on the client-side and server-side that allows you to make web pages interactive. Where HTML and CSS are languages that give structure and style to web pages, JavaScript gives web pages interactive elements that engage a user. The name JavaScript came from Netscape's support of Java applets within its browser. Many say it was also a marketing tactic to divert some attention from Java, which was the most buzzed-about language at the time. To run Java programs, the code must be first compiled into an executable form.

WHATSAPP SANDBOX TOOL

The Sandbox tool for WhatsApp is a pre-configured environment available through the Sandbox Console in which you can prototype sending outbound messages. While you wait for your WhatsApp Business Profile to relate to your trial phone number, it's a quick way to test out the functionality of the WhatsApp Business API with tool function. The Sandbox is pre-provisioned with a trial phone number that is shared across all sandbox users. However, other users who share the same sandbox number won't receive your messages, only the ones who have opted into your sandbox.

IMAP & SMPT

IMAP (Internet Access Message Protocol) is an email protocol that deals with managing and retrieving email messages from the receiving server. Since IMAP deals with message retrieval, you will not be able to use the IMAP protocol to send email. Instead, IMAP will be used for receiving messages. SMTP stands for Simple Mail Transfer Protocol and it's the industry standard protocol for email sending. With SMTP you are sending, relaying, or forwarding messages from a mail client (like Microsoft Outlook) to a receiving email server. A sender will use an SMTP server to carry out the process of transmitting an email message. IMAP is for the retrieval of emails and SMTP is for the sending of emails. That means IMAP talks to both the client and server to get emails, and SMTP talks only to servers to send emails.

HARDWAREE REQUIREMENTS

- It requires a computer running windows 10 with PyCharm configured and it will deploy the project through PyCharm to the Heroku server.
- All computer operating system are designed for a particular computer architecture.
- The power of the central processing unit (CPU) is a fundamental system requirement for any software.
- Memory
- Secondary storage.
- Display adapter.

FRONT END PROCESSOR HTML

The Hypertexts Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript. Web



browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document. HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes, and other items. HTML elements are delineated by tags, written using angle brackets. Tags such as `` and `<input />` directly introduce content into the page. Other tags such as `<p>` surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags but use them to interpret the content of the page.

CSS

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language such as HTML or XML (including dialects such as SVG, MathML or XHTML). CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript. CSS is designed to enable the separation of content and presentation, including layout, colors, and fonts.

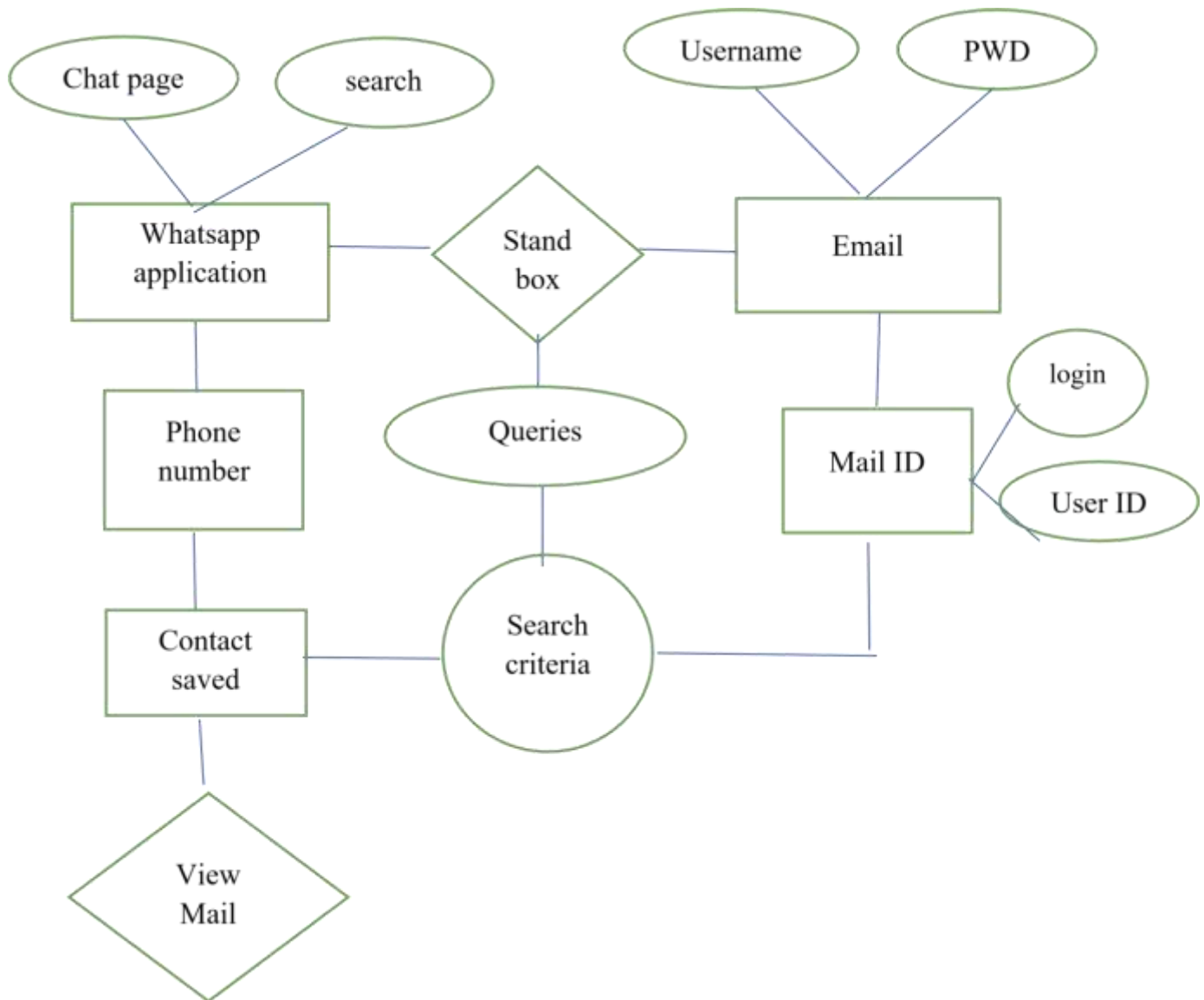
BACKEND PROCESSOR JAVASCRIPT

JavaScript is a high-level, often just-in-time compiled language that conforms to the ECMAScript standard. It has dynamic typing, prototype-based object orientation, and first-class functions. It is multi-paradigm, supporting event driven, functional, and imperative programming styles. It has application programming interfaces (APIs) for working with text, dates, regular expressions, standard data structures, and the Document Object Model (DOM).

JavaScript engines were originally used only in web browsers, but are now core components of some servers and a variety of applications. The most popular runtime system for this usage is Node.js. Although Java and JavaScript are similar in name, syntax, and respective standard libraries, the two languages are distinct and differ greatly in design.



ENTITY RELATIONSHIP DIAGRAM





DATAFLOW DIAGRAM



PROJECT PROCESS

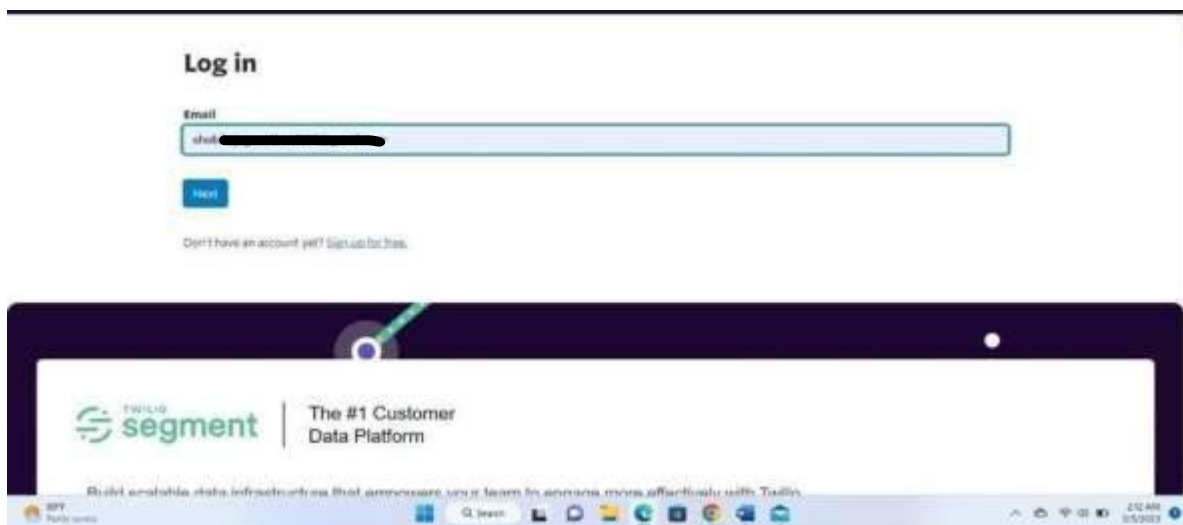


Fig no.01



LOGIN PAGE



Fig no.02

PROCESS OF MESSAGE

201 - CREATED - The request was successful. We created a new resource and the response body contains the representation.

```
{
  "body": "test message by shobi",
  "num_segments": "0",
  "direction": "outbound-api",
  "from": null,
  "date_updated": "Sun, 05 Mar 2023 07:57:12 +0000",
  "price": null,
  "error_message": null,
  "uri": "/2010-04-01/Accounts/ACcb482d0374a4a7b0b0caee54ed25d2de/Messages/SMefdf0207b8da4a0aa28eb9701a963319.json",
  "date_sent": null,
  "messaging_service_sid": "MG832911ee8951f486df55f5306edf634c",
  "error_code": null,
  "price_unit": null,
  "api_version": "2010-04-01",
  "subresource_uris": {
    "media": "/2010-04-01/Accounts/ACcb482d0374a4a7b0b0caee54ed25d2de/Messages/SMefdf0207b8da4a0aa28eb9701a963319/Media.json"
  }
}
```



WHATSAPP CONNECTION PAGE



Fig no. 03

ERROR PAGE



Fig no.04



UNREAD MAIL PAGE

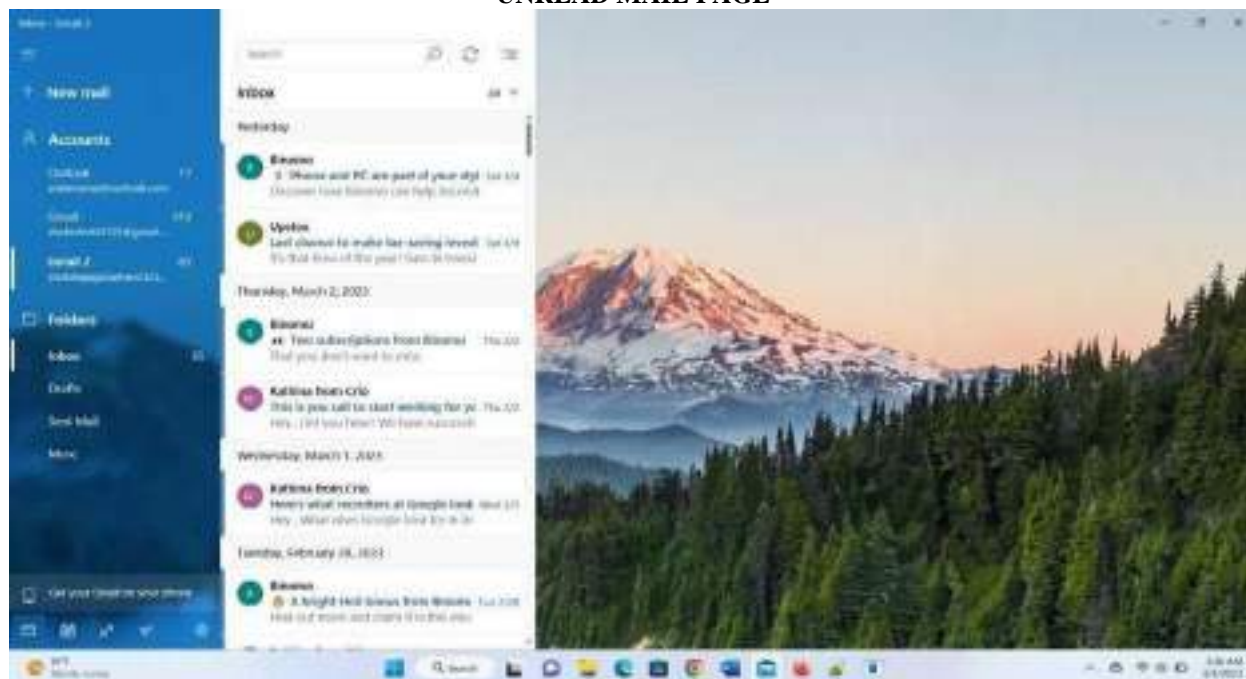


Fig no.05

MAIL RECEIVED PAGE



Fig no .06



Fig no. 07

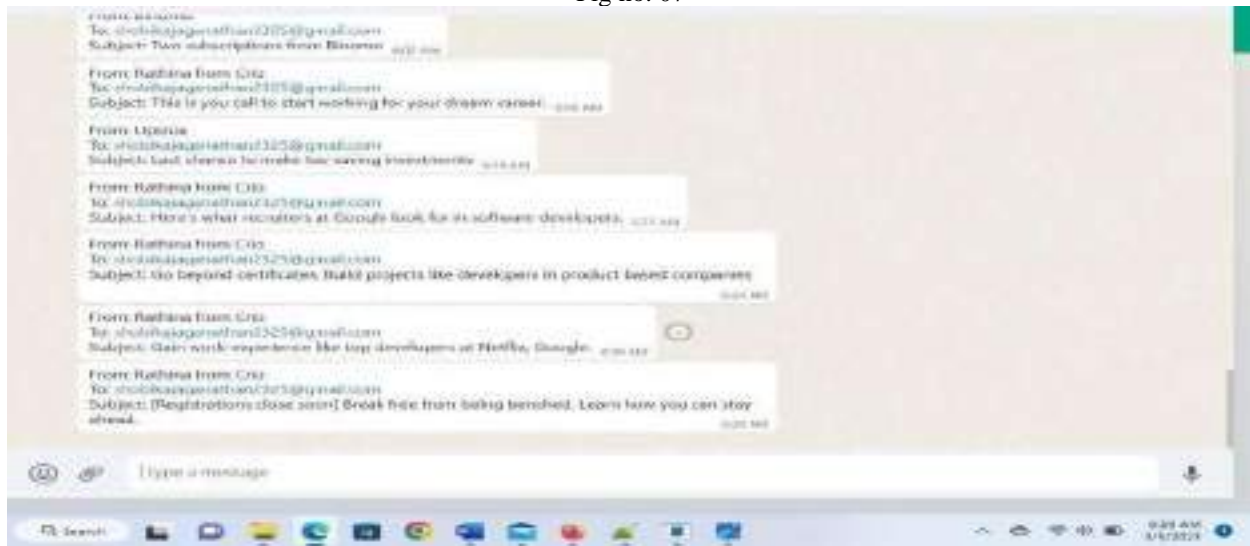


Fig no .08

CONCLUSION

The sandbox for WhatsApp is pre-configured environment available through the Sandbox console in which it can prototype sending outbound message and configuring thinks like message delivery call backs. With the help of this platform its easily able to see the mails from WhatsApp. The important mail which is received is not missed out. It is a programmable communication tools for making and receiving phone calls, sending and receiving text messages, and performing other communication function using its web service APIs.

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ANDROID APP FOR BLOOD DONATION

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ABSTRACT

A blood donation app is a mobile application that aims to connect potential blood donors with patients in need of blood. The app has several objectives, including increasing blood donations, saving lives, educating the public, addressing blood shortages, reaching a wider audience, increasing efficiency and fostering community engagement. By taking the advantage of the power of technology, a blood donation app can simplify the process of blood donation and help ensure that patients receive the blood products they need in a due course. The app can also be a valuable educational tool, providing information about blood donation. The app also helps its users to track the last time they donated blood and when they can donate again. Overall, a blood donation app has the potential to increase blood donations and save lives, while also promoting safety, and community engagement.

I. INTRODUCTION

Blood donation is a critical aspect of modern healthcare, providing life-saving blood products for patients in need of transfusions. Although avid importance has been provided on the need of blood donation, there are often shortages of blood products in many parts of the world, highlighting the need for innovative solutions to increase blood donations. One such solution is the development of a blood donation app, a mobile application designed to connect potential blood donors with patients in need of blood transfusions. A blood donation app can be a powerful tool for increasing blood donations and saving lives. By making the process of donating blood more accessible and convenient, the app can encourage more people to donate blood and help address the ongoing shortage of blood products in many parts around the country.

II. SYSTEM REQUIREMENTS

Software Requirements

JAVA

Java is a widely used programming language known for its portability, security, and object-oriented design. Introduced by Sun Microsystems in 1995, it is popular for developing desktop software, web applications, and mobile apps. Java's scalability makes it ideal for large-scale projects and it is used by many large corporations, including Amazon, Google, and IBM. With an estimated 9 million Java developers worldwide, the language is known for its ease of use, extensive libraries, and ability to run on multiple platforms without recompilation.

Google Firebase

Google Firebase is a mobile web application development platform that offers various features such as real-time database, user authentication, cloud storage, hosting, and analytics. Introduced in 2011, acquired by Google in 2014, its ease of use, its scalability has made it a popular choice for developers. The Firebase real-time database allows real-time transactions of data across multiple clients, making it ideal for building real-time apps such as chat apps and games, while its user authentication feature provides the user secure use. Firebase continues to evolve, constantly to suit the changing needs of developer's new features have been added.

Android Studio

Android Studio is an Integrated Development Environment (IDE) for growing Android packages. It is a free and open-source platform evolved by Google, and it offers a complete set of gear for building Android apps with current UI and robust capability.



Android Studio supports Java, Kotlin, and C++ programming languages and comes with a human-friendly interface builder, a powerful emulator for trying out apps, and integration with Firebase for mobile and internet app improvement.

In addition to its capabilities, Android Studio gives a range of plugins that make bigger its talents and permit builders to customize their workflow. It includes features for optimizing app performance, such as reminiscence profiling and code inspection, which help builders identify and clear up overall performance issues. Android Studio also consists of a visual format editor, which permits builders to create complicated consumer interfaces by dragging and dropping UI factors onto a canvas.

Hardware Requirements

The laptop used in this project has a 64-bit version of the Windows 11 operating system, which further increases the computing capacity of the system and provides a more efficient and user-friendly interface. This laptop is also powered by an AMD Ryzen 5 4600H processor with Radeon Graphics. The system is equipped with 16 GB of RAM, enabling efficient multitasking and handling complex applications. Additionally, the laptop features a 512 GB SSD and a 1 TB HDD, providing plenty of storage for various applications and data.

III. SYSTEM STUDY

Existing System

The existing system has proven to be less user-friendly and less effective in promoting blood donation. For example, users would have to manually search for blood camps or blood centres in their area without the aid of a GPS-enabled location feature. Similarly, users would have to manually track when they last donated blood without the assistance of an automated tracking system.

Disadvantages of Existing System

- The existing system does not have the features to help users locate blood camps or blood centres in their area, making it difficult for individuals to find convenient locations to donate blood.
- The existing system does not have the features to connect blood donors to potential blood seekers.
- The existing system does not have the features which allows the user to track the previous time they donated blood.

Proposed System

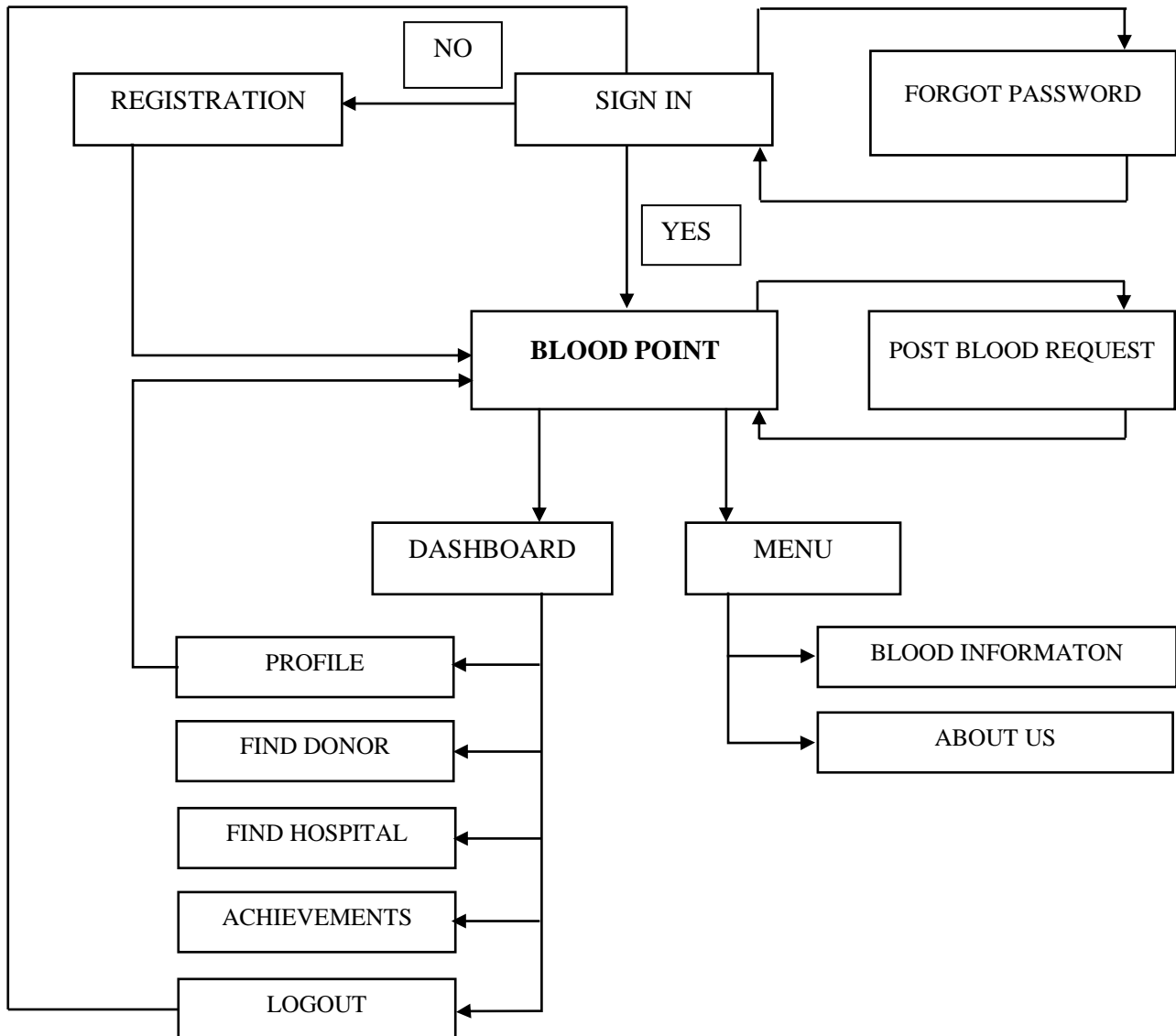
The proposed blood donation app offers a user-friendly interface, personalized experience, enhanced donor recruitment and improved accessibility. Users can easily create and update their profiles, track their last blood donation. The app promotes inclusivity, encourages regular donations from existing donors, and provides a sense of purpose and fulfilment by connecting users with potential recipients.

Advantages of Proposed System

- Users can easily create and update their profiles, track their last blood donation, and locate nearby blood camps or centres using Google Maps API.
- The app offers personalized updates about blood donation opportunities and needs in the user's area, making the donation process more meaningful and fulfilling.
- Tracking of the last blood donation makes it easier to recruit new donors and encourage regular donations from existing donors.



IV. SYSTEM DESIGN





V. SAMPLE PROJECT PROCESS

The Registration screen features a red header with a back arrow and the title 'Registration'. Below the header is a large red button with a white blood drop icon and a white cross. The form contains the following fields: Name (Full Name), Sex (Male), Blood Group (A+), Contact No. (Mobile No.), Address, Division (Achilabad), Email, Password, and Confirm password. There is a checkbox for 'Mark this to be a donor' and a 'Register' button at the bottom.

The Profile screen has a red header with a back arrow and the title 'Profile'. It displays the user's information: Name (Abhijith), Sex (Male), Blood Group (O+), Contact No. (+912828373737), Address (Bhannargetta), and Division (Bangalore Urban). There is a checkbox for 'Unmark this to leave from donors' and an 'Update Profile' button at the bottom.

The Blood Point screen has a red header with a menu icon and the title 'Blood Point'. It displays a list of blood donation requests. Each request includes a blood drop icon, the text 'Needs B+ Blood Donor', the contact number, the poster's name, the time and date posted, and the location. The requests are: 1. Needs B+ Blood Donor, Contact: 7019125330, Posted by: Shewone, Posted on 05:00 PM, 13/7/2022, From: thirumangalakudi, Bangalore, Dhaka. 2. Needs A+ Blood Donor, Contact: +919629784338, Posted by: Gopalakrishnan, Posted on 10:06 AM, 3/11/2022, From: andod, Andod. 3. Needs A+ Blood Donor, Contact: +922144067382, Posted by: Asad Ullah, Posted on 01:30 AM, 22/6/2022, From: Lahore, Dhaka. 4. Needs A+ Blood Donor, Contact: 6361023633, Posted by: vjith, Posted on 02:07 PM, 19/7/2022, From: BANGALORE, Bangalore. 5. Needs A+ Blood Donor, Contact: 8897688798, Posted by: venkatesh, Posted on 10:29 PM, 26/12/2022, From: tenali, Guntur. 6. Needs A+ Blood Donor, Contact: 8897688798, Posted by: venkatesh, Posted on 11:08 AM, 8/7/2022, From: begal, Begal. There is a 'Your account has been updated!' message and a red '+' button at the bottom right.

The Achievements screen has a red header with a menu icon and the title 'Achievements'. It displays a 'Have you donated today?' question with 'YES' and 'NO' buttons. Below this are two circular progress indicators: 'Total Donated' (0 times) and 'Last donated' (Do not Donate yet). There is a red '+' button at the bottom right.



VI. CONCLUSION

The blood donation app is a revolutionary platform designed to simplify the blood donation process and make it easier for donors to connect with recipients in need. By offering a range of features and integrating with Google Maps, the app has the potential to significantly increase the number of successful blood donations and save countless lives in the process. With its user-friendly interface and powerful tools, the blood donation app represents a major step forward in the fight against blood shortages and the promotion of public health.

- The integration of the Google Maps API allows users to easily locate nearby donation centres and blood drives, providing an added layer of convenience and accessibility.
- By increasing the number of successful blood donations, the app has the potential to save countless lives and make a significant impact on the healthcare industry as a whole.

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TECHNOLOGY AS A TOOL FOR DEVELOPMENT OF RURAL EDUCATION

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ABSTRACT

According to Article 45 of the Indian Constitution, every citizen of India has the right to receive basic elementary education, regardless of their location. However, even after 64 years of independence, many states in India are still struggling to achieve universal enrollment, retention, and quality education. This is particularly true in rural areas, where there are over one million schools in 638,000 villages across the country. These rural schools are essential to increasing the literacy rate in India, where over 40% of the population is illiterate. The primary goal of these rural schools is to provide access to education and raise the level of literacy in rural India. However, many schools in rural areas are inadequate and often equivalent to being non-existent. As a result, the Indian government has initiated programs to establish and improve schools in these areas. Despite the challenges, the conditions of rural education in India are improving steadily, and the government is providing full support and numerous initiatives to make education accessible to all. One significant aspect of these rural schools is their low fee structure, which ensures that every child can afford to study. The government understands the importance of education in uplifting the socioeconomic status of rural India and is committed to ensuring that every child has access to education. By providing access to quality education, the government is not only fulfilling its constitutional obligation but also empowering rural communities to improve their lives. In conclusion, education is a fundamental right that every Indian citizen deserves, regardless of their location. The establishment and improvement of rural schools is crucial in increasing the literacy rate in rural areas and uplifting the socioeconomic status of rural communities. The Indian government's initiatives and support for rural education are commendable, and it is essential to continue to focus on improving access to education for all.

KEYWORDS: *Rural education, Technology, ICT, Problems, Enhancement.*

As per the 2011 census, approximately 72.2% of the Indian population lives in rural areas, which amounts to about 638,000 villages. The remaining 27.8% lives in more than 5,100 towns and over 380 urban agglomerations (Census of India, 2011). However, the adequacy of educational techniques in rural India needs to change according to the demands of the 21st century. The main objective of this study is to elevate the scope, purpose, and methodology adopted for computer education in rural India.

Information and Communication Technology (ICT) is a rapidly developing technological field in global society (Castells, 2000). Among developing countries, India has achieved a significant position in the development of ICTs. In particular, the field of education has undergone tremendous transformation due to ICT development. There is no doubt that the future development of education will be based on ICTs. However, the benefits of ICTs have not reached the expected level in rural areas, and the rural population still has minimal access to ICT facilities, especially the poorest of the poor (Gupta & Bhatia, 2016). Both the central and state governments and non-governmental organizations (NGOs) are allocating huge amounts for the development of ICTs and rural education. Despite this, the level of improvement in the accessibility of ICTs in rural schools has not reached the expected level. This paper aims to provide ideas for improving rural education through ICTs, especially computer-related technologies, and suggests effective implementation of the national policy for ICT in education in rural areas.

One of the key ways to improve computer education in rural India is to integrate various government self-employment training institutes to work for ICT education programs. Additionally, disseminating worldwide current science and technological-related information to rural students can increase their knowledge and skillsets. This will help to create awareness for the effective utilization of local resources



for the development of the economic conditions of rural areas. Moreover, developing a rural knowledge network can enhance the e-learning capabilities of rural people, providing them with a forum for the exchange of knowledge and national experiences in promoting ICT for development in rural areas through a training center.

Another way to improve rural education is to provide employment-related education through computer technologies for school students at the standard of 8th to 12th. This will help to prepare them for the job market and enable them to become self-sufficient. The use of rural kiosk machines can also be an effective way to provide access to updated and latest information, particularly for students and educators. In conclusion, while the development of ICTs in India has progressed significantly, the benefits of these technologies are yet to reach rural areas. However, by implementing the ideas proposed in this paper and effective utilization of available resources, it is possible to bridge the digital divide in rural India and provide quality education to all, regardless of their location or socioeconomic status.

PREVALENT CONDITION

Despite efforts by the government, the present scenario of rural education in India remains poor. In many villages, there are limited government schools and children often have to travel long distances to attend them. Furthermore, most schools in these locations lack computer education facilities. During a visit to Bahin Gram Panchayet (8no. Maraikura), a village in Raiganj Block of Uttar Dinajpur district, West Bengal, India, it was observed that despite the presence of several primary and upper primary level government schools, there were only two or three high schools, all of which were established a long way back. As a result, students often migrate to cities like Raiganj or Siliguri and some Kolkata for higher education. Bahin High School, one of the oldest and popular schools in the area, had inadequate building infrastructure, electricity, telephone facilities, and experienced teachers. It was established in 1956 and it is managed by the Department of Education. The school consists of Grades from 5 to 12. The school is Co-educational and it does not have an attached pre-primary section. Bengali is the medium of instructions in this school. The school has pucca but broken boundary wall. The school has electric connection. The source of drinking water in the school is hand pumps and it is functional. The school has 1 boy's toilet and it is functional and 1 girl's toilet and it is functional. The school has no playground. The school has a library and has 2122 books in its library. The school does not have ramp for disabled children to access classrooms. The school has not sufficient number of computers for teaching and learning purposes. The name-for-only computer room was in a state of disarray, with computers not installed in a systematic order and basic software not installed. The headmaster of the school informed that although the school has few computers, these are not updated and no computer teacher or technical person is appointed by the government. Computer classes are provided by local people, paid for by the school. The quality of ICT-based education is very poor due to inadequate infrastructure and poorly trained teachers. These hired teachers receive very low salaries, leading to frequent absences and inadequate teaching. The same condition is of Samuktala Jr. Girls High School established in 2008 and is located at Samuktala village in Alipurduar-ii block of Alipurduar district of West Bengal. It is managed by the Department of Education of West Bengal. The school has a library and has 16 books in its library. The school has no computers for teaching and learning purposes. The school is not having a computer aided learning lab or any teacher for teaching computer. Although the government has implemented various initiatives, they have not been effectively implemented in schools, resulting in the current scenario.



Interaction at Bahin High School



CHALLENGES HINDERING RURAL EDUCATION IN INDIA

India has made significant progress in education, yet there are still challenges that hinder its rural education system. The challenges faced by rural education are many, and some of them are as follows:

1. **Low-Income of Teachers:** Teachers play a crucial role in shaping the minds of young children, but the low-income of teachers in rural areas is a significant concern. Due to the meager income, many teachers do not give the necessary attention to children, which hampers the overall learning process.
2. **Poor Infrastructure:** Most rural schools lack proper infrastructure, including basic facilities such as electricity, clean water, and sanitation. As a result, children are deprived of the opportunity to receive quality education, including computer education, sports education, and extracurricular activities.
3. **Limited Transportation:** Many children in rural areas have to travel miles to reach school, and the lack of proper transport facilities makes it difficult for them to attend school regularly. This leads to a high dropout rate and a low rate of enrollment.
4. **Inadequate Access to Supplemental Education:** Children in rural areas have limited access to supplemental education, such as after-school programs or private tutoring. This puts them at a disadvantage compared to their urban counterparts, who have more access to educational resources.

To overcome these challenges, the government of India has launched several initiatives to promote rural education. These initiatives include building schools in remote areas, providing mid-day meals to children, and improving the quality of education. NGOs and private organizations are also working towards improving the situation by providing scholarships, building schools, and conducting teacher training programs.

Despite these efforts, much more needs to be done to ensure that every child in rural India has access to quality education. The government, NGOs, and other stakeholders need to work together to create a sustainable and effective education system that can provide children with the knowledge and skills needed to succeed in life.

ENHANCING ICT EDUCATION IN RURAL INDIA

Despite efforts made by the government to improve the infrastructure of rural schools, the development is not uniform across all rural areas. Many areas still lack even basic infrastructure facilities, including access to proper ICT education. While the government has provided ICT facilities to rural schools, many of them are not functioning effectively. The reasons behind this include limited accessibility of the facilities by beneficiaries, inadequate knowledge of users, and programmes not meeting the needs of rural students. In order to enhance ICT education in rural India, it is important to assess the local conditions and priorities of rural students before implementing any programme. This assessment should be conducted through dialogue, surveys, and discussions with beneficiaries in rural areas. It is essential to help rural students understand the real benefits of ICT education, so that the programme can sustain in the long-term and perform effectively in rural areas. Moreover, there is a need to provide proper training to teachers to enable them to use ICT facilities effectively in their teaching practices. This will not only enhance their own knowledge but also increase their interest in teaching. Special emphasis should be given to teachers who lack technical expertise, so that they can improve their ICT skills and effectively integrate them into their teaching practices. In addition, the government and other stakeholders should work together to ensure that rural schools have access to proper infrastructure facilities. This includes providing reliable power supply, internet connectivity, and necessary equipment such as computers and projectors. Special attention should be given to remote areas where access to basic infrastructure is limited. Overall, enhancing ICT education in rural India requires a multi-pronged approach, including proper assessment of local needs, effective training for teachers, and providing necessary infrastructure facilities. By addressing these issues, we can ensure that rural students have access to quality ICT education and can fully participate in the digital economy.

CREATING AWARENESS ON ICT EDUCATION IN RURAL AREAS

To successfully implement computer education in rural schools, it is important to first create awareness among students and teachers about ICT education and its usage. Many rural students lack exposure to ICTs and may not initially show interest in computer-based education. Furthermore, previous failures of ICT-related programs in rural areas have led to a lack of trust and motivation among students and teachers. Therefore, creating awareness and motivation is essential not only for students but also for the instructors of the ICT program in rural schools. Awareness and motivation play a crucial role in the success of ICT-based education in rural areas. The authors suggest that the lack of awareness and motivation can be addressed through various methods such as training programs, workshops, and demonstrations. In addition, the government and NGOs can play an important role in creating awareness by providing resources and funding for awareness campaigns.



Incorporating ICT education into the curriculum can also help create awareness among students. For instance, in Rajasthan, India, the government has introduced computer science as a compulsory subject in government schools, including those in rural areas (Singh et al., 2020). This move has not only increased awareness and interest in computer education among students but has also led to the development of necessary infrastructure in rural schools. Moreover, teachers must also be trained to effectively teach computer education. In the above mentioned study conducted, it was found that teachers in rural schools lack the necessary training to teach computer education. Therefore, training programs for teachers must be implemented to ensure that they are equipped with the necessary skills to teach computer education effectively. Creating awareness and motivation among students and teachers is crucial for the success of computer education in rural schools. Various methods such as training programs, workshops, and incorporating ICT education into the curriculum can be used to achieve this goal. The government and NGOs also have an important role to play in providing resources and funding for these initiatives.

IMPROVING INFRASTRUCTURE FACILITIES

Infrastructure facilities play a crucial role in the successful implementation of ICT programs in rural areas. Although there have been some improvements in the infrastructure facilities of rural schools, many areas still lack even the basic infrastructure required for ICT education. Therefore, before starting an ICT education program, it is essential to ensure that there are adequate infrastructure facilities such as power, connectivity, computer-related materials, and human support. Without these facilities, the program will not succeed. In addition to basic infrastructure, it is important to assess the specific needs and priorities of rural students when implementing ICT programs. This can be achieved through dialogues, surveys, and discussions with beneficiaries in rural areas. By understanding the real benefits of the program, it can be sustained in the long term and effectively implemented in rural areas.

Overall, the improvement of rural education in India requires a concerted effort from the government, educators, and the wider community. By addressing the challenges faced by rural schools and ensuring adequate infrastructure and awareness of ICT education, we can create a brighter future for rural students and help bridge the gap between urban and rural education in India.

ENHANCING COMMUNITY PARTICIPATION IN ICT EDUCATION

One of the crucial aspects of an ICT education program in rural areas is the involvement and interest of rural students. Rural students have different attitudes and behaviors towards technology, and their access to ICTs may be limited compared to urban students. It is important to educate and motivate rural students about the benefits of ICTs for their educational development. This requires a clear understanding of the rural students' needs and perspectives, which can be facilitated through community participation. The role of teachers is vital in creating awareness and promoting community participation in ICT education programs. Teachers should be provided with adequate knowledge and training on the usage and benefits of ICTs. They can act as mentors and facilitators in guiding rural students towards effective utilization of ICT resources.

Rural students often have misconceptions about computer-based education. Some may perceive it as only computer training in basic applications or gaming. Some may think it requires advanced English language skills or is difficult to access and obtain information. Such misconceptions can hinder their participation in the program. It is important to break down these barriers by providing accurate information and addressing their concerns. This can be achieved by working with computer graduates who live in rural areas and have an understanding of the rural students' educational and life conditions.

Effective community participation can enhance the success of an ICT education program in rural areas. The involvement of local leaders, parents, and other stakeholders can ensure the program is tailored to meet the needs of the community. By working together, rural areas can overcome the challenges of limited infrastructure and resources, and achieve sustainable success in ICT education.

INTEGRATING ICT EDUCATION FOR RURAL EMPOWERMENT

To uplift rural communities, ICT education programs must prioritize the needs of rural students. The vision for ICT education in rural areas should be centered on "Integrated Development for Education and Economic Empowerment for Rural Students." In order to achieve this vision, ICT education programs should integrate the rural lifestyle with information about urban educational developments. Providing computer education alone is not enough. Students should also be informed about higher education opportunities and employment prospects in various fields.



In Tamilnadu, for example, moral education includes vocational training classes such as farming, tailoring, and weaving. However, many schools are unable to effectively implement these classes. ICT education programs can effectively deliver this training and awareness through computer-based technologies. Moreover, computer-based education can disseminate information on new technological developments from the local to global level. It will help rural students understand the social and technological progress of the world while relating to their rural lifestyle. Such ICT-related educational programs can provide employment opportunities for computer and other educated youths in rural areas, while also broadening the knowledge of rural school students about the latest technological developments. Community participation is also important in the success of ICT education programs. Teachers must be equipped with the necessary knowledge and skills to educate rural students about the benefits and usages of ICT. Unnecessary taboos about computer-based education must be removed from the minds of rural students with the help of computer graduates living in rural areas who understand the educational and life conditions of rural students.

In conclusion, for ICT education programs to be successful in rural areas, community participation, infrastructure facilities, and the creation of awareness about ICT education are essential. By focusing on rural students' needs and empowering them with information, ICT education programs can have a positive impact on their educational and economic development.

INITIATIVES UNDERTAKEN BY GOVT. OF WEST BENGAL INTRODUCING THE TIE SYSTEM CALLED 'KYAN'- AN EXAMPLE.

The Sarva Shiksha Abhiya (SSA) program has been implemented by the Government of West Bengal since its inception. To enhance its effectiveness, the State Government has integrated Information and Communications Technology (ICT) tools into the program for primary and secondary government schools. This integrated approach, commonly referred to as Technology in Education (TIE), aims to familiarize students with the use and workings of computers while leveraging the power of ICT to teach traditional subjects more effectively. The Technology in Education (TIE) system has certain prerequisites, including the use of technology by students to create learning artifacts, integrating technology with the curriculum, focusing on learning achievement, and teacher-designed instruction. To ensure sustainability, the Department of Education, Govt. of West Bengal introduced the TIE system called 'KYAN' (Vehicle of Knowledge), which was developed in collaboration with the Indian Institute of Technology (IIT), Mumbai, as a Community Computer. KYAN is a device that combines a computer with an inbuilt projector, content, speakers, and wireless keyboard and mouse. It utilizes the computing power of a computer with an appropriate high luminosity, high resolution, and large screen projection system. The project has significantly improved classroom teaching and learning practices, attendance, retention of core academic concepts, better recall, and examination results, thereby boosting the morale of teachers. The integration of ICT in education has become a significant trend in modern education, especially in developing countries such as India, where the government has recognized its potential to improve the quality of education. SSA is a flagship program of the Government of India, and the Government of West Bengal has taken several initiatives to enhance its impact by integrating TIE. The KYAN device, designed to support the SSA program, has been successfully implemented in various districts of West Bengal. The device has significantly enhanced the quality of education in government schools by improving classroom teaching and learning practices, attendance, and examination results. The device's success is attributed to its user-friendly interface, which has made it easier for teachers to integrate ICT into the curriculum.

However, the implementation of KYAN has not been without challenges. Some of the issues faced by the government include inadequate infrastructure, lack of awareness and training among teachers, and limited funding for the program. The paper suggests that to sustain the success of the program, the government needs to address these challenges and provide adequate resources and support to teachers. The integration of ICT in education has significant potential to improve the quality of education in developing countries such as India. The KYAN device, developed to support the SSA program, has successfully enhanced classroom teaching and learning practices, attendance, and examination results in various districts of West Bengal. However, to ensure the program's sustainability, the government needs to address the challenges faced in its implementation and provide adequate resources and support to teachers.

NEED FOR ICT EDUCATION IN RURAL SCHOOLS

The education system in India is one of the largest in the world. However, the planning and management of ICT-based education have primarily been the responsibility of the state governments, while the central government oversees the matter of policy, planning, and monitoring. The size and complexity of the education system in India, spread across different states, make it highly complex to manage. Effective planning and management are crucial to improve the quality of ICT education, and it should be designed to meet the needs of the user operating agencies at different administrative levels. The decision-making process and control mechanism become more complicated due to the wide geographical institutional network representing a variety of school locations and endowments. Moreover,



the complexities increase due to the variation in school structures, endowments, and availability of teaching-learning resources. ICTs have the potential to be a powerful tool for extending educational opportunities, both formal and non-formal, to previously underserved constituencies, such as rural populations, ethnic minorities, girls and women, persons with disabilities, and the elderly, who were traditionally excluded from education due to cultural or social reasons. ICTs' anytime, anywhere feature makes it possible to transcend time and space, allowing for asynchronous learning or learning characterized by a time lag between the delivery of instruction and its reception by learners. Online course materials can be accessed 24/7. ICT-based educational delivery, such as educational programming broadcast over radio or television, eliminates the need for all learners and the instructor to be in one physical location. Teleconferencing technologies also enable instruction to be received simultaneously by multiple, geographically dispersed learners. ICTs also provide access to remote learning resources, eliminating the need for teachers and students to rely solely on printed books and other materials in physical media housed in libraries, which are often available in limited quantities. The internet and the World Wide Web provide a wealth of learning materials in almost every subject and in various media that can be accessed from anywhere, at any time of the day, and by an unlimited number of people. This is particularly significant for many schools in developing countries and even some in developed countries with limited and outdated library resources. ICTs also facilitate access to resource persons such as mentors, experts, researchers, professionals, business leaders, and peers, from all over the world.

ROLE OF NATIONAL INSTITUTE OF RURAL DEVELOPMENT (NIRD)

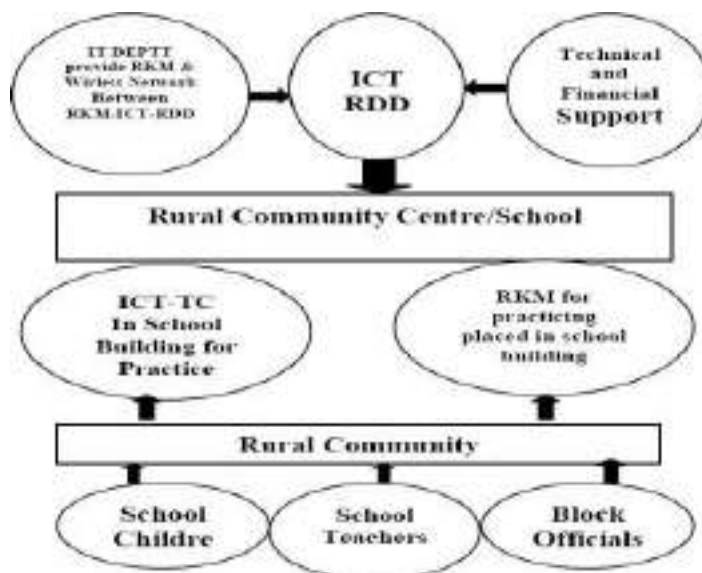
As a renowned research, training, and action research organization for rural development in India, the National Institute of Rural Development (NIRD) operates as an autonomous body under the Ministry of Rural Development. Founded in 1958, NIRD has become a center of excellence for research and training in the field of rural development. Apart from research and training, NIRD also engages in curriculum development, preparing training manuals, and creating training guidelines. To increase the reach of its training programs, NIRD is working on developing a distance learning component that includes print materials, audio-visual content, and two-way video conferencing technologies. Such initiatives leverage ICT tools for the training and development of rural education.

E-LEARNING CENTERS

The Indian Government's IT Department is responsible for establishing ICT-based E-Learning Centers in each block of the country, either by themselves or with the assistance of non-governmental organizations (NGOs). This move is aimed at creating a literacy campaign in rural areas, and it serves as a prime example of the effective use of technology in promoting the development of rural India. E-Learning centers provide education through visual and audio content, enabling people to learn how to read and write. The ICT-based E-Learning system plays a critical role in enhancing online education for social and economic change in rural society. With e-learning, education can be delivered anywhere and anytime, providing flexible models such as just-in-time learning.

PROPOSED MODEL FOR ICT EDUCATION

Our proposed model for ICT education takes into account various aspects of rural development and leverages technology to bridge the gap between the rural community and the Rural Development Department (RDD). To enable technical communication between the RDD and the rural community, we plan to use Rural Kiosk Machines (RKM), which will serve as a physical interface. These RKM's will be connected to different departments, based on area-specific wireless connections tailored to local needs. The model includes Community Training Centres, referred to as ICT-TC, where people will be trained initially by the RDD on how to use the RKM and gather relevant information. The Rural Community Centre is the core component of this model, consisting of RKM and ICT-TC, and will be housed in rural school buildings that operate 24 hours a day. Furthermore, ICT instructors from the RDD will provide guidance to rural residents on how to use the RKM and navigate the available information. The proposed model will enable individuals in rural communities to access vital information and resources, fostering growth and development.



Source: from Niraj Kumar Roy

RURAL COMMUNITY CENTER

The Rural Community Centre is a pivotal element of the proposed model, comprising the Rural Kiosk Machine (RKM) and the ICT-Training Centre (ICT-TC). A rural school building will serve as the Rural Community Centre, housing the RKM, which will be available to people around the clock. In addition, the building will function as the ICT-TC, providing a space for discussion and training in the evenings for the rural community. An ICT teacher or instructor from the ICT-RDD department will be available to assist individuals in learning how to use the RKM and obtain information from it directly. By using this model, the community will have access to information and training resources, allowing them to enhance their skills and knowledge, ultimately leading to the development and empowerment of rural areas.

RURAL KIOSK MACHINE

The Rural Kiosk Machine plays a crucial role in providing access to information in local languages. It is imperative that the kiosk displays information in Hindi and other regional languages to ensure that people in rural areas can understand and benefit from it. To achieve this, the RKM stores information in various formats such as textual, audio, video, livestock data, market prices, weather forecasts, health information, etc. The machine has a user-friendly interface that is easy to navigate and understand. The ICT-RDD department will update all the relevant information on an hourly basis using wireless connections from various departments.

The Ministry of IT will sponsor the installation of RKM machines. These machines will be connected directly to the ICT-RDD through wireless connections, and all the machines will be centrally operated by the department. By having access to up-to-date information in their local language, people in rural areas will be empowered to make informed decisions and improve their lives.

ICT TRAINING CENTERS (ICT-TC)

The responsibility of providing basic education on the use of RKM for every faction of the rural area will fall upon the ICT-RDD department. They will establish an ICT-Training Centre in every school in each village, even the smallest ones. In cases where a school is not available in the village, the RKM will be placed in a well-known and secured central location. These centers will educate the community on how to access information from the RKM on various rural aspects.

RURAL DEVELOPMENT DEPARTMENT FOR ICT (ICT-RDD)

The ICT-RDD department will be responsible for gathering the latest information from IT and other related departments, updating the RKM machines, and providing training to the ICT instructors on the latest updates at the rural community center. The main goal and theme of the ICT-RDD department are to focus solely on the development of the 70% of the population which requires more attention and care, and can contribute more to the country's development. This is a cyclical process and it is hoped that it will accelerate rapidly



with the passage of time. The department will work tirelessly to bridge the gap between rural and urban areas in terms of access to information and knowledge.

OBSTACLES OF THE ICT FOR EDUCATION

The implementation of ICT for education in rural areas presents numerous challenges that must be addressed to ensure its success. One major challenge is the lack of infrastructure facilities, particularly in internet connectivity, which is crucial for the effective use of ICT. This challenge can be overcome by providing training and information through computers, even without internet connectivity. Additionally, the use of CDs is an inexpensive and technically feasible option for providing developmental programs in rural schools. Another challenge is the knowledge and computer skills of the instructors working in these schools. It is crucial to select instructors who have basic knowledge of various technologies related to development aspects. To support this, government training institutions for ICT programs should make use of CDs to collect and display practical and theoretical works of experts from different fields. However, it is important to compile this knowledge in a way that is simple and understandable to all students.

Moreover, the knowledge of local resources and its utilization is another significant challenge. This information can be acquired from elders in rural areas, related research institutions, historical events, and books. However, it should be compiled like a syllabus and provided to students in a manner that is easy to comprehend.

Furthermore, the involvement and interest of teachers, education departments, and the end-user community (i.e., students) is critical for the success of ICT for education in rural areas. It can be achieved through continuous motivation and providing better awareness of the importance of ICT programs. Monitoring and evaluating the overall program is also a significant challenge that needs to be addressed. Concerned school education departments can appoint suitable persons to monitor the ICT program in schools. These persons should have better knowledge of computer skills, technical knowledge on various fields, and knowledge of local resources and their management.

It is also important to establish institutional networks at the Panchayat level to facilitate in-service training of teachers and Panchayat officials such as Block Education Officers. State institutes of education and training could provide leadership at the state level and network with districts, while district-level lead institutes can develop a network with Panchayat levels. These institutions, if provided with adequate funding and professionally trained staff, can effectively take responsibility for capacity building at different levels to ensure absorption of ICT inputs. The national policy of ICT for education should pay more attention to rural areas and the education standard of rural students. This represents a great opportunity for rural students to improve their education, employment prospects, and knowledge of global technological developments. By addressing the challenges presented by ICT for education in rural areas, we can ensure that this opportunity is not wasted, and that the benefits of ICT are enjoyed by all.

OBJECTIVES

This paper aims to address the challenges faced by rural education and to improve the accessibility of basic information in rural schools through the use of ICT. The main goal is to promote the development of education in rural communities. To achieve this, several objectives have been identified. Firstly, the objective is to provide employment-related education through computer technologies to students in grades 8 to 12. This will help them acquire skills that are relevant in today's job market, and enable them to secure better employment opportunities. Secondly, the government's self-employment training institutes will be integrated into the ICT education programmes, in order to enhance the effectiveness of the training. Thirdly, the dissemination of current scientific and technological information to rural students is crucial. This will keep them up to date with the latest advancements in technology and science, and prepare them for future opportunities. Another objective is to create awareness among rural communities on the effective utilization of local resources for economic development. This will help them to identify opportunities for economic growth and develop their communities sustainably. To enhance E-learning capabilities among rural people, the Rural Knowledge Network will be developed. This will provide a platform for accessing and sharing knowledge and experiences related to ICT for development. Moreover, the Training Centre will be established to provide a forum for the exchange of knowledge and national experiences in the promotion of ICT for development in rural areas. A tested set of resources and training materials on concepts, issues, and approaches to promote and realize the access of ICTs for all will be produced through the Rural Kiosk Machine. This will help in disseminating knowledge to rural students in an effective manner. Lastly, fast and easy access to updated and latest information is essential. This objective will be achieved by ensuring that the ICT infrastructure in rural schools is equipped with the latest technology and reliable internet connectivity. In conclusion, these objectives will pave the way for improved access to education and development opportunities in rural areas.



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EDUCATIONAL THOUGHTS OF WESTERN THINKERS FROM PHILOSOPHICAL VIEWPOINT

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ABSTRACT

In order to create the ultimate culture of education for humanity, the idea and notion of education philosophy were developed from both ancient and modern sources, merged, and worked on simultaneously. When comparing these aspects within the understanding of education itself, through the countries apart from this global nation, there are many aspects of this discipline that are not parallel with one another. The present study focuses mainly on Western thoughts on education. Different Western educationists and their works have been considered as the area of study.

KEYWORDS: *Western education, Maria Montessori, Mary Wollstonecraft, Nel Noddings, Matthew Arnold, Herbert Spencer, John Milton, Oliver Goldsmith.*

INTRODUCTION

In order to equip students to live fulfilled lives in accordance with the society's standards and treasured values, education must include a process of imparting moral precepts (Gayen, 2023). While the education system is a framework that has been standardised and used as a reference by teachers to teach their students in a communicative, informative, and insightful way, education is the living knowledge, information, and skills throughout life. According to Tagore, the emphasis of the educational process should be on the holistic development of the student, as knowledge acquisition and application to the welfare of humanity are the main goals of education (Mondal & Gayen, 2021). In fact, the educational system serves as an indicator, keeping track of how well instruction is being carried out within a framework that works to achieve a particular objective enabling pupils to perform at the required level within a given time frame (Hassan et al., 2010). Due to their distinct cultures, the East and West's educational systems are diverse, which indirectly reveals both cultures' strengths and flaws (Kim, 2005). First, Western educational theory places a strong emphasis on active learning, which entails students actively participating in class and in group discussions. Such instruction increases pupils' speaking confidence in front of the class, producing outspoken, self-assured people who are not afraid to express their opinions. Additionally, it teaches students to respect and accept the opinions of others while also fostering interpersonal relationships as they converse and share ideas (Hassan et al., 2010). The present study deals with the different western educationists and their contribution to the field of education.

MARIA MONTESSORI

Since her first appearance in front of the public, at the International Women's Conference in Berlin in 1896, feminist educator Maria Montessori has been successful in capturing the attention of the media. Her paper on female emancipation, which she wrote, gave her more notoriety in addition to the fact that she had a captivating personality. She had a flair for public speaking, which helped her transition into society easily (Adhikari & Saha, 2021b). According to her theory, children go through various stages of development, which are reflected in how the Montessori programme is set up for kids (Adhikari & Saha, 2021c). The Montessori educational philosophy was developed in a way that supports and encourages a child's natural desire to be independent. In this environment, kids are allowed to explore independently and have access to a range of opportunities for 'real work'. Due to these challenges, the pupils are able to execute their daily activities with assurance and self-esteem (Adhikari & Saha, 2023). Maria Montessori played a key role as a female educator and very similar to the role played by Durgabai Deshmukh, Tarabai Modak, Pandita Ramabai etc. in the Indian context (Adhikari & Saha, 2021e).



MARY WOLLSTONECRAFT

Mary Wollstonecraft, a British author, philosopher, and ardent supporter of women's rights, lived during the French Revolution and died in 1797. Wollstonecraft's writing is permeated with a profound and urgent concern for education, particularly the raising of girls, and this concern persists even after her career ends abruptly (Adhikari & Saha, 2023). Mary Wollstonecraft's posthumous work is fortified with such dominant political statements (Adhikari et al., 2023). Up until the abrupt end of her career, Mary Wollstonecraft's writing was infused with a deep and urgent concern for education, especially the upbringing of girls and women. Her most major work, *A Vindication of the Rights of Woman*, starts as an appeal for the equitable education of women and includes an ambitious and long-range proposal for a national school system. *Thoughts on the Education of Daughters*, the title of her first book, speaks for itself (Adhikari & Saha, 2022a). In view of republican polemics against reliance, it is enlightening to take into account what Wollstonecraft has to say regarding female dependence (Adhikari & Saha, 2022b). Apart from all these, her writing bears the touch of sexuality and it has also been asserted by Godwin (Adhikari & Saha, 2022c). She also bears the tag of being a feminist and her writing *An Historical and Moral View of the French Revolution* (1794) clearly demonstrates that tag (Adhikari & Saha, 2022d). It is generally accepted that *A Vindication of the Rights of Woman* by Mary Wollstonecraft, which was published at the beginning of 1792, was met with shock, horror, and mockery. To counter this ambitious endeavour to promote women's equality, the forces of opposition purportedly gathered and spattered the Amazon with their pens (Adhikari & Saha, 2022e).

NEL NODDINGS

For her contributions to educational theory, philosophy of education, and care ethics, Nel Noddings, an American educator, philosopher, and feminist, has won praise from all around the world (Adhikari & Saha, 2021a). According to Noddings, the primary goal of education should be to create competent, compassionate, loving, and likeable individuals. Her approach to caring may appear implicitly religious, yet her view of education is wholly pragmatic. According to Noddings, pupils should acquire the knowledge and abilities needed to assist them navigate the world while also showing compassion for younger people, the elderly, animals, and the environment (Coleman, Depp, & O'Rourke, 2017). Like Socrates, Nel Noddings views knowledge as "justified true belief." According to Nel Noddings, pupils in schools assert their knowledge based on what they have learnt from reputable sources. They are frequently questioned "how they did it" rather than "why their answers are true," so if they can provide an account based on legal means, we give them credit for knowing.

MATTHEW ARNOLD

English poet and critic Matthew Arnold lived during the Victorian era. In the wake of Alfred Lord Tennyson and Robert Browning, he is frequently regarded as the third-greatest poet of his generation (New World Encyclopedia, n.d.). Every moniker, whether disparaging or complimentary, that promotes standards, unity, order, and impersonality in criticism has been used to describe Matthew Arnold, including "classicist," "unnerved conservative," and "persistent critic". As a result, it is unquestionably possible to say with some certainty that Arnold emphasised impersonality, praised unity, emphasised order, and emphasised standards (Adhikari & Saha, 2021d). In a famous paragraph from *Culture and Anarchy*, where he exhorts us to seek knowledge of "the best that has been thought and said," he captures his influence on educators. This has been often regarded as an early support for the western canon. Arnold has been called a cultural elitist as a result of the quote, which has been used as a criterion for curriculum selection. In reality, when taken out of context like this, Arnold's catchphrase is too nebulous to be helpful. It also runs the risk of portraying him incorrectly as someone who is primarily concerned with maintaining tradition through education. He has a complex perspective on the goal of education, as we shall discover (Parents and Teachers for Excellence, 2020).

HERBERT SPENCER

British positivist philosopher, sociologist, and advocate for improved education Herbert Spencer. He was a pioneer of "Social Darwinism" and put out the idea of using evolutionary theory in sociology, particularly in the context of education and class conflict. Spencer, according to Harvard University's president, was a great educational pioneer (Rhys, 1911). Herbert Spencer has a strong background in experimentation. His approach to education is utterly unconventional. A good education must put the student in a position to learn on their own through observation and objective attachment. The learner should be situated somewhat in the middle of objective reality (Maji & Saha, 2013). The objective of education, according to Herbert Spencer, is to teach everyone how to live fully. Spencer promoted automatic learning based on the needs of the pupils and emphasised the importance of interest in the educational process (Liu, Li & McLean, 2017). Spencer proposed that the most crucial moral principle in moral education is individual self-preservation and created the formula for moral evolution. He supported the idea of natural consequence in terms of discipline and opposed punishment (Richards, 2010).

JOHN MILTON

John Milton (1608-1674) was born in Cheapside, London's Bread Street, and had a wild childhood. He had never experienced traditional education. Although he began his elementary education at Cambridge and St Paul's School in London, he never finished



it. He temporarily moved into Horton and thought about imaginative music and art (Maji & Saha, 2012b). Nothing can be a better teacher than suffering. Milton learned a valuable lesson from his blindness and was guided by disasters throughout this tale. Milton had developed the optimum educational structure during this period. 'Repair' is the main goal of education. It is repair in the sense that it fills in his deficiencies and eliminates his excesses.

OLIVER GOLDSMITH

When one is impoverished, poverty serves as the finest possible teacher. The pitiful representation of Oliver Goldsmith and his life was tested by such a tragic fate. Many great educational masters who conducted in-depth analyses of educational practises were accessible through British literature. In this situation, Goldsmith is quite far up the order (Maji & Saha, 2012a). The worries and anguish that Goldsmith has depicted are largely artificial and unreal. Goldsmith was close with Jusah Reynolds. And the poem was dedicated to Mr. Reynolds. He was the one who attacked Goldsmith. However, such made-up anxiety and fear might not be accurate or believable. Oliver Goldsmith was clearly a recognised educator in 18th-century Britain, it can be admitted.

CONCLUSION

The ideal education should combine elements of both Eastern and Western pedagogies. The western education philosophy looks at the learning process at educational institutions in order to produce knowledgeable and competent students, but the eastern education philosophy emphasises a meaningful life in developing an ideal life of the individual and focuses on values that shape the lifestyles. This is a result of the students' capacity to put what they learned in class into practise in their daily lives (Muhammad, 2003). The role of teacher also differs in Eastern and Western pedagogies. A teacher is revered in the classroom and is also a unique character with a variety of ideals that might affect how the students are taught (Ahmad, 1998). To conclude, a teacher is the torch bearer of the educational philosophies of both East and West. And to transmit such philosophies and culture a teacher should keep in mind that he is there to serve the ordinary people (Gayen et al., 2021).

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A STUDY ON FINANCIAL PERFORMANCE OF INDIAN BANK LTD

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ABSTRACT

This study examines the financial performance of Indian Bank, one of the leading public sector banks in India. Using financial statements for the period from 2017 to 2022, key financial ratios such as profitability, solvency and asset quality are analyzed to assess the bank's financial health. This study finds that Indian Bank's profitability has improved over the period, driven by a higher net interest margin and lower operating expenses. However, solvency ratios have declined, indicating potential areas for improvement. The study provides insights for investors, regulators, and policymakers on the financial health of Indian Bank and highlights areas that require attention for sustainable growth.

INTRODUCTION

Financial statement analysis is the process of analysing a bank's financial statements for decision-making purposes. The financial statements of a company are valuable to both external stakeholders and internal constituents for different reasons. External stakeholders rely on them to assess the overall health of an organization and determine its financial performance and business value. Meanwhile, internal constituents use these statements as a monitoring tool for managing finances. These statements contain significant financial data covering all aspects of a business's activities, allowing them to be evaluated based on past, present, and future performance. This analysis helps to determine the creditworthiness of the bank.

STATEMENT OF THE PROBLEM

Banking facilities are growing day by day and many private sector banks were introduced. So, the research conducted on these private banks are increasing. Though there are many research conducted on public sectors like SBI, they don't concentrate on other public sector banks. Proper maintenance of financial statements is crucial for ensuring the stability of a bank's financial performance. By conducting ratio analysis, the financial data can be summarized, and qualitative assessments can be made about the Indian bank's financial position and performance.

OBJECTIVES OF THE STUDY

- To identify the profitability position of the Indian Bank.
- To analyse the solvency position of the Indian Bank.
- To analyse the asset quality of Indian Bank.

RESEARCH METHODOLOGY

Nature of Data	Secondary data
Source of Data	Financial Statement
Period of Study	2017-18 to 2021-22
Tools	Ratio Analysis



REVIEW OF LITERATURE

- **S. Manicka Vasuki (2022)**, analysed the financial performance of Bank of Baroda. She aimed to examine the financial performance of Bank of Baroda and provide useful recommendations to optimize its financial performance. Her study used secondary data collected from Bank of Baroda's website, Reserve Bank of India and other related sources for the period of 5 years from 2017 – 18 to 2021 – 22. She concluded that the bank's financial performance can be maximized by increasing the Net profit margin, Earnings per share, Return on Asset employed and Interest income.
- **Shikhil Munjal and Dr. Krishna Lal Grover (2022)**, analysed the financial performance of ICICI. The main objective was to find out the efficiency of ICICI bank through CAMEL Analysis. The researchers used 5 years (2015 - 2016 to 2020 - 2021) of ICICI bank's secondary data. The researchers found that the productivity of bank is in downward trend. The capital adequacy ratio parameter was average, asset quality parameter was moderate, management efficiency parameter was in increasing trend, earning quality parameter was in growing trend and liquidity parameter was on the top position.

ANALYSIS AND INTERPRETATION

Year	Net Profit Ratio	Return On Net Worth Ratio	Proprietary Ratio	Debt to Equity Ratio	Loans to Assets Ratio	Non Performing Assets Ratio
2017-18	5.14	6.43	6.26	14.80	7.82	7.37
2018-19	1.09	1.42	5.80	15.99	4.32	7.11
2019-20	2.84	3.70	6.16	15.04	3.34	6.87
2020-21	6.39	8.89	5.23	17.91	3.96	9.85
2022-22	6.79	8.48	5.57	16.75	2.55	8.47

FINDINGS, SUGGESTIONS AND CONCLUSION

FINDINGS

1. The net profit ratio of the company increased from 5.14 in financial year 2017-18 to 6.79 in financial year 2021-22, indicating an improvement in the company's profitability.
2. The return on net worth ratio of the company increased from 6.43 in financial year 2017-18 to 8.48 in financial year 2021-22, indicating an improvement in the company's ability to generate profits from its shareholders' investment.
3. The proprietary ratio of the company decreased from 6.26 in financial year 2017-18 to 5.57 in financial year 2021-22, indicating a decrease in the company's reliance on shareholder funds to finance its operations.
4. The loan to assets ratio of the company decreased from 7.82 in financial year 2017-18 to 2.55 in financial year 2021-22, indicating a decrease in the company's reliance on borrowing to finance its assets.
5. The loan to assets ratio of the company decreased from 7.82 in financial year 2017-18 to 2.55 in financial year 2021-22, indicating a decrease in the company's reliance on borrowing to finance its assets.
6. The non-performing assets ratio of the company decreased from 7.37 in financial year 2017-18 to 8.47 in financial year 2021-22, indicating an improvement in the company's ability to recover its loans.

SUGGESTIONS

1. Address the increase in debt to equity ratio: The increase in this ratio indicates that the bank is relying more on debt financing than equity financing. While debt financing can be beneficial in the short-term, it can also increase financial risk in the long-term. The bank could explore options to raise equity capital, such as through public offerings or strategic partnerships, to reduce its reliance on debt. Additionally, the bank could focus on improving its profitability to generate more internal capital to support its growth.
2. Manage the loan to assets ratio carefully: While the decrease in this ratio indicates a decrease in reliance on borrowing, the bank should still be cautious about its lending practices to avoid increasing its credit risk. The bank could focus on diversifying its lending portfolio and increasing its fee-based income to reduce its reliance on interest income.
3. Continue to reduce Non Performing Assets (NPAs): The decrease in NPAs is a positive sign for the bank. However, the bank could further improve its asset quality by continuing to focus on recovery of bad loans and strengthening its credit appraisal and risk management processes.

CONCLUSION

In conclusion, Indian Bank has demonstrated an improvement in its financial performance over the years, as evidenced by the positive trend in its liquidity, profitability, and asset quality ratios. Therefore, Indian Bank appears to be on a positive trajectory,



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and it should continue to focus on managing its debt levels while improving its asset quality to maintain its growth and profitability in the long run.

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AN EVALUATIVE STUDY ON EMPOWERING WOMEN THROUGH MICRO FINANCE

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ABSTRACT

Micro finance is a concept that is helping the poor to avail of and create opportunities for economic growth. In India micro finance has fuelled the efforts of rural development, women empowerment and wealth generation by providing small-scale savings, credit, insurance and other financial services to poor and low-income households. Micro finance thus serves as a means to empower the poor and provides a valuable tool to help the economic development process.

KEY WORDS: *Micro finance, SHG.*

INTRODUCTION

In India, the concept of micro finance was introduced by NABARD in the nineties to bridge the gap between demand and supply of funds in the lower rungs of the Indian economy. It aims at the eradication of rural and urban poverty through the linkage of SHGs with Micro Finance Institutions. Microfinance is the provision of access to credit and allied financial services to the poor and vulnerable group of the society. In financial sector these groups are referred as excluded population. Thus there is a need for including the excluded population of society in the formal financial system by providing access to financial credit and services. Government of India with the objective of increasing the reach to the maximum households in the country came with the focused policy objective of Financial Inclusion.

STATEMENT OF PROBLEM

Absence of capital is a genuine requirement to the improvement of poor ladies in provincial and urban regions who discover next to zero access to credit. Credit can enable ladies to take up cultivate and partnered exercises. A little credit, to people to set up or grow a little self-managing business, through which employments are made, learning is shared, metro interest increments.

OBJECTIVES

1. To find the Benefit of the scheme & analysis the percentage of people Benefit through availing micro finance.
2. To measure the level of income of the rural/urban women after availing microfinance.
3. To find out the purpose of getting micro finance.
4. To identify the hurdles among faced by women empowerment.

RESEARCH METHODOLOGY

Methodology is a way to systematically solve a research problem. It explains the various steps that are generally adopted by a researcher to solve a research problem.

Research Design

The results of the study were obtained by descriptive analysis.

Area of study

Coimbatore City is the second largest city and is one of the major metropolitan cities in Tamil Nadu. The study covers in the area of “An Evaluative study on Empowering women Through Micro Finance “.



Period of study

The study covers a period of 3 months January 2023 - March 2023.

Sampling procedure

A sample design is a definite plan for obtaining a sample from a given population. 120 samples were selected by snow ball sampling method. It is one of the probability sampling techniques.

METHOD OF DATA COLLECTION

Collection of data

Collection of Primary and Secondary Data

primary data

Data collected from women who had availed of microfinance from SHG and other microfinance organizations.

Secondary data

Data published in various microfinance journals, reports from Resource NGOs, Microfinance publication from NABARD etc.

TOOLS USED FOR ANALYSING THE DATA

Study has the objective of ascertaining the “AN EVALUATIVE STUDY ON EMPOWERING WOMEN THROUGH MICRO FINANCE” for analysing the primary data the following statistical tools was used.

- Percentage Analysis
- Ranking Analysis

REVIEW OF LITERATURE

1. **Beley mengstie (2022):** Impact of microfinance on women's economic empowerment. Women's economic empowerment a strategy aimed at enabling women in decision-making, increment in income and asset ownership. The main aim of the study is to examine the impact of microfinance on women's economic empowerment. Data were derived from a questionnaire of a sample of 346 women clients of microfinance. Multiple regression and paired sampled *t*-test data analysis techniques were used in the study.
2. **Dr. M. Abdul Rahuman(2021):** A Study On The Beneficiaries' Perception Of Micro Finance Schemes Extended By The Commercial Banks In Tirunelveli .Microfinance is a dominant instrument to improve poverty and empowerment of rural people and it is efficient in bring communal and financial changes. Nowadays the majority of the Banks have to provide microfinance for the needed public.the main objective if the study is to value and evaluate the impact by the customers of commercial banks in utilizing in micro finance scheme.the research design is adopted in the study was a descriptive design.the area of the study is in Thirunelveli district.the study was conducted for two months.the study is collected both primary and secondary data.The sampling design is convenient random sampling.total number of samples is 120.the collected data was analyzed with the help of a percentage table and five points Likert scale.
3. **Dr. A. Thilagaraj(2020):** A Study On Women Empowerment Through Self- Help Group Members With Special Reference To Virudhunagar District In Tamil Nadu. Women's empowerment has been visible in recent years as a focal topic in determining their status. The objective of the analysis is intended to replicate the social impact of the self-help group of women to investigate the changes in the SHGs social clause, to assess the influence of the SHGs on the social status of individuals and to differentiate the attitude of individuals from the SHGs and their social impact. The inquiry is separate with the ultimate aim of making use of only critical data. The critical information was collected. via a field summary, the size of the exam is 300, for example, Interviewees. Stratified random testing was used by the specialist. The respondent's survey and the information was collected from Virudhunagar, District, Tamil Nadu.
4. **Mritunjay Kumar(2018) :** A Literature Review on Women Empowerment.Focused on the theory that women are different from men in social roles and that these disparities result in asymmetrical, discriminatory gender power relationships, 'women's empowerment' relates to increasing women's right to influence of their strategic decisions in life and their opportunity to completely grow their potential.As an economic, political and social culture phase, women's empowerment questions the framework of sexual stratification that has contributed to the subordination and marginalization of women to increase the quality of life of women. This review article provides an overview of women empowerment status in India.
5. **SHALINI AGGARWAL(2017):** A Study on Women Empowerment through Self-Help Groups with special Reference to Ghaziabad in Uttar Pradesh District. Self-Help Groups basically follow the principle of, „for the people, by the people and of the people. The study used primary data and secondary data for analysis according to the objectives set out in the study. Primary



data were collected by structured questionnaire method. Secondary data were collected from websites and subject book. The present study covered from 2 blocks of Ghaziabad district from Uttar Pradesh. The sample size is 150 respondents consisting all categories of Self Help Group members from Ghaziabad district of Uttar Pradesh. The main objective of the study is To study the economic empowerment, social empowerment and personal empowerment of SHGs members. .To study the income pattern of SHGs members before joining Self Help Group and after joining Self Help Group.

FEATURE OF MICRO FINANCE

1. Microfinance is a tool for the empowerment of poor women;
2. Loans under microfinance programmes are very small;
3. Microfinance targets the poor rural and urban households;
4. Credit under microfinance follows thrift i.e. mobilize savings and lend the same;
5. Low transaction cost due to group lendings;
6. Transparencies in operation;
7. Short repayment period;
8. Simple procedure for reviewing, processing and approving loan applications and delivery credit;
9. Chances of misutilization are rare and there is assured repayment;
10. Peer pressure act as the collateral security required for loans;
11. Need based loan disbursement;
12. Prompt repayment; and
13. There is no ceiling from the RBI in respect of minimum and maximum amounts.

NEED FOR MICROFINANCE

Microfinance aims at assisting communities of the economically excluded to achieve greater levels of asset creation and income security at the household and community level. Access to financial services and the subsequent transfer of financial resources to poor women enable them to become economic agents of change. Women become economically self-reliant, contribute directly to the well being of their families, play a more active role in decision making and are able to confront systematic gender inequalities. Access to credit has been given considered a major poverty alleviation strategy in India. Micro-credit has given women in India an opportunity to become agents of change. Poor women, who are in the forefront micro-credit movement in the country use small loans to jump start a long chain of economic activity.

DATA ANALYSIS

CRITERIA	OPTIONS	NO OF RESPONDENTS	PERCENTAGE
AGE	19-25	29	24.2%
	26-35	32	26.7%
	36-45	43	35.8%
	ABOVE 46	16	13.3%
EDUCATION	ILLITERATE	1	0.8%
	PRIMARY SCHOOL	22	18.3%
	HIGH SCHOOL	46	38.3%
	GRADUATE	51	42.5%
GEOGRAPHICAL BACKGROUND	RURAL	63	52.5%
	URBAN	57	47.5%
OCCUPATION	LABOUR	15	12.5%
	AGRICULTURE	27	22.5%
	BUSINESS	62	51.7%
	HOME MAKER	16	13.3%
FAMILY STATUS	NUCLEAR	54	45%
	JOINT	66	55%
NO OF MEMBERS IN FAMILY	BELLOW 3	11	9.2%
	3-5	48	40%
	6-8	52	43.3%
	ABOVE 8	9	7.5%



EARNING MEMBERS	1 PERSON	7	5.8%
	2 PERSON	50	41.7%
	3 PERSON	51	42.5%
	MORE THAN 3 PERSON	12	10%
ANNUAL INCOME	BELOW 50000	7	5.8%
	50001- 100000	56	46.7%
	100001-200000	36	30%
	ABOVE 200000	21	17.5%
BPL	YES	51	42.5%
	NO	69	57.5%
EXPENSES	LESS THAN 5000	Nil	Nil
	5000-10000	39	32.5%
	10001-20000	64	53.3%
	ABOVE 20000	17	14.2%
PURPOSE OF LOAN	PERSONAL	16	13.3%
	MEDICAL	32	26.7%
	AGRICULTURE	27	22.5%
	BUSINESS	29	24.2%
	OTHER	16	13.3%
LOAN TAKEN	BELOW 10000	3	2.5%
	10000-20000	53	44.2%
	20001-50000	48	40%
	ABOVE 50000	16	13.3%
LOAN REPAYMENT	LESS THAN 1	13	10.8%
	2-3	39	32.5%
	4-5	53	44.2%
	MORE THAN 5 YEARS	15	12.5%
FACING DIFFICULTY	YES	92	76.7%
	NO	28	23.3%
DIFFICULTY	LACK OF SUPPORT FROM FAMILY	13	10.8%
	DIFFICULTY IN FULLFILL GOVERNMENT FORMALITIES	49	40.8%
	SHORT PERIOD OF REPAYMENT OF LOAN	30	25%
	NONE	28	23.3%
PROBLEM FACING	YES	103	85.8%
	NO	17	14.2%
REASON FOR NON REPAYMENT	NATURAL CALAMITY	14	11.7%
	HEALTH/ILLNESS PROBLEM	45	37.5%
	LACK OF SOURCE OF INCOME	44	36.7%
	NONE	17	14.2%
RANKING ANALYSIS			
SL.NO	FACTORS	SCORE	RANK
1	FOOD	387	I
2	RENT	379	II
3	UTILITY BILLS	325	V
4	LOAN REPAYMENT	337	IV
5	HEALTH CARE EXPENSES	339	III



FINDINGS, SUGGESTIONS AND CONCLUSIONS

SUMMARY OF FINDINGS

PERCENTAGE ANALYSIS

1. Mostly (35.8%) of respondents are under the age of 36-45.
2. Mostly (42.5%) of respondents educational status are Graduate.
3. Majority of (52.5%) respondents are belongs to rural background.
4. Majority of (51.7%) respondents are belongs to Business.
5. Majority of (55 %) respondents are belongs to joint family.
6. Mostly (43.3%) of respondents family members are upto 6-8.
7. Mostly (42.5%) of respondents had 3 earning member of the family.
8. Mostly (46.7%) of respondents are between 50001-100000 of annual income
9. Majority of (57.5%) of respondents are belongs to no
10. Majority of (53.3%) of respondents are between 10001-20000 of monthly expenses
11. Mostly (26.7%) of respondents are getting loan for Medical purpose.
12. Mostly (44.2%) of respondents are taken loan upto 10000-20000.
13. Mostly (44.2%) of respondents repaid loan upto 4-5 years.
14. Majority of (76.7%) respondents are belongs to yes.
15. Mostly (40.8%) of respondents are facing difficulty in fulfil government formalities.
16. Majority of (85.8%) respondents are belongs to yes
17. Mostly (37.5%) of respondents are facing Health/illness problem.

RANKING ANALYSIS

1. Most of the respondents ranked food (387).

SUGGESTION

- Need to improve financing facility
- Awareness regarding micro finance
- Increase flexibility

CONCLUSION

This study concludes that microfinance is very necessary in India to achieve financial inclusion of the poor in the rural and urban areas. Lending to the poor population if handled in an effective manner it can be a miracle for the development of the country and alleviation of Poverty. If government and MFIs act together then microcredit can play a great role in poverty alleviation. The challenging issue in microfinance helps to reduce the financial problems faced by poor people. Inability of MFIs in getting sufficient funds is a major challenge in the microfinance growth and so these institutions should look for alternative source of funds. The impact of microfinance is appreciable in bringing confidence, courage skill development among poor people. Thus external factors such as microfinance institutions are needed to help fix these problems.

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A STUDY ON FINANCIAL PERFORMANCE OF ITC LTD

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ABSTRACT

A leading Indian conglomerate operating in various sectors such as Fast-Moving Consumer Goods (FMCG), Hotels, Paperboards and Packaging, Agri Business, and Information Technology. The research utilizes secondary data from the company's annual reports, financial statements, and other relevant sources for a period of five years from 2017 to 2021. The study evaluates the company's profitability, liquidity, solvency, and efficiency ratios to assess its financial performance. Additionally, the study analyzes the trends and patterns in the financial statements and provides insights into the company's financial strengths and weaknesses. The results of the study provide a comprehensive understanding of ITC Ltd's financial performance and highlight the key drivers of its profitability and growth over the years.

INTRODUCTION

The concept of finance may include capital, funds, money and amount. But each word has a unique meaning. A broad range of subfields within finance exist due to its wide scope. Asset, money, risk and investment management aim to maximize value and minimize volatility. Financial performance analysis is the process of identifying the financial strengths and weaknesses of the firm by properly establishing the connection between the things of record and profit and loss account. It also helps in short-term and long run forecasting and growth are often identified with the assistance of economic performance analysis. The analysis of an economic statement could be a process of evaluating the connection between the component parts of the economic statement to get a far better understanding of the firm's position and performance.

STATEMENT OF THE PROBLEM

Financial statement analysis is an important tool for measuring the financial performance of the company. These days analysis and interpretation of financial statements is a regular exercise to review the performance of the companies. Nowadays risk in every company is increasing day to day and the requirement of finance is more to run the business. Hence there is a need for every organization to evaluate their performance each year in order to capture a place in the market. Ratios have proven to be an effective and a very powerful analytical tool useful for measuring performance of an organization. Thus this study investigates the performance for ITC limited with the last five years financial statement.

OBJECTIVES OF THE STUDY

1. To measure ITC's overall profitability.
2. To evaluate a company's ability to meet its short-term debt obligations.
3. To evaluate the company's financial health and stability and to evaluate the effectiveness of management.

METHODOLOGY OF THE STUDY

An Analytical research design is chosen for the study. This research is conducted to find out facts about the given topic from the answers obtained develop new and useful ways during things.

TOOLS

- ✓ Ratio analysis



REVIEW OF LITERATURE

- **Mr. A. David, Ms. T. Madhumitha (2021)**, This deals with the financial strength and weakness of the business concern accurately establishing a relationship between the balance sheet and income statement. The objective of the study is to present key findings of the study and to make suitable suggestions for the further successful survival of the company. This study suggests the company should take effective measures to create more cash reserves to pay off its debts. They should increase their short-term liquidity of the company, it helps to pay off the current dues. Finally, the study reveals there was gradual rise and fall in the growth of the company during the study period. Secondary data were used for analysing the financial performance.
- **Dr. R. Mayilsamy, Ms. C. Anushia (2021)**, Financial statements are often audited by government agencies, accountants, firms etc., to ensure accuracy and for tax, financing or investing purpose. The objective of the study is to view the growth of the Pricol limited by comparing the past year's balance sheet and evaluate financial performance through ratio analysis. This suggests the management should make the proper use of current assets to increase the profit of the company. Thus, the findings and recommendations which will be helpful for the development and improvement of the company. Finally, the author concludes that the company's performance is good and there is a gradual decrease in the working capital of the company.

ANALYSIS AND INTERPRETATION

Year	Operating Profit	Current ratio	Quick ratio	Cash Ratio	ROA	ROE	Proprietary
2018	37.94	2.85	2.03	0.31	0.18	0.21	1.98
2019	38.07	3.17	2.38	0.41	0.18	0.21	1.86
2020	38.98	4.13	3.19	0.76	0.20	0.23	1.65
2021	34.51	3.27	2.29	0.43	0.18	0.22	1.72
2022	34.05	2.81	1.91	0.38	0.20	0.24	1.82

FINDINGS, SUGGESTIONS AND CONCLUSION

FINDINGS

LIQUIDITY RATIO

1. A current ratio higher than the industry average indicates that the management may not be using its assets efficiently.
2. The company has enough liquid assets to cover its short-term obligations.
3. The quick ratio shows that the company's ability to pay off its short-term obligations without relying on inventory has also decreased over the years, from 3.19 in 2019-2020 to 1.91 in 2021-2022. The company's liquidity position has been fluctuating over the years.

PROFITABILITY RATIO

1. The net profit ratio shows that the company's ability to generate profits has been
2. Consistent over the years, ranging from 25.10% to 30.97%.
3. The operating profit ratio shows that the company's ability to generate profits from its operations has been consistent over the years, ranging from 34.05% to 38.98%.
4. The return on assets (ROA) has been improving, with an increase in 2019-2020 and 2021-2022, indicating that the company has become more efficient in using its assets to generate profits.
5. The return on equity (ROE) ratio shows that the company's ability to generate profits from shareholder's equity has been consistent over the years, ranging from 0.21 to 0.24.

SOLVENCY RATIO

1. The decreasing trend in the debt-to-equity ratio and debt-to-asset ratio in the earlier years followed by an increasing trend in recent years suggests that the company has been relying more on debt financing in recent years.
2. The increasing trend in the proprietary ratio suggests that the company has also been relying more on equity financing to acquire its assets.

ACTIVITY RATIO

1. Total assets turnover ratio: The ratio fluctuated over the years, with a high of 1.64 in 2017-2018 and a low of 1.25 in 2019-2020. However, the ratio increased to 1.77 in 2021-2022, indicating that the company is utilizing its assets more efficiently to generate revenue.



2. Fixed assets turnover ratio: The ratio increased from 1.99 in 2017-2018 to 2.07 in 2018-2019, but then decreased to 1.85 in 2020-2021. However, the ratio increased significantly to 2.27 in 2021-2022, indicating that the company is using its fixed assets more effectively to generate revenue.
3. Return on assets turnover ratio: The ratio decreased from 0.42 in 2017-2018 to 0.37 in 2020-2021, indicating that the company's profitability in relation to its total assets decreased. However, the ratio increased to 0.44 in 2021-2022, indicating that the company is generating more profit per unit of total assets.

SUGGESTIONS

1. The company's profitability has been fluctuating over the years, indicating a need for management to implement effective cost control measures.
2. The company could consider strategies such as improving its sales and marketing efforts or optimizing its asset utilization.
3. The company could consider reducing its operating costs to improve its profitability.
4. The company could consider to make policy changes and improve the incentives for employee which may help the company to improve its operational activities.
5. The company could improve its efficiency in using its assets to generate more revenue

CONCLUSION

In this study, the company has shown consistent growth over the years. The financial statements reveal that the company has been able to generate significant revenue, maintain healthy profitability, and generate positive cash flows. The company has been able to fund its growth through its well-articulated management, which is a positive sign for investors. Overall, the financial performance of ITC is impressive, and the company is well-positioned for future growth. However, it is important to note that the company operates in a highly competitive industry, and there are various risks associated with its business operations. Therefore, investors should conduct a thorough analysis of the company's financial performance and future growth prospects before making any investment decisions.

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SCOPING STUDY OF LIVESTOCK INSURANCE IN SAILANA BLOCK OF RATLAM DISTRICT

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ABSTRACT

Livestock is a second highest agriculture allied activity in rural India, but there are several risks presents related to the livestock, for coping up with the risk insurance is one and only effective way. This study mainly focused on the scope of livestock insurance in the block, apart from that study help to analyse how livestock is playing an effective role in poor people's life and risk related to that. The study was totally done by sample survey, FGD and PRA (Participatory Rural appraisal) method. 100 samples are selected under which 35 of goat, 35 of cattle and 30 buffalo growers were taken. The sampling has chosen by stratified random sampling. Madhya Pradesh is having the third largest livestock population in India, which clearly indicates that livestock is an important part of people's life. According to past experience and information water is a very big problem for the people and due lack of irrigation water facilities sometimes crop failure is also occur, due to that the agriculture which is the backbone of rural India is got effected. So, the community focuses on different solution of getting income through livestock. So, the livestock is playing an important role in people's life so insurance is also important to protect their surviving bread.

Highlights: *In this study risk, important and scope of livestock insurance is highlighted in a detailed manner.*

KEYWORDS: *Livestock, Risk, Importance, Insurance*

Livestock is a most important productive asset in the rural India and an insurance mechanism for the farmers to cope up with household related shocks (Ahuja et al., 2000; World Bank, 1999; LID, 1999; de Haan, et al., 2001). Livestock sector plays an eminent role in Indian's economy and also the welfare of the rural and tribal population. According to the Indian council of agriculture research there are 15 agro climatic zones in India, so the environmental variance has created its role in the creation of region-specific breeds.

Livestock is a second highly adopted activity after crop cultivation. So, it is notice that crop and livestock farming are mixed activities. As per the data of NAS 2020 livestock farming contributes more than 28% of the agricultural and allied sector output in India. Livestock is not only providing income for family; it is mostly for the women also who is getting income from that. Livestock production in India is largely in the domain of women, and thus helps empower rural women (Jaya and BIRTHAL 2015). For poor people it is act like a valuable asset and during risk time they are using it for mitigation.

Livestock producers face several risks or constraint's related to animal health, nutrition and breeding in improving livestock productivity because of climate change. There are several kinds of livestock risk are present starting from water unavailability to health infrastructure availability and other thing. For coping up with all those risk insurance is coming out as one of the best mitigation strategies.

This study mainly focused on the scope of livestock insurance in the selected block. It will help to analyse how livestock is playing an effective role in poor people's life. What are the problem and risk associate with the livestock, and how people are using available resource for coping up with those risk? It could able to find the scope of insurance in those villages, and what is their mind-set regarding to insurance.

OBJECTIVE OF THE STUDY

1. Understanding the potential, existing risk and coping mechanism of livestock followed by the people.
2. Understanding status of the livestock insurance status of the selected village.
3. To assess the scope of insurance for livestock in selected village.



METHODOLOGY

The study was completed at Sailana block of Ratlam district, Madhya Pradesh, and the survey was completed during the time of June and July of 2022.

Selection of village- The study holistically covered the Kalanjiam (SHG) members. Criteria for selection of villages are as follows:

1. Tribal villages are selected as they have unique practices for rearing livestock. More number of members are having livestock in their house.
2. Livestock is a secondary source of income.

Data collection process – 2 type of data collection process were adapted:

1. Primary data collection
2. Secondary data collection

Secondary data collection – All the secondary data was collected from the Veterinary hospital of the study location, and from insurance company, from the farmer portal.

Primary data collection – Two type of primary data collection method was used. PRA (participatory rural appraisal) and Survey.

Research type – Qualitative and quantitative method of research

Target group - Only focus on Kalanjiam (SHG) members those who are having livestock.

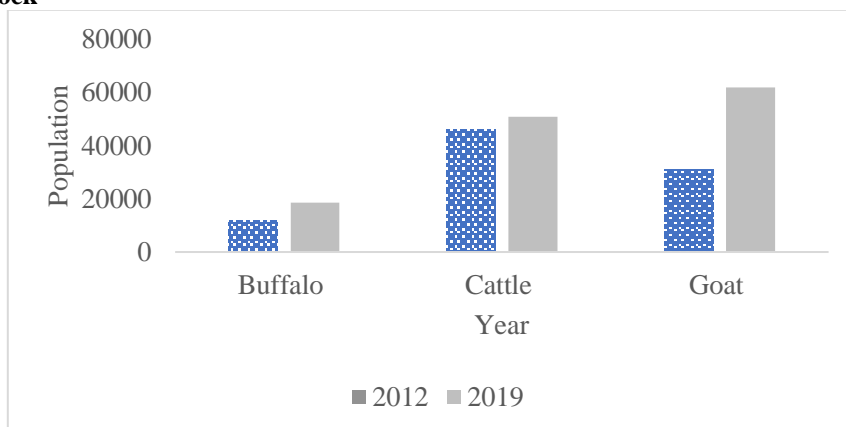
Selected villages - Whole study was conducted in selected 6 villages those villages are Amliapada Bid, Ambakudi, Bhada, Bherugata, Kotada and Dhamnod.

Sample size- Number of samples collected 100.

Survey method - Stratified random sampling was conducted (35 those who are having goat, 35 who are having cattle, 30 those who are having buffalo).

RESULT AND DISCUSSION

Madhya Pradesh is the third biggest state in India for livestock rearing. As per the 2011 census Madhya Pradesh is the first state which having highest number of ST population in India, and as the tribal settlement is high the number of livestock rearing is also high in this State. From the collected data during the study, it was found that the average income of the area is nearly Rs.30000 – 40000/ year/ family, only few people are getting the income more than 1 lakh/ year/ family. Around 59% people are involved in Agriculture and labour work and 27% people's main occupation is Agriculture, labour and migration. During the study it was observed that all the people are depend on agriculture only, as it is the main source of income. Almost 27% people are going for migration to different state, for working in factory or construction work. According to past experience and information water is a very big problem for the people and due lack of irrigation water facilities some times crop failure is also occur, due to that the agriculture which is the backbone of rural India is got effected. So the community focuses on different solution of getting income through livestock.

**Existing status of livestock****Figure 1 Livestock status of the Sailana Block**

(Source – Farmer portal and veterinary hospital)

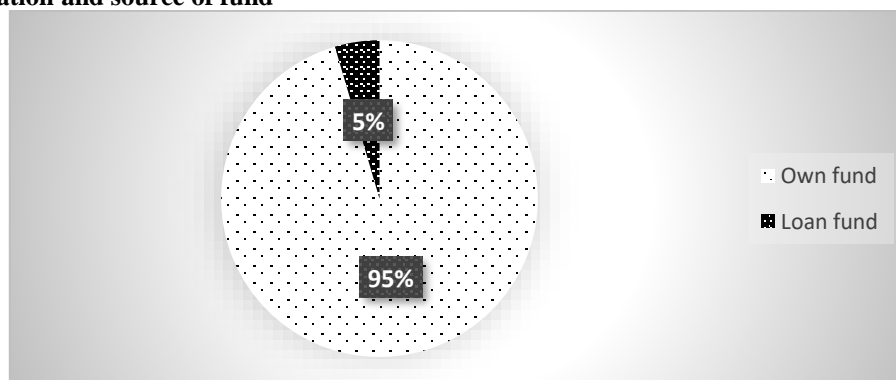
From the above chart it is inferred that livestock population is increasing over the year but the goat population has increase more. From the FGD (Focus group discussion) it came to know over the year market demand of the goat has increase more and the price of the meat has increase, because of this reason people are going more goat rearing.

Table 1 Livestock status in selected village

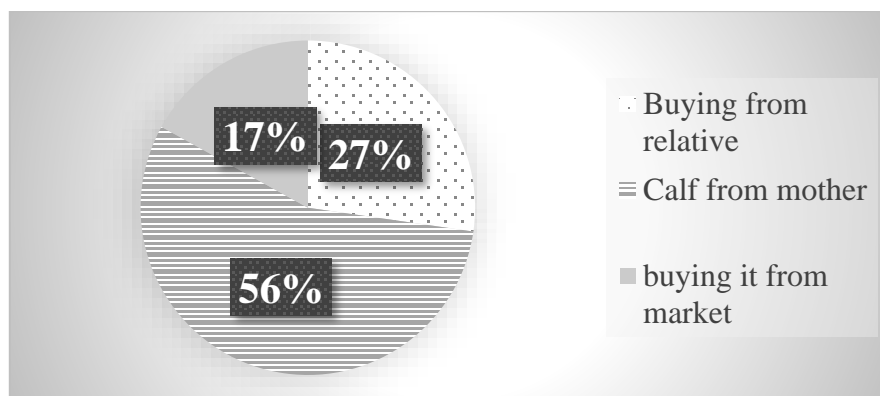
Year	2012			2019		
Village Name	Cattle	Buffalo	Goat	Cattle	Buffalo	Goat
Kotada	513	87	409	351	75	454
Bhada	185	58	105	105	13	122
Ambakudi	29	97	114	89	18	164
Bherugata	276	43	69	147	45	152
Amlipada	125	50	99	113	38	228
Dhamnod(Ratlam block)	2953	1456	1059	2200	830	800
Total	4081	1791	1855	3005	1019	1920

(Source- Veterinary Hospital)

From the above table it is depicted that at village level livestock population has decrease over the year mostly the cattle and buffalo population has decrease. But in the other hand goat population has increase in village level because of high market demand and increased meat prices.

Livestock buying location and source of fund**Figure 2 Source of fund for buying livestock**

(Source – Sample survey)

**Figure 3 Source of buying livestock**

(Source – Sample survey)

As per the survey analysis it understood that more than 50% people are not buying livestock, that all are new born baby from the existing livestock. 27% people are buying livestock from the relative under which 62% people are not paying any money for buying the livestock. Only 17% people are buying livestock from the market and out of them 95% are buying livestock with their own fund only 5% buying livestock with loan fund. Most of the people are taking loan from the private dairy sector or from the big land holder with the minimum interest rate of 2 to 5%.

Risk related to livestock

For any kind of insurance risk analysis is the most important part. So, for livestock insurance also risk related finding have to be understood. So, this section is going to focus on the risk relate to the livestock including disease, mortality rate and etc.

Table 2 Diseases of livestock

Livestock	Disease high in season	Expenditure in one time checkup (Private)
Buffalo	Summer season	Rs.1000 - 2000
Goat	Rainy season	Rs.100 - 500
Cattle	Rainy season	Rs.700 - 1500

(Source – Livestock calendar, Participatory rural appraisal method)

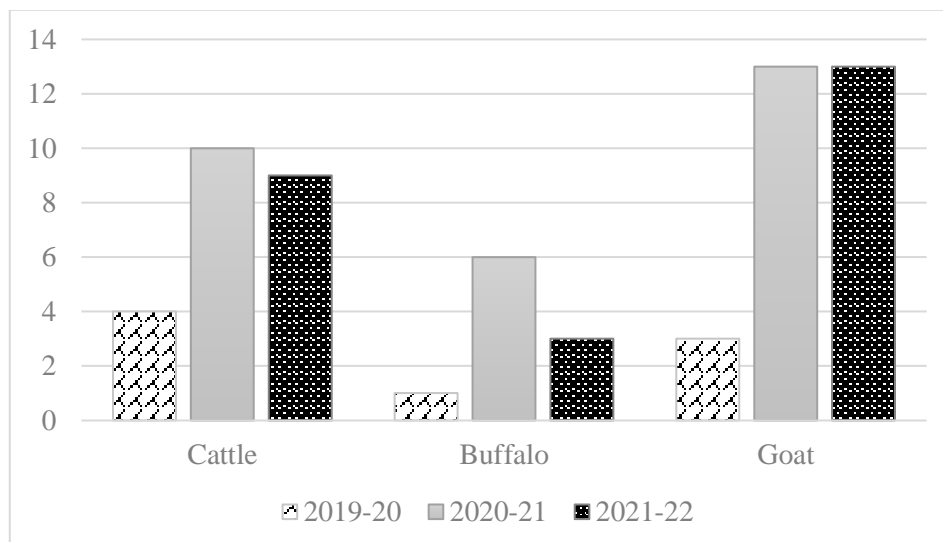
Table 3 Common disease in livestock

Livestock	Common disease
Buffalo	HS (Hemorrhagic septicemia)- Bacterial disease, BQ (Black quarter)
Goat	Brucellosis – bacterial diseases,
Cattle	Brucellosis, Mastitis

(Source – Veterinary hospital)

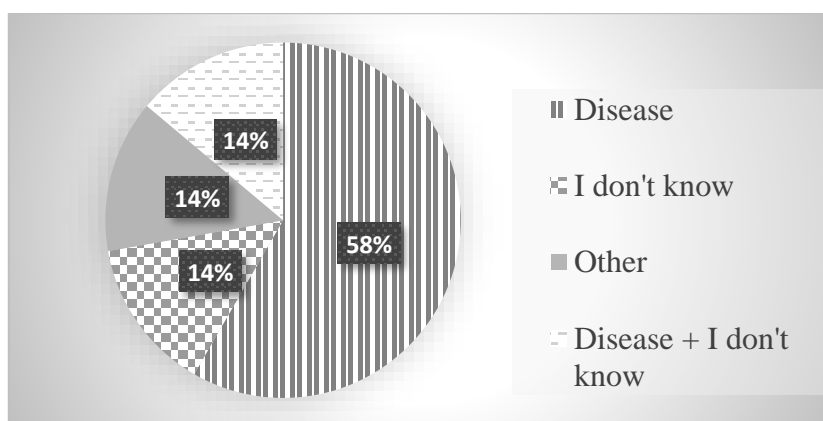
From the livestock calendar season wise information of the livestock disease and mortality was analysed. So, from above table it is inferred that buffalo are having high number of diseases in summer season because of the heat. Cattle and goat are having high number of diseases in the rainy season. As per the discussion with the community it came to know that goat is having more risk during rainy days. In rainy days they started eating new leaf of the grass and for grazing they are staying in water more time so they are easily got effected by some food related problem. Due to this reason over the year mortality rate of goat is also increased. As per the community more no of goat are dying because of the disease called dast (means diarrhoea).

From veterinary department the data has collected regarding to the common disease. For one check-up in the private hospital, they are paying around Rs.1000 – Rs.2000.

**Mortality rate****Figure 4 Mortality rate of livestock over the year**

(Source – Sample survey)

From the above chart it is found that over the year the mortality rate has increase for the Goat population because of the goat population increased. But it is depicted that over the year mortality has not increase more so it is good that they can go for insurance.

**Figure 5 Cause of death in livestock**

(Source – Sample survey)

From the above chart it is found that more no of livestock has died because of death so as per the insurance rule they will provide the money if the livestock has died on disease. So, from this it is understood that they can go for insurance.

Health practices**Table 4 Details about the health practices**

Particular	Yes (%)	No (%)
Vaccination	73	27
Bathing	49	51
Deworming	0	
AI (Artificial insemination)	29	71
Following traditional method	0	
Frequency of your visit	11(moderately)	89 (V.L)

(Source – Sample Survey)

From the above table it came to know that out of 100 people 73% respondent yes that they are providing vaccination to their livestock. So, from this it can analyse that people are aware about the vaccination, it will be easy to convince them about the



insurance status. Regarding to animal care 49% gave response yes about the animal bathing. And no one is going for traditional method so it can understand people are very much aware about the health check-up, all people are going to the veterinary doctor. So, any kind of awareness camp can be arranging with the help of those doctor which will be easy to convince the people for taking livestock insurance.

Existing status of livestock insurance

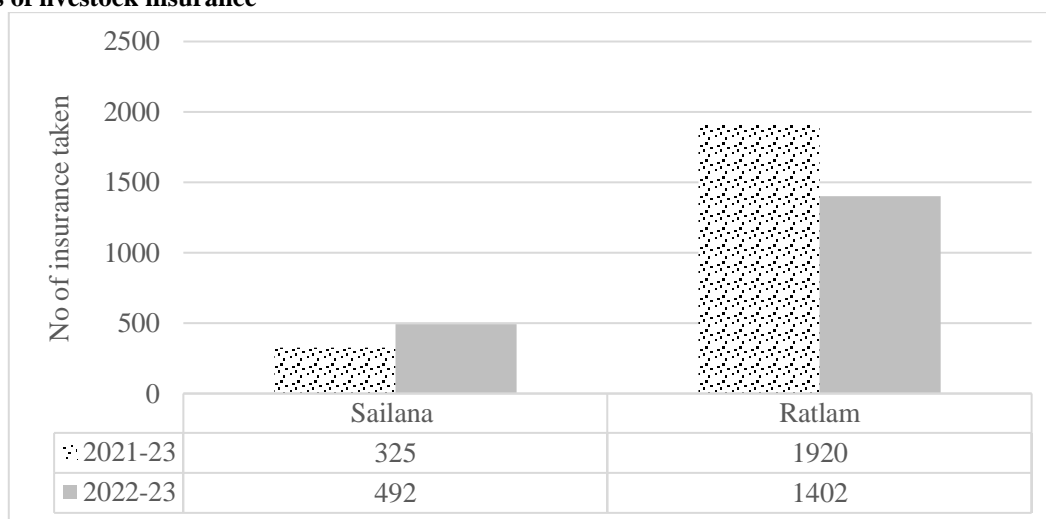


Figure 6 Status of livestock insurance in block

(Source – Veterinary hospital)

All the insurance was done under Pashu Dhan Bima Yojana. Under this yojana all the doctors are getting the target of 100 insurances each year. In Sailana veterinary hospital total no of doctor is 6 and they have completed 492 insurances so average insurance done by the doctors are 82. Under this yojana previous year 50 claims were come and this year 70 claims are there. During the discussion with the doctor, it came to know that 90% people are going for one-year insurance. And depending on their capability and companies' policy people are taking those insurance.

CONCLUSION

The research study is help to understood the tribal context, as well as the importance of livestock in their life. From the whole study it was found that livestock is the most important agriculture allied activity, and for few people it is their primary source of income. There are several risks present related to the livestock and depending on the agro climatic zone as well as the market availability also the livestock rearing pattern are changed. So, for coping up with those risk insurance will be the best way.

All the suggestion and way forward are given on the basis of the research and the tribal context.

- 49% people are going to the formal sector for health check-up so there is as chance that awareness programme can be create with the help of the Doctor's to convince the people.
- More than 50% people are going for livestock rearing for income purpose only, so it will be the scope for the livestock insurance because convincing those people will be easy.
- 22% people are using the goat for additional income so for them also the scope of goat insurance is there.
- More no of livestock was died because of disease only. As per the criteria of the Insurance people can get their claim, if livestock will die because of disease.
- Frequency of the visit to the veterinary hospital is less from this it was understood the status of disease has less it is good they can go for insurance.
- 86% people told yes for future livestock rearing it will be good for insurance.

ACKNOWLEDGEMENT

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A STUDY ON FINANCIAL PERFORMANCE OF TATA MOTORS

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ABSTRACT

This project aims to conduct a financial study of Tata Motors Limited by utilizing both quantitative and qualitative research methods, specifically through ratio analysis and literature review. The quantitative methods will involve analyzing financial data and presenting it through charts, while the qualitative methods will focus on introducing the company and reviewing existing literature. The objective of this report is to determine the financial position of Tata Motors Limited, evaluate any significant or minor changes, and provide insights for further analysis.

KEYWORDS: *Ratio Analysis, Fund Flow Analysis, Financial Position Analyzing.*

INTRODUCTION

Finance is a necessary and important aspect of every business. The success of an organization depends on how competently the firm is managing the funds available to them. The topic for the project is “a study on the financial performance of Tata Motors Limited”. There are many stakeholders in a company, including trade creditors, bondholders, investors, employees, and management. Each group has its own interest in tracking the financial performance of a company. Understanding financial performance is essential for every organization because most of the organization's crucial decisions depend on the financial performances. The analysis of financial performance involves evaluating a company's operating and financial characteristics by examining its accounting and financial statements. The primary objective of this analysis is to assess the effectiveness and efficiency of the company's management, which is reflected in the financial reports and records. The aim is to determine the performance of the company's management and its efficiency in running the business.

STATEMENT OF PROBLEM

Financial performance analysis evaluates the effectiveness of decision-making within an organization. To assess effectiveness, various analytical tools are utilized to determine the profitability, liquidity, and solvency position of the business. These tools also evaluate the ability of the organization to meet its obligations promptly and fulfill them on time. By analyzing financial data and statements, the analysis helps identify areas for improvement and areas of success within the organization's financial management practices.

OBJECTIVES OF THE STUDY

- To find the liquidity position of the Tata motors Ltd and the activity of the assets and liabilities using the liquidity ratios.
- To assess the long-term solvency, and profitability of Tata motors ltd.
- To forecast the future and show the trend rate of Tata Motors Ltd.,

RESEARCH METHODOLOGY

Research design

The descriptive research designs have been adopted for the study. The descriptive design is the simplest. It allows the researcher to study and describe the distribution of one or more variables, without regard to any causal or other hypotheses.



Data collection method

Secondary data were used in the study. The data required for the study was gathered from the annual reports of the company through their website. Data is collected from the secondary sources, which include Annual Reports, Data company websites, Journals.

Period of the study

The study has been undertaken for the period of 10 years from 2012-13 to 2021-22. In order to analyze financial status in terms of Profitability, Solvency, Activity and Financial stability various accounting ratios have been used.

Tools used for the study

1. Liquidity Ratios
2. Solvency Ratios
3. Profitability Ratios
4. Trend Analysis

REVIEW OF LITERATURE

Vanshika Singh, Vichal Kumar, Dr. Ruchi Atri (2021)

A Study of Financial Performance of TATA Motors with Special Reference to the period 2017 - 2021 Vinit Kumar , Financial ratio analysis is the process of reviewing the financial position of the company. Ratio analysis is extensively used by firms as a technique to forecast the financial soundness of the company to build future growth. This study aims at analyzing the financial performance of Tata Motors by calculating financial ratios. The primary objective of this study is to evaluate the performance of Tata Motors during the last decade. The reference period taken for the study is 5 years starting from 2017 to 2021. The results reveal that the company has performed reasonably well during the reference period. The company has shown good potential by earning returns for their shareholders.

Mr. P. Kanagaraj, Ms. S.S. Priyadharshini (2021)

A STUDY ON FINANCIAL PERFORMANCE OF TATA MOTORS

The purpose of this study is to analyze the financial performance of Tata Motors over a six-year period, from 2015 to 2020, using data from their balance sheets and profit and loss accounts. By conducting financial analysis, companies can identify their strengths and weaknesses, and improve their performance. This study utilized secondary data collected from Tata Motors' annual reports. The findings suggest that the company's profitability position is not optimal, and it needs to decrease its production costs, maintain lower costs, increase sales prices, and improve efficiency in converting sales into actual profit. The study emphasizes the importance of improving financial performance and provides suggestions for achieving this goal.

Nikkita Arora (2021)

Financial Statement Analysis of Tata Motors Ltd

The aim of this study is to conduct a financial statement analysis of TATA Motors Ltd for the period of 2016-2017 and evaluate the company's financial position. Despite facing some challenges, Tata Motors has managed to maintain its influence in the industry, and its strong reputation as a large company is expected to help it rebound. The study indicates that Tata Motors' ability to make contractual payments has been adversely affected, and 2016-2017 was the strongest financial year of the four years analyzed. During that period, the company had the highest current and quick ratios, but these have since declined, indicating a decrease in liquidity over time. However, it is believed that effective asset management and sufficient financing for debts will aid the company in recovering from losses.

Shaikh Salman Masood (2020)

Financial Statement Analyses of Tata Motors Limited

The objective of this project is to conduct a financial analysis of Tata Motors Limited using ratio analysis and research. The study employs both qualitative and quantitative methods, including literature review, introduction, and analysis through charts. The data for the analysis was obtained from Yahoo Finance for a three-year period spanning from 2017 to 2019. The report assesses the financial position of Tata Motors Limited by determining the magnitude of changes, both major and minor. In conclusion, the study reveals that Tata Motors has had a significant impact on the industry, but also experienced a downfall. The analysis indicates that the company has a substantial amount of debt, and its ability to make contractual payments has decreased significantly. However, effective asset management and proper debt financing are expected to aid the company in recovering from its losses.

**DATA ANALYSIS AND INTERPETATION****LIQUIDITY RATIOS**

Liquidity ratios are an important set of financial ratios used to evaluate a company's ability to meet its short-term obligations. These ratios measure a company's ability to convert its assets into cash quickly to pay off debts and meet other short-term financial obligations.

CURRENT RATIO

The current ratio is a widely used financial ratio that measures a company's ability to pay its short-term liabilities with its short-term assets. It is calculated by dividing a company's current assets by its current liabilities. A current ratio of 1 or higher generally indicates that a company has enough current assets to cover its current liabilities. A ratio below 1 indicates that a company may struggle to meet its short-term obligations.

Current Ratio = Current Assets / Current Liabilities

TABLE NO 1

Years	Current Assets	Current Liabilities	Current Ratio
Mar-22	1,46,977.54	1,50,682.81	0.975
Mar-21	1,46,887.64	1,57,749.18	0.931
Mar-20	1,19,587.25	1,40,454.05	0.851
Mar-19	1,23,431.16	1,45,457.43	0.849
Mar-18	1,35,972.84	1,43,219.47	0.949
Mar-17	1,16,119.75	1,15,629.52	1.004
Mar-16	1,09,923.67	1,07,049.43	1.027
Mar-15	1,01,758.40	1,00,272.00	1.015
Mar-14	95,845.33	92,356.13	1.038
Mar-13	74,006.73	86,285.90	0.858

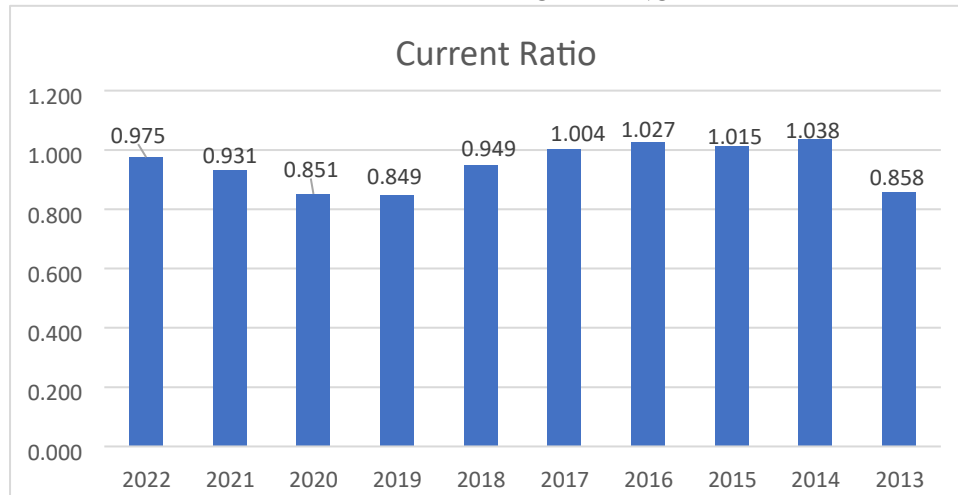
INTERPRETATION

The above table shows current ratio of TATA Motors Ltd. For the past ten years its below ideal ratio (Ideal Current ratio is 2:1) But the current ratio of the company is unsatisfied.

That means it is not able to meet even the current liabilities of the company.

INFERENCE

The current ratio was highest in the year 2014 it is 1.038 and its lowest was 0.849 in the year of 2019.

**CHART NO 1****QUICK RATIO**

The Quick ratio, also known as the Acid-Test ratio, is a financial ratio used to measure a company's ability to pay its short-term liabilities with its most liquid assets. It is a more stringent measure of a company's liquidity than the current ratio, as it excludes inventory and other current assets that may be difficult to convert to cash quickly.

Quick ratio = (Current assets - Inventory - Prepaid expenses) / Current liabilities

TABLE NO 2

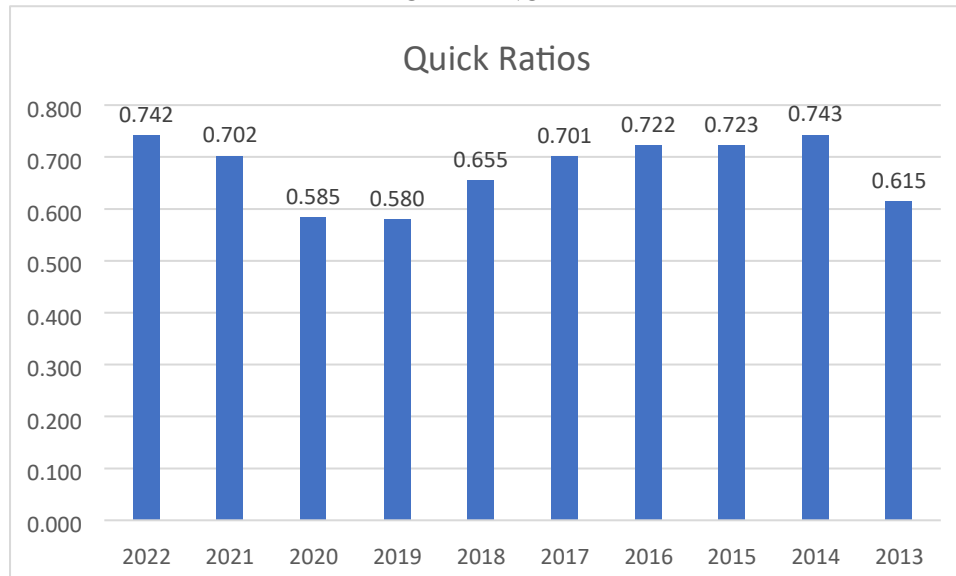
Years	Quick Asset	Current Liabilities	Quick Ratios
Mar-22	111737.2	1,50,682.81	0.742
Mar-21	110799.05	1,57,749.18	0.702
Mar-20	109430.76	1,40,454.05	0.585
Mar-19	107873.91	1,45,457.43	0.580
Mar-18	104750.01	1,43,219.47	0.655
Mar-17	81034.44	1,15,629.52	0.701
Mar-16	77267.94	1,07,049.43	0.722
Mar-15	72486.06	1,00,272.00	0.723
Mar-14	68574.44	92,356.13	0.743
Mar-13	53037.72	86,285.90	0.615

INTERPRETATION

The above table show quick ratio. Generally, liquid ratio of 1:1 is considered as satisfactory. For this company the past ten years show a less than liquid ratio, when compared to the satisfactory ratio. It further means that, the company is not able to pay off its current liabilities.

INFERENCE

The Quick ratio was highest in the year 2014 it is 0.743 and its lowest was 0.580 in the year of 2019.

**CHART NO 2****SOLVENCY RATIO**

Solvency ratio is a financial metric that measures a company's ability to meet its longterm obligations and debts. It is calculated by dividing a company's total assets by its total liabilities. A solvency ratio of greater than 1 indicates that a company has more assets than liabilities, which suggests that it has the ability to repay its debts in the long run.

PROPRIETARY RATIO

The proprietary ratio, also known as the equity ratio or net worth ratio, is a financial ratio used to evaluate the proportion of a company's assets that are financed through its shareholders' equity, as opposed to its debt. It is calculated by dividing the shareholder's equity of a company by its total assets. The proprietary ratio measures the extent to which a company's assets are financed through equity, which indicates the level of financial risk associated with the company. A higher proprietary ratio indicates that a company relies more on equity financing, which is generally considered less risky than debt financing. On the other hand, a lower proprietary ratio suggests that a company has a higher level of debt financing, which could increase the financial risk of the company.

Proprietary Ratio = Shareholders' Equity / Total Assets

TABLE NO 3

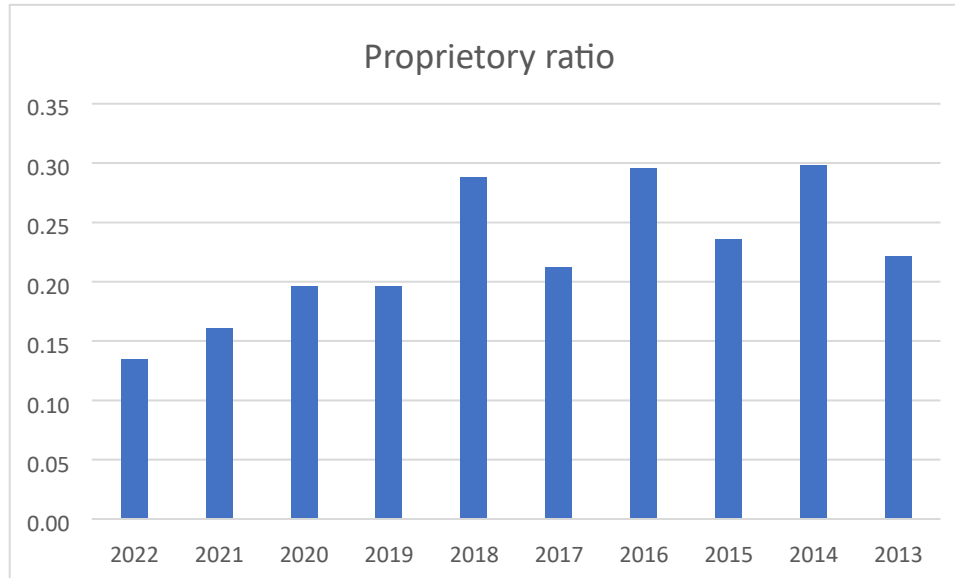
Years	Share Holder's Equity	Total Assets	Proprietary Ratio
Mar-22	44,554.85	3,30,619.93	0.13
Mar-21	55,246.72	3,43,125.80	0.16
Mar-20	63,078.53	3,22,121.26	0.20
Mar-19	60,179.56	3,07,194.53	0.20
Mar-18	95,427.91	3,31,350.51	0.29
Mar-17	58,061.89	2,73,754.36	0.21
Mar-16	78,952.41	2,67,141.15	0.30
Mar-15	56,261.92	2,38,657.99	0.24
Mar-14	65,603.45	2,19,998.32	0.30
Mar-13	37,637.30	1,70,026.45	0.22

INTERPRETATION

The above table shows proprietary ratio of the TATA Motors Ltd. A ratio of 0.5:1 or above is considered as satisfactory. The proprietary ratio has a constant increase and decrease up to 2018 but after that the ratio has declined for the last four years which is a greater risk to the creditors. In the share holders' point of view, the lower ratio indicates the company is highly dependent on creditors for its working capital.

**INFERENCE**

The Proprietary ratio was highest in the year 2014 and 2016 it is 0.30 and its lowest was 0.13 in the year of 2022.

CHART NO 3**4.2.2 DEBT RATIO**

The debt ratio is a financial ratio that indicates the proportion of a company's total assets that are financed through debt. It is calculated by dividing the company's total debt by its total assets. A high debt ratio indicates that a company is relying heavily on debt to finance its operations and growth, which can increase its financial risk. A low debt ratio indicates that a company is relying less on debt and may be less risky. Generally, a debt ratio of less than 0.5 is considered low, while a debt ratio of more than 0.5 is considered high. However, the ideal debt ratio varies depending on the industry, the size of the company, and the company's financial goals

Debt Ratio = Total Debt / Total Assets

TABLE NO 4

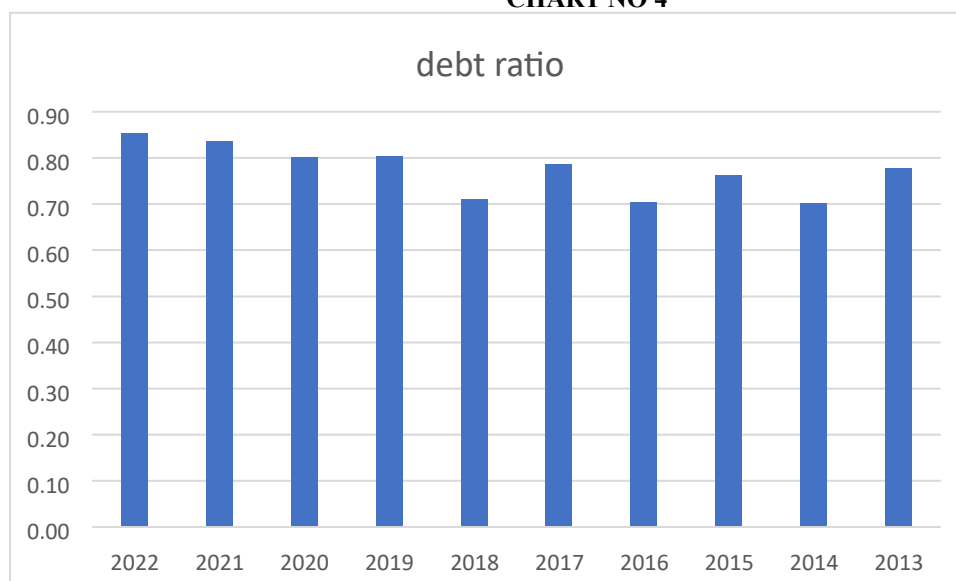
Years	Total Debt	Total Assets	Debt Ratio
Mar-22	2,81,787.63	3,30,619.93	0.85
Mar-21	2,86,305.59	3,43,125.80	0.83
Mar-20	2,58,229.17	3,22,121.26	0.80
Mar-19	2,46,491.91	3,07,194.53	0.80
Mar-18	2,35,397.54	3,31,350.51	0.71
Mar-17	2,15,239.30	2,73,754.36	0.79
Mar-16	1,87,755.90	2,67,141.15	0.70
Mar-15	1,81,962.73	2,38,657.99	0.76
Mar-14	1,53,974.22	2,19,998.32	0.70
Mar-13	1,32,018.67	1,70,026.45	0.78

INTERPRETATION

The above table show Debt Ratio of TATA Motors form 2013-2022. A good debt ratio should between 0.3 to 0.6 or it should be below 1 which means the company has more asset than it liability to pay back and the company has a good debt ratio as for the past ten years the company's debt ratio lies below 1.

INFERENCE

The Debt ratio was highest in the year 2022 it was 0.85 and its lowest was 0.70 in the years of 2014 and 2016.

**CHART NO 4****PROFITABILITY RATIOS**

Profitability ratios are key financial indicators that offer valuable insights into a company's capacity to generate profits through its business operations. These ratios hold significant importance for investors, creditors, and other stakeholders who need to assess a company's financial performance.

NET PROFIT RATIO

Net profit ratio, also known as net profit margin, is a financial ratio that measures the percentage of net profit earned in relation to a company's total revenue. This ratio is a key indicator of a company's profitability and efficiency in managing its costs. Net profit is the amount of revenue that remains after all expenses, including taxes and interest payments, have been deducted. Total revenue includes all sales, as well as any other income generated by the company. A higher net profit ratio indicates that a company is able to generate more profit from its revenue. This can be achieved by increasing revenue or reducing expenses. A lower net profit ratio may indicate that a company is facing challenges in controlling its costs or that its pricing strategy is not competitive.

Net Profit Ratio = (Net Profit / Total Revenue) x 100

TABLE NO 5

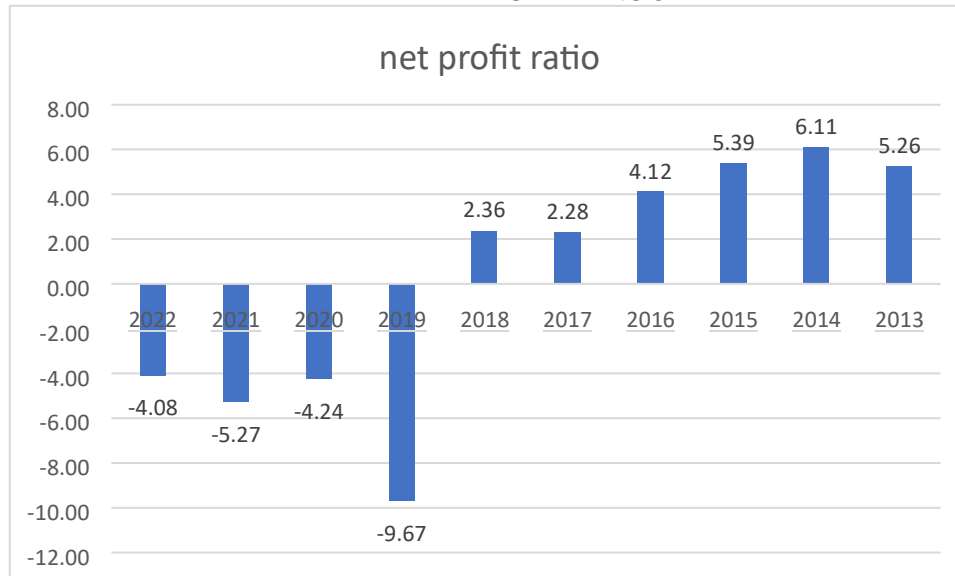
YEARS	Net Profit	Net Sales	Net Profit Ratio
Mar-22	-11,234.70	2,75,235.23	-4.08
Mar-21	-13,016.14	2,46,972.17	-5.27
Mar-20	-10,975.23	2,58,594.36	-4.24
Mar-19	-28,933.70	2,99,190.59	-9.67
Mar-18	6,813.10	2,88,596.09	2.36
Mar-17	6,063.56	2,65,498.47	2.28
Mar-16	11,100.72	2,69,560.11	4.12
Mar-15	14,059.65	2,60,734.33	5.39
Mar-14	14,104.18	2,30,677.10	6.11
Mar-13	9,862.49	1,87,652.84	5.26

INTERPRETATION

The above table shows the net profit Ratio of TATA Motors. The net profit ratio of the company is generally decreasing from 2014 to 2018. After that the net profit of the company's net profit has drastically declined as the company had facing loss for past four years.

INFERENCE

The net profit ratio was highest in the year 2014 it is 6.11 and its lowest was -9.67 in the year of 2019.

**CHART NO 5****OPERATING PROFIT**

Operating profit ratio is a financial metric that measures a company's operating profit as a percentage of its revenue. It is also known as operating margin or return on sales. Operating profit is calculated by subtracting the company's operating expenses from its revenue. Operating expenses include the costs of goods sold, salaries and wages, rent, and other overhead expenses.

Operating Profit Ratio = Operating Profit / Revenue x 100%

TABLE NO 6

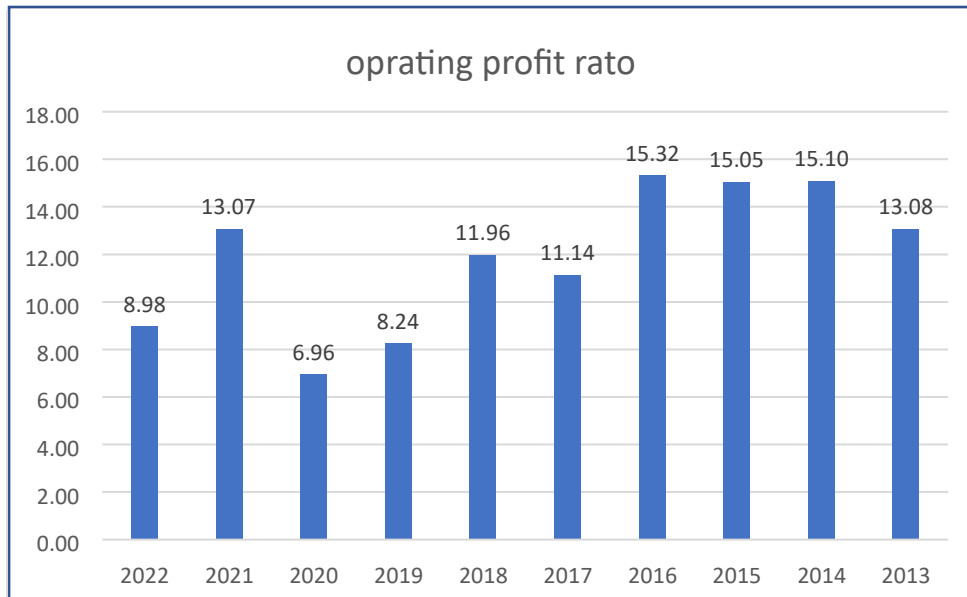
YEARS	Operating Profit	Net Sales	Operating Profit Ratio
Mar-22	24,720.09	2,75,235.23	8.98
Mar-21	32,287.43	2,46,972.17	13.07
Mar-20	17,987.07	2,58,594.36	6.96
Mar-19	24,664.33	2,99,190.59	8.24
Mar-18	34,526.38	2,88,596.09	11.96
Mar-17	29,588.69	2,65,498.47	11.14
Mar-16	41,305.62	2,69,560.11	15.32
Mar-15	39,238.65	2,60,734.33	15.05
Mar-14	34,837.70	2,30,677.10	15.10
Mar-13	24,547.30	1,87,652.84	13.08

INTERPRETATION

The above table shows the Operating profit Ratio of TATA Motors. The Operating profit ratio of the company is low compared to the previous years but it is not entirely low and declined, the rate is increasing and decreasing like a zigzag and the operating profit ratio is never gone in the negative rate for the past ten years.

INFERENCE

The net profit ratio was highest in the year 2016 it is 15.32 and its lowest was 6.96 in the year of 2020.

**CHART NO 6****TREND ANALYSIS**

The term “Trend Analysis” refers to one of the most useful analytical tools employed for financial analysis of statements. Trend analysis is a valuable financial analytical tool that is used for evaluating financial statements. This type of analysis involves comparing the changes in each line item across different time periods in order to gain meaningful insights. By measuring the movement of line items in terms of amount or percentage change year over year, trend analysis helps to identify significant trends and changes over time.

The analyst can effectively compare two or more companies over time with the aid of trend analysis. It may also be contrasted to the industry standard. In other words, it aids in understanding a particular firm's strength or weakness in relation to other similar firms in the industry.

The formula for trend analysis can be derived by using the below formula:

Change in Amount=Current Year Amount-Base Year Amount

Percentage Change= (Current Year Amount-Base Year Amount)/Base Year Amount



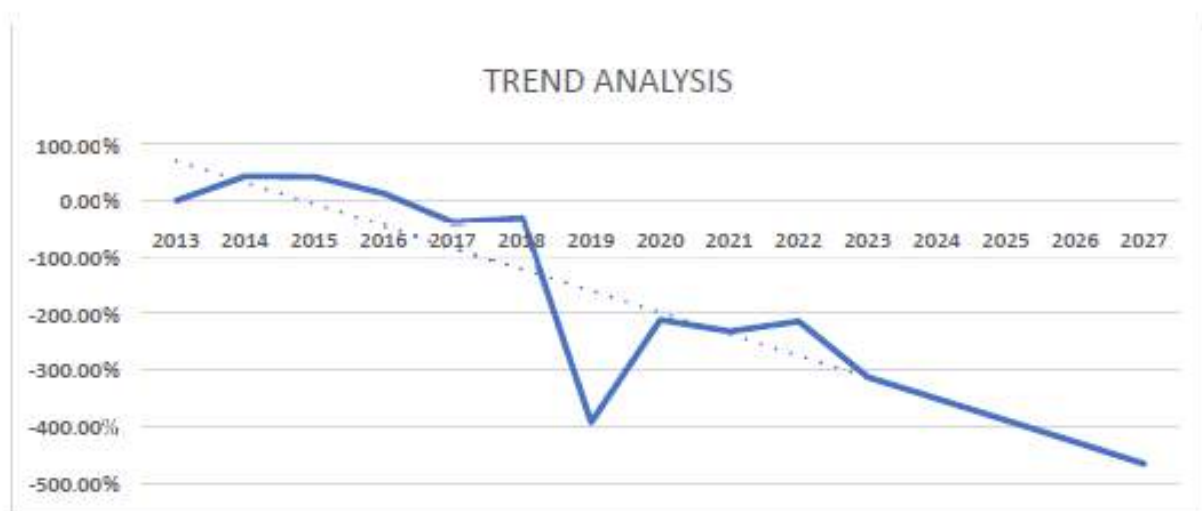
TABLE NO 7
TABLE SHOWING TREND ANALYSIS OF TATA MOTORS LTD

YEAR	NET PROFIT	CHANGE IN AMOUNT	PERCENTAGE AMOUNT
2013	9,862.49	0.00	0.00%
2014	14,104.18	4,241.69	43.01%
2015	14,059.65	4,197.16	42.56%
2016	11,100.72	1,238.23	12.55%
2017	6,063.56	-3,798.93	-38.52%
2018	6,813.10	-3,049.39	-30.92%
2019	-28,933.70	-38,796.19	-393.37%
2020	-10,975.23	-20,837.72	-211.28%
2021	-13,016.14	-22,878.63	-231.98%
2022	-11,234.70	-21,097.19	-213.91%
FORECASTED FUTURE VALUES			
2023	-21023.776	-30,886.27	-313.17%
2024	-24807.07945	-34,669.57	-351.53%
2025	-28590.38291	-38,452.87	-389.89%
2026	-32373.68636	-42,236.18	-428.25%
2027	-36156.98982	-46,019.48	-466.61%

INTERPRETATION

The above table 4.5 shows the trend value of the net profit for the study period of 2013 to 2022. The analysis also shows the trend rate of the forecasted net profit value for the next five years from 2023 to 2027. From the below trend rate, it shows a declining growth and it shows that the company is facing a loss for a long period. This shows if the company's growth continuous declining the company will face even more loss in next 5 years.

CHART 7
CHART SHOWING TREND ANALYSIS OF TATA MOTORS LTD





FINDINGS

- † The current ratio is below the ideal ratio for the past ten year, it has an unstable growth in past ten years and it is not satisfying.
- † Quick ratio of the company is not satisfactory because it is lower than the standard ratio.
- † The company has a low Proprietary ratio that indicates that it is more depend on debt financing which is a great risk to the company.
- † The debt ratio of the company is considerably high according to the ideal ratio this shows that the company is facing the financial risk.
- † Net profit ratio shows that the company facing loss for past four years.
- † The operating profit ratio tells that the operating expenses in more than the profit but it never goes to negative in the past ten years.

SUGGESTIONS

The company has to improve its short-term financial position by increasing its working capital. It has no sufficient funds to its short-term liabilities and it has to work more to fulfil its short-term obligations. The company is facing loss for past four years this shows that the company does not pay the dividend to its investors and this may create a bad impact on the investors. So, it is very important to increase its sales revenue. The activity ratio shows that the company should improve in use its assets efficiently. And the solvency ratio says that the company is more rely on its debt to finance and cannot meet their long-term obligations as it should focus and improve the cash flow of the company and working capital to face the longterm obligations. The company should increase its equity capital and work more on capital for financing.

CONCLUSION

The study on financial performance analysis of TATA MOTORS is stated in this report, this shows the company's financial analysis for the period of 10 years. The result revealed that the company has performed very bad almost in all parameters. We can see Tata Motors' downfall, but it is expected to rebound because it is such a big company. The profitability position of the company is not promising, that the company, has to decrease the cost of production and keep the cost lower or increase the sales price and also need to improve the efficiency in converting sales into actual price.

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THE THEME OF 'FRIENDSHIP' IN THE BOND'S NOVEL "THE ROOM ON THE ROOF"

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ABSTRACT

There is a famous saying all over the world that "A friend in need is a friend indeed." Friendship is a very noble behavior from a humanitarian point of view. It is the most valuable asset in life. It is worshiped by the people as it brings good old memories to the people and makes them happy even in difficult times. It starts from the birth of a human being and continues till death. It is a quality and develops among different people in the society. During friendship people become one and share happiness and sorrow in their life. People not only join in happy times but also help their friends in difficult times. Wedding ceremonies, birthday celebrations, and other large celebrations are examples of large gatherings. The native likes to spend more time with his friend. Where many people who know each other come together to cultivate and celebrate friendship. Writers all over the world have appreciated the concept of friendship in their short stories, poems, and novels.

Ruskin Bond who is a writer promotes friendship with the right words. Ruskin was a friend of Bond, who is depicted in his novel "The Room on the Roof". He wrote "The Room on the Roof" while he was only seventeen. For this achievement he was awarded the John Llewellyn Rice Prize in 1957. His dedication towards his friends is reflected which is very good and commendable. In 1957 he was awarded the John Llewellyn Rice Prize for this novel. The paper aims to highlight the theme of 'friendship' in the novel "The Room on the Roof".

KEYWORDS: Friendship, Ruskin Bond, The Room on the Roof.

INTRODUCTION

Around the world, there is a well-known saying that goes, that "A friend in need is a friend indeed." There are several people in an individual's life who leave an imprint on their memory for a lifetime. Friendship is seen as a very noble human behaviour. People worship it because it evokes pleasant memories and makes them joyful even in adverse circumstances. The true friend will always help according to his/her limits whereas other people identifying themselves as friends once will isolate themselves from other's problems. It occurs between two persons in a variety of scenarios. It begins with the birth of a human being and ends with death. In his book "The meaning of Friendship," Mark Vernon has categorized friendship into three groups. He spoke:

"He looked around him and saw three broad grouping of relationships people called friendship. The first group are friends primarily because they are useful to each other - like the friendship between an employee and a boss ... they share goodwill because they get something out of the relationship. The second group are friends primarily because some pleasure is enjoyed by being together; it may be the football, the shopping, the gossip... This, though, is not true of the third group. These are people who love each other because of who they are in themselves." (4)

Friendship holds a very special place in the life of people in their childhood and youth. It is a virtue and develops among various people in society. It is evident in society. During friendship, people unite and share happiness and sorrow in their life with each other. People not only participate in good times but also support friends in bad times. Some people have the nature of befriending others as a hobby, while some people have the nature of fulfilling their needs from others. Huge gatherings can be seen in the case of marriage functions, birthday parties etc. where many people, who know each other gather, develop, and



celebrate friendships. Friendship is similar to medicine in that it treats certain problems that cannot be immediately cured but provide relief to the sufferer indirectly. Because of their distinct characteristics, some people become friends who will never be forgotten.

Ruskin Bond is one of the most well-known and well-liked figures in English literature. He is an Indian of British parentage. The majority of his works are composed in simple English that anyone from a tiny Children to a young adult can enjoy. He typically exploits his past experiences in his work, which are mostly reminiscence. These kinds of literature were quite popular in the eighteenth century. He brings forward friendship in true terms. For Ruskin Bond, friendship is like the symphony of life. He considers his pals to be the true companions of his various stages of life. In the journal titled "*Music of Life: A Quest of Hidden Rudiments in The Writings of Ruskin Bond*," Gourav Agarwal highlights the importance of Ruskin Bond's behaviour towards friendship. He states: "Friends have a special place in his life. He makes friends so easily that a child can do only. In his view, friendship is a medium to spread love and, in his literature, one can find out this never fading commitment running through in his characters." (265) His dedication towards his friends is very good and appreciable. When it comes to writing, he is very close to the people around him. He is a storyteller who tells the stories of those around him. Most of his protagonists in his short stories and novels are surrounded by friends, and this motif is especially prominent in his novels. Ruskin has experienced life with friends which are reflected in the novel *The Room of the Roof*. Ruskin Bond states:

"The Room on the Roof was based on a journal I kept when I was seventeen, just out of school. When I went to England I turned it into a work of fiction, and after writing two drafts, found a sympathetic publisher in Andre Deutsch (and his partner, Diana Athill). It was not a best seller but it was kindly received by most critics (except for John Wain, who said I wrote 'babu English'), and received the John Llewellyn Rhys Prize in 1957. This was an award given to a Commonwealth writer under this for 'an outstanding literary achievement'." (vii)

Theme of Friendship in "*The Room of the Roof*"

Ruskin Bond depicted various circumstances in his novel "The Room on the Roof" in which one buddy aided another friend due of their fondness and good nature. The story depicts his friends' support during his difficult times when he ran away from his house after a fight with his guardian. In the novel, Rusty's pals were all encouraging and supportive of him. There are different kinds of displays of friendship or relationship.

The story revolves around Rusty's life. He, a seventeen-year-old Anglo-Indian, was born in India. Rusty under Mr John Harrison felt very lonely in his home. During his lonely days on the upper room, the creature lizard was his listener. Mr Harrison, Rusty's guardian, does not want Rusty to associate with any Indian underprivileged people. Mr. Harrison who is an Englishman deprived Rusty of his desires to be free and friendly. Mr Harrison said, "*That point is, I have told you never to visit the bazaar. You belong here, to this house, this road, [and] these people. Don't go where you don't belong.*" (31) Rusty did not like Harrison's way of command. He wished to make friends, but due to Mr Harrison's procedures, he was unable to make friends with the youngsters around him, regardless of race. He likes to walk alone and talk to himself. He sees caste discrimination as injustice.

Rusty's guardian regards himself as the highest caste in front of the Indian people in the bazaar. He tries to retain his dominance by keeping his distance from them, and he feels like a dominating authority to them. "*Since his parents had died, Rusty had been kept, fed, and paid for, and sent to an expensive school in the hills that was run on 'exclusive European lines.' He had, in a way, been bought by Mr. Harrison. And now he was owned by him.*" (10)

In the novel, after the death of Rusty's parents, Mr Harrison had taken care of Rusty. He gives him everything that a parent would have given him. He wanted Rusty to become an Englishman. The novel shows that Mr Harrison wanted Rusty to protect the dignity of the family by following the protocols of an upper-caste man. When Rusty did not obey the conditions set by Mr Harrison, a kind of hatred grew. He beats Rusty with a Malacca Cane. Rusty was in Mr Harrison's house under his supervision. As a result, he had to obey Mr Harrison. At one point in the novel, the lower caste sweeper boy tried to be polite and converse with Rusty, but Rusty never showed any interest in him. In her book "*Ruskin Bond's World. Thematic influences of Nature, Children and Love in his major works*," Gulnaz Fatma writes "so, Bond's circle of friendship was therefore limited. Among servants, he had friends like the tonga (horse-cart) driver Bansi and the gardener Dukhi. Bansi always gave him free tonga rides" (9).

In the story, Mr Harrison is shown to be a loyal friend to Rusty's deceased parents, who took care of him and ensured that he did not fall behind in his academics. As a result, it is clear that Mr Harrison's responsibilities to Rusty as a symbol of friendship to his parents are motivated by a variety of factors. When Rusty rebelled against his guardian and fled his house to live a life of liberty on his own, the plot of this novel began to take shape. When he was confronted with the harsh reality of the outside world, his buddies came to his aid and helped him maintain his resolve and hard work. "Ranbir was pleased. He said, 'I will be waiting in the jungle behind your house. When you hear the drum-beat in the jungle, then it is me. Then come'" (29).

Friendship brings two people together to form a strong bonding. It is noticed in the novel when Rusty developed a friendship with Somi and Ranbir. He was comfortable sharing his personal life with them. "Rusty felt at ease and began to talk, telling his companions about his school in the hills, the house of his guardian, Mr. Harrison himself, and the supple Malacca cane.



The story was listened to with some amusement: apparently Rusty's life had been very dull to date, and Somi and Ranbir pitied him for it." (27) His friends listened to him, felt sorry for him, and consoled him with their words. This happens amongst friends when they share their joys and sorrows. People's hearts are lifted when they share their sadness.

The tale depicts an occurrence in which Ranbir, Rusty's friend, would provide a drum beating symbol and Rusty would accompany him to the bazaar to play Holi. Holi is a cultural celebration in India where everyone puts colour on each other and enjoys themselves. Mr Harrison, on the other hand, had a British attitude and would never want Rusty to be in the company of Indian children playing the Holi game. As a result, Rusty planned to play pranks on his guardian and escape into the jungle through the backside window. Rusty disobeys his Guardian once more and goes out to play Holi with his mates. He ignores all the rules and joins Ranbir to honour his vow to celebrate Holi with him. "For one day, Ranbir and his friends forgot their homes and their work and the problem of the next meal, and danced down the roads, out of the town and into the forest. And, for one day, Rusty forgot his guardian and the missionary's wife and the supple Malacca cane, and ran with the others through the town and into the forest." (41) He is so engrossed in the joy of Holi with his pals that he is unconcerned about his guardian's Malacca cane or his royal title.

In one episode, one of Rusty's buddies in the bazaar, Suri, was always causing difficulty for people with his petty mischiefs. When Suri's friends learn about his weakness of being terrified of being colored, they want to make amends with him for the issues he has caused others. This is a good type of animosity in which neither party harms the other but makes a mockery of the situation.

The day of revolt dawned when Rusty disobeyed his Guardian and assaulted him in return after his Guardian whacked him in the face with the Malacca cane. "He made his escape from the bedroom window. From the gate he could see the missionary's wife silhouetted against the drawing room light. He laughed out loud. The woman swiveled round and came forward a few steps. And Rusty laughed again and began running down the road to the bazaar." (47) Rusty could no longer stay in his residence after his uprising against his guardian. Despite the unknown future that lay ahead of him, he had opted to break the chain of command and live a life of independence on his own. He had no other means of subsistence, but the need for independence was so strong within him that he only felt the satisfaction of freedom today. He had no plans for the future and was hurrying towards the market, which had fulfilled his independence dream and given him plenty of satisfaction in the time he spent with his companions.

On the first night of his inherited exile, when he had to face the rain, cold, and lack of shelter, Rusty realised the challenge. He began to confront this stage of his life. His choice has left him apprehensive about his future. On the night he left the house, he had a fleeting idea of returning and pleading with his guardian for forgiveness. But something had shattered inside his heart, and he had acquired a loathing for his guardian, Mr Harrison. "I'll stay with you only until I find a job, [any] kind of job, there must be something" (56). His buddies helped him get work as an English tutor. Rusty was certain that he had made the correct decision by leaving his house and making his own mark in this culture because of the confidence that his buddies provided him. He is a highly self-respecting young man who does not want to be a burden on his buddies for an extended period of time. He aspired to be self-sufficient and to make a living.

In the novel *The Room on the Roof*, Rusty's friends were unique and everyone put an impression on his mind in such a way that their absence created a sad feeling in him. In the story, one such friendship shown is between Rusty and Somi. She (Somi) is a character who finds delight in assisting others and establishing new acquaintances, and she approaches Rusty to assist him in getting a lift in his cycle. He belonged to a middle-class family in India. He was just concerned with assisting Rusty and putting him in a comfortable posture. He was uninterested in receiving anything in exchange for the favour he wanted to perform for Rusty, who was basically impoverished when he came to Somi and announced that he had deserted his residence.

"Friends hold a significant place in the life of an adolescent. They are a ray of hope. Rusty was provided food and a place to sleep in the night by Somi, an Indian boy of his own age. He felt very comfortable in the house of Somi. "In Somi's 'middle class Indian house,' Rusty felt 'safe and happy.' There was a feeling of bond and trust. There was no feeling of obligation from either side. He says 'in true friendship, there is no formalities and no obligation'." (74)

Instead of being concerned, Somi stated that he will offer all assistance and housing to Rusty until he finds work or settles down. Somi's family is likewise kind and supportive of Rusty. Characters such as Somi form connections based on their preferences and are unconcerned by societal structures. As a result, Rusty had the same sentiments as Somi and his other buddies who assisted others in their time of need.

Friendship may occasionally blossom into love. Attraction and manifestation at a tender age makes it tough to settle on a connection such as friendship, love, sister, brother, and so on between two distinct genders. friendship is a type of unlawful connection. The novel depicts Rusty's fascination with Meena. She is married and has a child. "Meena and Rusty stood by the window in silence, hand in hand. Rusty was prepared to stand there, holding hands forever. Meena felt a sisterly affection for him, but he was stumbling into love" (85). Meena too shows interest in Rusty.



Some characters become friends quickly and change the course of life. Ranbir drives away the dullness in a person and brings the cheerful side in the front. Ranbir changed the character of Rusty from an isolated kid to a friendly person who had gathered the confidence of sharing his situations with others. In the influence of friends like Ranbir and Somi, Rusty was all total a new person who had confidence in himself and had broken all the barrier of caste.

Friendship blossoms when individuals care for and support one another. Sometimes people like the character of another person because of their personality, looks, or speaking manner, for example. This is noticed in the character of 'Kishen' who was a very lazy kind of person. Rusty constructed a fondness for him as a result of his open-hearted conduct. Kishen both condemns and praises people in front of the camera. He does not possess a dual personality. He communicates the feelings he feels frankly and without fear. He takes benefit of Rusty's predicament in the narrative and hires him as his guide. He looked up to him as his elder brother and followed him as a disciple. In his adolescence, he displayed juvenile behaviours. 'Kishen' individuals are drawn to others and form bonds of friendship with one another. Rusty was his instructor and Kishen's guide.

Rusty and Kishen also formed a bond in which they relied on one other to fulfil their desires. Kishen for his freedom in studying, and Rusty for his livelihood as Kishen's instructor. Rusty also stood by Kishen and cared after him as if he were a protector. This need for one other created a deep kinship between them, despite their opposing ideals. Within a few days, Kishen had become confidence in himself and was now hiding Rusty from the outside world. Kishen's life might have been further ruined if Rusty hadn't come to his aid. If Kishen had been a horrible person, he would have refused to join Rusty to an uncertain existence in Dehra, but his loyalty to Rusty demonstrates the power of companionship, which can bring a person in hard circumstances into a pleasant and fulfilling one. This occurred to Rusty, where his friends like Somi, Ranbir, and others assisted him in providing a wonderful life throughout his difficult times. Rusty now has the same opportunity to free Kishen from the confines of the harmful habit.

At the end of the novel, it is revealed that Rusty abandons his goal to travel to England in order to live with his buddy Kishen, look after him, and create a future in this country, India. They decided to return to the room on the roof in Dehra and start their lives there.

CONCLUSION

The topic of friendship reflects the writer's good side, since most of his works conclude on a happy note. Friendship will always exist in our universe and will help individuals in society. There has never been an alternative to real friendship, and there will never be one in the future. Friendship is the most important thing in people's lives. When Rusty left his residence, his buddies were a huge source of encouragement, allowing him to move forward his career with confidence. Friendship is an amalgamation of delight and rage. It's similar to a familial bond formed by two strangers who meet and create an entirely fresh connection on their own. The bonding of friendship between Rusty, Somi, Ranbir and Kishen is unbreakable and each of them cares for the other irrespective of wherever they are. In the novel "*The Room on the Roof*", The character Rusty, Somi, Ranbir, Meena, Kishen, and Mr Harrison set an example of friendship.

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DESIGN AND FABRICATION OF ECO-FRIENDLY ROAD CLEANER MACHINE

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ABSTRACT

Cleaning is the main basic need for all human beings and it is necessary for daily routine process. The conventional road and floor cleaning machine is most widely used in many applications such as example roads, railway stations, airports, hospitals, bus stands, in multi buildings, colleges etc. also this machine uses human energy for its working operation. It is a user friendly as well as eco-friendly. In our project we are aimed to use easily available material with low cost and it can be easily fabricated and easy to use and control. It is the better alternative for conventional machine. The manually operated eco-friendly road and floor cleaner can work very efficiently with respect to covering area, time and cost of road cleaning process compared with the existing machineries. Also, it is economical to use.

KEYWORDS - Cleaning, Road, Floor, Conventional, Economic.

I. INTRODUCTION

Cleaning is a necessary factor of daily routine process. Effective cleaning and sanitizing help and protect the health of human beings directly and indirectly. The Road cleaner is used to keep our surroundings clean. So that we feel fresh while walking on the streets. Generally, in the era of modern technology, different devices such as electric motors, diesel engines, and robots are being used to clean the floor, road. But such processes create abundant pollution, maintenance and are very tough to carry out. So, in order to save energy and save nature, there is a need to develop, user-friendly road and floor cleaning machine.

A machine which should be operated manually so that it can be as an alternative for conventional electric cleaning machine. The dust cleaning machine system is fixed with a pair of wheels which are connected with the help of shaft. The shaft makes the wheels connected to one and other. The wheels are moved to the desired position with the help of manual force, which can handle is provided to move. The handle can be adjusted for a required height and are provided three adjusting holes for it. A chain drive is connected to the wheels and gear at each side. The chain is moved according to the wheel and gear.

The brush moving the alternative direction of the wheels move and the brush brooms the waste present on the road also it dumps the waste into the waste-collecting box. The waste collection box is removed to dump the waste into desired places.

II. METHODOLOGY

We came across the points that the available road cleaning machines that are in use cannot clean the floor and compact roads effectively, like in collages, companies, hospitals, and household purposes. Thus, for this an alternative method is essential. To overcome these disadvantages a simple and eco-friendly design is made. This machine is feasible to use for the household purposes and compact spaces. According to precious research the conventional road cleaning systems are costly and heavy that cannot clean most of the rough spaces. The alternative method that is used to overcome this drawback effectively.



III. MODELING AND ANALYSIS

Model and Material which are used is presented in this section.



Figure 1: Eco-friendly Road Cleaner Machine

IV. RESULTS AND DISCUSSION

Mechanical sweeper for industrial/ professional cleaning and sweeping requirements better. The action of the brooms throws the dust and the debris into a large capacity. Heavy Duty Machines. High Pressure Machine. Cleaning machine is very much useful in cleaning floors and outside ground in hospitals, houses, auditorium, shops, bus stands and public places etc. Many of floor cleaning machines are available but we developed machine is a very simple in construction and easy to operate. Anybody can operate this machine easily. Hence it is very useful in hospitals, any large area space. The time taken for cleaning is very less and cost is also very less. Maintenance cost is less. In our project we have made the machine to operate in a fully mechanical way. The floor cleaner is very simple in a construction and very easy to operate, anyone can operate it. Without any prior training of any sorts with safety. The system is fixed with pair of wheels which are connected with the help of shaft. The shaft makes the wheels connected to one and other.

1. Manual cleaning is time consuming so, by using manually operated road cleaning machine we can save time.
2. It was seen from literature survey that cleaning is less effective where the road seems to be very rough and damage.
3. Maintenance of machine is less and it is easy to control and clean.
4. Vacuum, Brushes, Vipers, Mobs, Scrubbers, etc. from these can be used to make the design economical and conventional.
5. Further modification in the vehicle can be made automated using sensors and electrical circuits.
6. The vehicle can be modified according to the Indian road conditions and where it needs to be used.
7. Manual cleaning is time consuming so, by using manually operated road cleaning machine we can save time. 26
8. It was seen from literature survey that cleaning is less effective where the road seems to be very rough and damage.
9. Maintenance of machine is less and it is easy to control and clean.
10. Vacuum, Brushes, Vipers, Mobs, Scrubbers, etc. from these can be used to make the design economical and conventional.
11. Further modification in the vehicle can be made automated using sensors and electrical circuits.
12. The vehicle can be modified according to the Indian road conditions and where it needs.

V. CONCLUSION

Project, we conclude that, our machine is safe, ecofriendly and reduce the cost and time of dust cleaning done by manual process. This is the best alternative method for cleaning road side dust. In our cleaning machine when motor starts, Scrubber brush scrubs the dust separated on road divider and cyclone vacuum collector collect that dust into the collector tank. Only one person is required to operate machine and cleaning is done at very less human effort. Using this Simplified Road Cleaning Machine with Modified Technology, Suitable for Indian Conditions, because of its reliability and expendability. Due to total cost of the system is very low and only one time investment has to be made for reducing labor charges. It will reduce human efforts drastically and very helpful to clean roads even in traffic. Due to these benefits, usage of this system helps in cleaning roads. I think there may be chance of using this machine in future of India A mechanical setup is intended with synergies of mechanics and mechanical systems to produce economical cleanup, each at floor and therefore the road surfaces. This project works implements the operated by hand eco-friendly road cleaner for road cleanup that reducing the value, human efforts likewise as time. it's the simplest various for machine-driven road cleanup machine throughout power crisis. it's found that the present road cleanup machines use gasoline and diesel. It will cause pollution and conjointly the vibration made within the machine causes sound pollution. The machine is economical. Manual



cleanup might cause shoulder downside thanks to continuous sweeping. The straightforward mechanisms used during this system makes the vehicle easier for operation.

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PROCESSED FOOD CONSUMPTION AND HEALTH OUTCOMES AMONG WORKING WOMEN

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ABSTRACT

The present study aims to know the factors influencing for the consumption of processed food among working women and to know the health outcomes in it. 300 working women were chosen to conduct the research from. Simple random sampling technique were used to identify the respondents among all people. Both primary and secondary data were used. Primary data collected from questionnaire and secondary data collected from E-Journals, Journals, Magazines, Websites etc., To analyse the collected primary data, tools like Simple Percentage, Chi-Square Analysis, Ranking analysis, Correlation and Regression were used. From the study, it is found that most of the respondents choose convenient as the reason for the consumption of processed food. Most of the respondents spend Rs.2001 – Rs.3000 for the consumption of processed food per month. The study concludes that, we need a healthy lifestyle to build up a healthy immune system and to avoid disease.

KEY WORDS: Processed food, working women, health outcomes.

INTRODUCTION

India's unique culture, which is made up of several regions and states, is reflected in the country's distinct cuisine. Indians traditionally enjoy eating at home, a preference that is shared by both individuals and their respective religions. However, there has been a noticeable change in food consumption patterns among urban Indian households throughout time as a result of both are engaged in occupation and slowly adopting western culture. Consumers are individuals or groups who want to order and utilise purchased items, products, or services primarily for personal, social, family, household or similar requirements that are not directly tied to entrepreneurial activity.

Food processing has developed into one of the fastest-growing businesses worldwide, including in India. In a developing economy like India, the processed food business is still in its infancy.

It is important to eat nutritious foods that meet all of the body's nutritional requirements and to avoid foods as much as possible that include industrial additives that could be detrimental to physical health.

STATEMENT OF THE PROBLEM

Proposed study is to identify the consumption of processed food and health outcomes among working women. The changing lifestyle of people makes a drastic change in their food. People are more focused on less time taking activity for consumption pattern. Though processed food was fast, it is expensive and there is increased availability of poor nutrient in it. While there's not a problem with including some processed foods as part of a balanced diet, there is growing concern that processed food contain a lot of added salt, sugar and fat and are often low in fibre. So, study is mainly conducted to find the consumption and health outcomes in processed food.

OBJECTIVES

- To know the socio-economic profile of working women.
- To identify the factors influencing the consumption of processed food.
- To identify the market players in processed food industry.
- To study the health outcome awareness of working women on processed foods.



SCOPE OF THE STUDY

Each and every research work that has been carried out should have some scope, which will help the management in taking decision regarding the future which again leads to research. The present study has focused on the consumption of processed food and health outcomes among working women. In this study, it has focused on the factors influencing such as price, quality, convenience, time consumption and easy availability of processed food. The study gives an insight into the important factors on purchasing frequency of the processed food.

RESEARCH METHODOLOGY

According to C.R. Kothari, "Research methodology is a systemized effort to gain new knowledge."

RESEARCH DESIGN

Research design is the set of methods and procedures used in collecting and analysing measures of variables specified in research problem. Descriptive research design has been followed to conduct the research study.

SAMPLE SIZE

The sample size for the study is 300 respondents.

SAMPLING METHOD

The respondents were chosen by using simple random sampling methods. Simple random sampling is a type of probability sampling in which the researcher randomly selects a subset of participants from a population.

METHODS OF DATA COLLECTION

SOURCES OF DATA

Both primary and secondary data are used for the data collection.

PRIMARY DATA

The present study is based on primary data. Questionnaire was the main tool for collecting the primary data.

SECONDARY DATA

Secondary data required for the study was collected from books, magazines, journals, newspapers, past research, reports and various websites.

TOOLS FOR ANALYSIS

The tools used for analysis are

- Simple percentage analysis
- Rank analysis
- Chi – square test
- Regression analysis
- Correlation analysis

LIMITATIONS OF THE STUDY

- The working women were reluctant to give correct information due to time constraint in the preparation of food.
- As the study was done within a limited time, investigator could not select the sufficiently large sample for the study.
- Findings related to this study are purely based on respondent's opinion.

REVIEW OF LITERATURE

A literature review is a survey of scholarly sources (such as books, journal articles, and theses) related to a specific topic or research question.

(2022) Huda Hameed Kadhim Alabbody "A representative sample of the public's attitudes towards eating processed foods." It is important to eat nutritious foods that meet all of the body's nutritional requirements and to avoid foods as much as possible that include industrial additives that could be detrimental to physical health. 400 people from Baghdad city were randomly chosen for a study. The questionnaire asked about demographics and consumer eating habits with regard to phosphate-added sodas and commercially processed items such as hamburgers, pizza, instant noodles, and soda. The majority of the sample was unaware of the adverse effects of phosphate additions in processed foods and beverages.

**ANALYSIS AND INTERPRETATION****SIMPLE PERCENTAGE ANALYSIS****Age:**

Table 1 describes the age of the respondents. It is categorized as below 25 years, 26-30 years, 31-35 years and above 36 years.

Table 1: Age of the respondents

S. No.	Age	Respondents	
		Number	Percentage (%)
1	Below 25 years	61	20.3
2	26-30 years	91	30.4
3	31-35 years	93	31
4	Above 36 years	55	18.3
	Total	300	100

Sources: Primary data

Interpretation

Table 1 shows that out of the total respondents taken for the study, 61 (20.3%) respondents belong to the age group of below 25 years, 91 (30.3%) respondents belong to the age group of 26-30 years, 93 (31%) respondents belong to the age group of 31-35 years and 55 (18.3%) respondents are above 36 years.

Inference:

It is concluded that majority (31%) of the respondents belong to the age group of 31-35 years.

Reasons for consuming processed food products

Table 2 describes the reasons for consuming processed food products of the respondents. It is categorized taste, convenient, time saving and easy to make.

Table 2: Reasons for consuming processed food products of the respondents

S. No.	Reasons for consuming processed food products	Respondents	
		Number	Percentage (%)
1	Taste	103	34.3
2	Convenient	121	40.4
3	Time saving	51	17
4	Easy to make	25	8.3
	Total	300	100

Source: Primary data

Interpretation

Table 2 shows that out of the total respondents taken for the study, 103 (34.3%) respondents choose taste as the reason for the consumption of processed food, 121 (40.4%) respondents choose convenient as the reason for the consumption of processed food, 51 (17%) respondents choose time saving as the reason for the consumption of processed food and 25 (8.3%) respondents choose easy to make as the reason for the consumption of processed food.

Inference

It is concluded that majority (40.4%) of the respondents choose convenient as the reason for the consumption of processed food.

Taste of processed food

Table 3 describes the taste of processed food of the respondents. It is categorized as highly satisfied, satisfied, neutral, unsatisfied and highly unsatisfied.

Table 3: Taste of processed food

S. No.	Taste of processed food	Respondents	
		Number	Percentage (%)
1	Highly satisfied	100	33.3
2	Satisfied	105	35
3	Neutral	73	24.3
4	Unsatisfied	16	5.4
5	Highly unsatisfied	6	2
	Total	300	100

Source: Primary data

**Interpretation**

Table 3 shows that out of the total respondents taken for the study, 100 (33.3%) respondents were highly satisfied with the taste of processed food, 105 (35%) respondents were satisfied with the taste of processed food, 73 (24.3%) respondents were neutral in the taste of processed food, 16 (5.4%) respondents were unsatisfied with the taste of processed food and 6 (2%) respondents were highly unsatisfied with the taste of processed food.

Inference

It is concluded that majority (33.3%) of the respondents were highly satisfied with the taste of processed food.

Health outcomes of consuming processed food:

Table 4 describes the health outcomes of consuming processed food of the respondents. It is categorized as diabetes, obesity, digestive problem and high blood pressure.

Table 4: Health outcomes of consuming processed food

S. No.	Health outcomes of consuming processed food	Respondents	
		Number	Percentage (%)
1	Diabetes	53	17.7
2	Obesity	116	38.7
3	Digestive problem	105	35
4	High blood pressure	26	8.6
	Total	300	100

Source: Primary data

Interpretation

Table 4 shows that out of the total respondents taken for the study, 53 (17.7%) respondents choose diabetes as a health outcome of consuming processed food, 116 (38.7%) respondents choose obesity as a health outcome of consuming processed food, 105 (35%) respondents choose digestive problem as a health outcome of consuming processed food and 26 (8.6%) respondents choose high blood pressure as a health outcome of consuming processed food.

Inference

It is concluded that majority (38.7%) of the respondents choose obesity as a health outcome of consuming processed food.

Information they see in the processed food

Table 5 describes the information they see in the processed food of the respondents. It is categorized as added sugar/salt, proteins, fat and carbohydrates.

Table 5: Information they see in the processed food

S. No.	Information they see in the processed food	Respondents	
		Number	Percentage (%)
1	Added sugar/salt	83	27.7
2	Proteins	117	39
3	Fat	60	20
4	Carbohydrates	40	13.3
	Total	300	100

Source: Primary data

Interpretation

Table 5 shows that out of the total respondents taken for the study, 83 (27.7%) respondents see added sugar/salt in the processed food, 117 (39%) respondents see proteins in the processed food, 60 (20%) respondents see fat in the processed food and 40 (13.3%) respondents see carbohydrates in the processed food.

Inference

It is concluded that majority (39%) of the respondents see proteins in the processed food.

**RANK ANALYSIS**

Factors influencing the consumption of processed food products by the respondents:

Table 6: Factors influencing the consumption of processed food products by the respondents

Factors	1	2	3	4	5	6	7	8	9	10	Total score	Ranks
Culture/change in lifestyle	35 (350)	19 (171)	36 (288)	44 (308)	72 (432)	11 (55)	22 (88)	24 (72)	16 (32)	21 (21)	300 (1817)	6
Cost	11 (110)	49 (441)	44 (352)	71 (497)	32 (192)	2 (10)	31 (124)	28 (84)	18 (36)	14 (14)	300 (1860)	4
Convenient	91 (910)	32 (288)	67 (536)	31 (217)	32 (192)	28 (140)	6 (24)	10 (30)	2 (4)	1 (1)	300 (2342)	2
Easy availability	52 (520)	111 (999)	27 (216)	43 (301)	24 (144)	14 (70)	18 (72)	5 (15)	3 (6)	3 (3)	300 (2346)	1
Time saving	56 (560)	45 (405)	62 (496)	36 (252)	48 (288)	22 (110)	5 (20)	14 (42)	8 (16)	4 (4)	300 (2193)	3
Income	4 (40)	14 (126)	9 (72)	10 (70)	16 (96)	31 (155)	10 (40)	20 (60)	62 (124)	124 (124)	300 (907)	10
Passion for cooking	8 (80)	11 (99)	8 (64)	15 (105)	10 (60)	5 (25)	40 (160)	20 (60)	114 (228)	69 (69)	300 (950)	9
Taste	55 (550)	15 (135)	16 (128)	34 (238)	12 (72)	99 (495)	16 (64)	37 (111)	11 (22)	5 (5)	300 (1820)	5
Hunger	15 (150)	50 (450)	10 (80)	11 (77)	30 (180)	27 (135)	94 (376)	27 (81)	31 (62)	5 (5)	300 (1596)	7
Meal pattern	8 (80)	9 (81)	48 (384)	8 (56)	12 (72)	42 (210)	46 (184)	94 (282)	10 (20)	23 (23)	300 (1392)	8

Interpretation

It could be observed from the table 6 factors influencing the consumption of processed food products by the respondents has been calculated.

- According to 300 respondents, easy availability is placed as FIRST RANK.
- According to 300 respondents, convenient is placed as SECOND RANK.
- According to 300 respondents, time saving is placed as THIRD RANK.
- According to 300 respondents, cost is placed as FOURTH RANK.
- According to 300 respondents, taste is placed as FIFTH RANK.
- According to 300 respondents, culture/change in lifestyle is placed as SIXTH RANK.
- According to 300 respondents, hunger is placed as SEVENTH RANK.
- According to 300 respondents, meal pattern is placed as EIGHTH RANK.
- According to 300 respondents, passion for cooking is placed as NINTH RANK.
- According to 300 respondents, income is placed as TENTH RANK.

Inference

Majority of the respondent's influencing factor is easy availability and income is last in ranking.

CHI – SQUARE ANALYSIS

Relationship between frequency of purchase and health outcomes of consuming processed food of the respondents:

Table 7

Relationship between frequency of purchase and health outcomes of consuming processed food of the respondents

Frequency of purchase	Health outcomes of consuming processed food				Total
	Diabetes	Obesity	Digestive problem	High blood pressure	
Daily	9	21	23	5	58
Weekly	22	56	40	12	130
Monthly	18	33	31	7	89
Occasionally	4	6	11	2	23
Total	53	116	105	26	300



To find out the association between frequency of purchase and health outcomes of consuming processed food of the respondents, chi-square test is used and result is given below.

Hypothesis

H₀: There is no significant relationship between frequency of purchase and health outcomes of consuming processed food of the respondents.

H₁: There is significant relationship between frequency of purchase and health outcomes of consuming processed food of the respondents.

Chi-square test

Factor	Calculation value	Df	Table value	Remarks
Frequency of purchase	4.487 ^a	9	16.92	Accepted

Interpretation

It is clear from the above table that the calculated value of chi-square is less than the table value. Hence the hypothesis is accepted stating that there is no significant relationship between frequency of purchase and health outcomes of consuming processed food of the respondents.

REGRESSION ANALYSIS**Relationship between age and reasons for consuming processed food of the respondents:****Hypothesis:**

H₀: There is no significant impact on the age and the social determinant that influence the consumption of processed food by the respondents.

H₁: There is a significant impact on the age and the social determinant that influence the consumption of processed food by the respondents.

Table 8: Model Summary of Regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.067 ^a	.004	.001	1.04090

Predictors: (Constant), age

Table 9 ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.457	1	1.457	1.344	.247 ^b
Residual	322.873	298	1.083		
Total	324.330	299			

a. Dependent Variable: social determinant

b. Predictors: (Constant), age

Table 10 Coefficients

Model	Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	2.340	.159		14.739	.000
Age	-.069	.059	-.067	-1.160	.247

Dependent Variable: social determinant

Interpretation

Table 8 shows that R square value is 0.004, which means that independent variable i.e., age causes 0.4% changes in the dependent variable i.e., social determinant.

Table 9 anova results that p-value is .247 which is greater than 0.05. It shows that there is no significant impact between age and social determinant that influence the consumption of processed food by the respondents.

Table 10 shows the coefficient results. As indicated that the beta value is -.067 which means that the change in independent variable i.e. age by one unit will bring about changes in the dependent variable i.e. social determinant by -.067 units.

Furthermore, the beta value is negative, which indicates the negative impact between two variables or in other words, when independent variable increases by one unit the dependent variable decreases by -.067 units.



CORRELATION ANALYSIS

Relationship between educational qualification and preference of branded processed food products by the respondents:

Hypothesis:

H₀: There is no significant relationship between educational qualification and preference of branded processed food products by the respondents.

H₁: There is a significant relationship between educational qualification and preference of branded processed food products by the respondents.

Table 11 Correlations

		Educational qualification	Preference of branded processed food products
Educational Qualification	Pearson Correlation	1	.138
	Sig. (2-tailed)		.017
	N	300	300
Preference of branded processed food products	Pearson Correlation	.138	1
	Sig. (2-tailed)	.017	
	N	300	300

Correlation is significant at the 0.05 level (2-tailed).

Interpretation

Table 11 shows that correlation of educational qualification and preference of branded processed food products was found to be weakly positive and statistically significant ($r=.138$, $p<.05$). Hence H₁ was supported. This shows that an increase in educational qualification would lead to an increase in the preference of branded processed food products.

SUGGESTIONS

- Reduce the amount of processed foods you eat. The more processed foods you eat, the more preservatives you will eat too. Shop for foods like fresh fruits and vegetables, dries legumes and plain poultry, meats, seafood, milk and eggs.
- Eating processed foods on occasion is fine.
- Choose to steam, bake, grill, braise, boil or microwave your foods, rather than deep fry them.
- The standard of the food products should be increased. The government should implement strict rule for the safety of processed food products.
- Though processed food is easily available these days, it is important to check the ingredients that are added in it.

CONCLUSION

Time is an important resource for all working women in the current world, when life moves quickly. Everyone's daily life involves processed food, but working women's lives are particularly impacted. Due to the influence of the West, Indian eating patterns have evolved, and consumption of these foods is increasing. Women frequently eat these things at home. The market offers a wide variety of processed goods, and they have become a staple of daily living. Working women are more likely to eat processed foods now than they were 20 years ago because of the significant changes in lifestyle, education, income, and consumption habits of Indian consumers. Extending the menu items as a result of efforts to improve branded processed food gave rise to a platform for food innovation and made it simpler to serve a wide range of goods. Working women's increased consumption of processed food is a result of urbanisation, the breakdown of the traditional joint family system, convenience, changing lifestyles, and rising levels of middle-class luxury. The majority of respondents are knowledgeable about the various processed food products and their effects on health. The benefits of consuming it are taste, convenience, and time savings. The link between working women and food and other necessities has undergone significant change, not only in the way that products are purchased but also in the way they are consumed. The study concludes that, we need a healthy lifestyle to build up a healthy immune system and to avoid disease.

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PLANT SPECIES AND DISEASE DETECTION

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ABSTRACT

This survey paper examines the current state of the art in plant species and disease detection using machine learning techniques. The paper explores various approaches, including image-based, and analyses their strengths and weaknesses. Additionally, the paper investigates the challenges associated with data collection and annotation, as well as the performance metrics used to evaluate the accuracy of detection models. The paper concludes with a discussion on the potential future directions of this field, including the integration of emerging technologies such as drone-based imaging and edge computing.

KEY TERMS: Machine Learning, Support Vector Machine, Convolutional Neural Network, Long Short-Term Memory, Principal Component Analysis

INTRODUCTION

Plant species and disease detection are crucial tasks in agriculture and forestry management, as they help prevent crop losses, maintain high yields, and promote sustainable agriculture. Traditional methods of plant species and disease detection are often time-consuming, labour-intensive, and expensive. With the emergence of machine learning (ML) and computer vision techniques, there have been several attempts to automate this process. This paper aims to provide an overview of the current methods and research in plant species and disease detection using ML. Researchers have used ML techniques to classify plant species based on leaf shape, texture, and color. CNNs have been particularly effective in this area, enabling accurate classification of plant species from images. Some studies have also explored the use of plant phenotyping, which involves the analysis of plant traits such as leaf area, height, and volume, to distinguish between plant species. Additionally, researchers have developed automated plant species identification systems based on plant DNA analysis, enabling more accurate and reliable identification of plant species.

BACKGROUND

Plant species and disease detection is traditionally done through manual inspection and observation by experts. This process can be time-consuming, costly, and subject to human error. ML techniques have been applied to automate this process, enabling quick and accurate detection of plant species and diseases. These techniques can be applied to a range of scenarios, including large agricultural or forested areas, greenhouse production, and urban agriculture.

**LITREATURE REVIEW**

Name of paper	Year of Publication	Algorithm used	Accuracy achieved	Disadvantages
“Overview of PlantCLEF 2022: Image-based plant identification at global scale”	2022	Vision Transformers	Highest MA-MRR being 0.626 achieved by Mingle Xu Run 8 by South Korea	High Computation Cost
“Plant Species Identification from Leaf Images Using Deep Learning Models (CNN-LSTM Architecture)”	2021	LSTM on top of CNN	95% (almost consistently)	Prone to over-fitting
“Identification of Different Plants through Image Processing Using Different Machine Learning Algorithms”	2020	PCA layered with SVM	90%(minimum) 98%(maximum)	High energy Consumption
“Machine learning for image based species identification”	2018	Plain CNN	86%	Different algorithms can give better accuracy

Several ML techniques have been used for plant species and disease detection, which includes deep learning, support vector machines (SVMs), and convolutional neural networks (CNNs). These techniques can handle large amounts of data and can learn from complex patterns, enabling accurate and efficient detection of plant species and diseases.

According to [1] Hervé Goëau et al. (2022), the pressing need to increase our knowledge of plant species worldwide, which is essential for human civilization to be developed, including constriction, agriculture, and other areas. However, the systematic identification of plant species by human experts is a significant challenge, resulting in a burden on the acquisition of new information and understanding. To address this issue, automatic identification has been used more often in recent years and it has shown good progress, with deep learning techniques showing promise in addressing the problem of global assessment of plant biodiversity. The paper outlines the PlantCLEF2022 challenge's resources and evaluations and provides an overview of the methods and systems used by the research groups involved. The analysis of the result provides insights into the effectiveness of different techniques and their potential to improve automatic identification of plant species. The paper concludes that Deep Learning techniques can address the challenge of global identification of plant biodiversity and that the PlantCLEF2022 challenge represents a significant step towards this goal.

According to [2] J. Banzi et al. (2021), a deep understanding of plant species is crucial for achieving sustainable development and preserving biodiversity. However, the conventional approach to identifying plant species through botanical terms and morphology can be complicated and be very time-consuming, which may discourage learners from acquiring species knowledge. Therefore, automating plant species identification has become an increasingly popular area of interest, especially due to the increasing accessibility of digital cameras and mobile devices, combined with sophisticated image processing and pattern recognition techniques. This paper focuses on a convolutional neural network (CNN) model for plant species identification based on simple plant leaf images. The model was trained on a dataset of various different plant species images containing 64 different element vectors of plants in a set of 100 distinct classes of plant species. Several CNN model architectures were trained, and the with an accuracy of 95.06% in correctly identifying the associated plant species, the proposed model demonstrated remarkable precision and efficacy. The significant success rate of the proposed CNN model makes it a useful tool for plant species identification and as an advisor for non-experts. Furthermore, expanding this approach could lead to the development of a comprehensive plant species identification system that operates in real-world ecosystem services. Overall, the development of automated plant species identification models using deep learning methodologies has the potential to revolutionize the way we approach biodiversity conservation and sustainable development.

[3] Ibaphyrnaishisha Kharir et al. (2020) focuses on using digital image processing techniques and ML algorithms to identify and classify different plant species based on the features of their leaves. This research aims to develop a robust and efficient method for plant identification that can provide accurate results in less time. The research paper provides an overview of various image processing methods that can be used to identify distinct sections or areas of the plant leaves for classification. The study focuses



on the characteristics of the leaves, such as their colour, texture, which are essential for plant identification. The SVM algorithm is the main method used in this study for plant identification and classification. SVM is a powerful machine learning algorithm that can handle large and complex datasets and can provide accurate results even with noisy data. The proposed work asserts a significant level of accuracy in identifying plant species via the use of the SVM algorithm. The experimental results of the proposed research work show that the identification of plant species based on their leaf features using image processing and ML algorithms is an efficient and reliable method. This method can be used to classify different plant species accurately, making plant identification more accessible and safer for researchers, farmers, and plant enthusiasts.

According to [4] Jana Wäldchen et al. (2018) the importance of accurate species identification in biological research and the growing need for effective approaches to fulfill the need. The advent of smart mobile devices, digital cameras, and the conversion of natural history collections into digital format has led to a vast increase in image data representing living organisms that are openly available. The authors propose that this, combined with modern machine learning methods, presents a significant opportunity for automated species identification. The paper primarily centers on the use of neural networks as a technology that has facilitated significant advancements in automated species identification within the last couple of years. The authors offer a concise summary of machine learning frameworks suitable for the task of species identification and assess various deep learning methods for identifying species through image analysis. They also introduce publicly available applications. The objective of this article is to offer perspectives into the latest developments in automated species identification and to serve as a launchpad for researchers who seek to utilize new machine learning methods in their biological investigations. The authors contend that although modern machine learning techniques are gradually being adopted in the realm of species identification, there will be a surge in the application of these methods to the issue in the coming years. The authors anticipate that in the near future, AI systems will serve as alternative tools for taxonomic identification.

CHALLENGES FACED DURING RESEARCH

While ML techniques show promise for identifying plant species automatically, there are several difficulties that need to be addressed in research. One challenge is the quality of the data used to train the algorithms. The data must be of high quality and represent a diverse range of species, which can be challenging to obtain. Additionally, there may be variations in the quality and resolution of images, which can impact the accuracy of the algorithms. Another challenge is the need for experts to annotate the images, which can be time-consuming and costly. Without proper annotations, the algorithms may not learn the necessary features to accurately identify the species. Furthermore, there may be difficulties in generalizing the algorithms to new environments or species that were not included in the original training data. This can limit the practicality of the algorithms in real-world scenarios. Finally, there is also the challenge of interpreting the results of the algorithms, particularly when they make incorrect identifications. It is important to understand the limitations and potential biases of the algorithms and to use them in conjunction with expert knowledge for more accurate species identification. Overall, while machine learning techniques offer significant potential for automated species identification, researchers must address these challenges to improve the accuracy and applicability of these algorithms.

OBJECTIVES

- Collect diverse and high-quality data for training the algorithms.
- Classify images into various different classes and pre-process them.
- Train it on an Algorithm that over come the issues faced by the other algorithms mentioned in the above survey papers.

METHODOLOGY

We intend to use the following approach for detecting and classifying plant diseases - collecting and pre-processing a diverse dataset of plant images, training a VGG16 model, tuning hyperparameters, evaluating performance using k-fold cross-validation, analysing results, comparing with existing methods, and interpreting the implications for agriculture. The approach aims to ensure accurate and reliable plant species and disease detection, which is crucial for preventing and minimizing crop losses and ensuring global food security. The results of the proposed work can have significant implications for the field of agriculture by providing a reliable and efficient way to detect and classify plant diseases, which can help farmers take timely action and minimize the impact of diseases on their crops.

CONCLUSION

The use of ML techniques for plant species and disease detection has enabled quick and accurate identification of plant species and diseases, which makes it easy for farmers and researchers to manage crops and prevent losses. This survey paper has provided an overview of the current methods and research in plant species and disease detection using ML. Future research in this area may focus on improving the accuracy of disease detection, developing automated systems for plant species and disease detection, and applying these techniques to real-world scenarios. Moreover, ML techniques can also help in identifying the environmental and



biological factors that can affect plant growth and health, such as soil quality, temperature, and humidity. This information can be used to improve agronomic practices, resulting in better harvests and reduced environmental impact. However, there are still some difficulties associated with the use of Machine Learning techniques for plant species and disease detection. One of the main challenges is the availability of large and diverse datasets for training ML models. Additionally, the use of different imaging techniques can also lead to variations in image quality, which can affect the accuracy of disease detection. Another obstacle to overcome is the lack of interpretive power in ML models, which can make it challenging to comprehend how the model arrived at its decision. In conclusion, the use of ML techniques for plant species and disease detection is a rapidly growing field with numerous applications in agriculture and plant science. ML techniques have shown great potential in accurately and quickly identifying plant species and diseases, leading to improved crop management practices and reduced economic losses. As this technology continues to advance, it is important to tackle the difficulties associated with it and further explore its potential in real-world scenarios.

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COFFEE MATURITY CLASSIFICATION USING CONVOLUTIONAL NEURAL NETWORK AND TRANSFER LEARNING

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ABSTRACT

Coffee is one of the most popular beverages in the world, and the quality of coffee products largely depends on the maturity level of the coffee cherries used. Accurate and efficient classification of coffee maturity is essential for the coffee industry to ensure the quality and consistency of coffee products. Traditional methods of coffee maturity classification, such as visual inspection, can be time-consuming, subjective, and prone to errors. Therefore, the development of automated methods for coffee maturity classification is highly desirable. In recent years, deep learning has shown great promise in various image recognition tasks, including object detection, segmentation, and classification. Convolutional neural networks (CNNs) have been widely used for image classification tasks due to their ability to automatically learn features from images. In this study, we propose a deep learning approach for coffee maturity classification using images of coffee cherries. The proposed method consists of two main stages: image preprocessing and CNN-based classification. In the preprocessing stage, images of coffee cherries are first resized and normalized to reduce the variability in image size and lighting conditions. In the classification stage, a CNN is trained on the preprocessed images to classify coffee cherries into different maturity levels. To evaluate the performance of the proposed method, we collected a dataset of coffee cherry images at different maturity stages. The dataset was divided into training, validation, and testing sets, and the CNN was trained on the training set and evaluated on the testing set. The results show that the proposed method achieved high accuracy and outperformed other traditional machine learning techniques for coffee maturity classification.

1. INTRODUCTION

1.1 OVERVIEW

Machine learning is a method of data analysis that automates analytical model building. It is a branch of artificial intelligence based on the idea that systems can learn from data, identify patterns and make decisions with minimal human intervention. Machine learning is the study of computer algorithms that improve automatically through experience. It is seen as a part of artificial intelligence. Machine learning algorithms build a model based on sample data, known as "training data", in order to make predictions or decisions without being explicitly programmed to do so.

Machine learning algorithms are used in a wide variety of applications, such as email filtering and computer vision, where it is difficult or unfeasible to develop conventional algorithms to perform the needed tasks. A subset of machine learning is closely related to computational statistics, which focuses on making predictions using computers; but not all machine learning is statistical learning. The study of mathematical optimization delivers methods, theory and application domains to the field of machine learning. Data mining is a related field of study, focusing on exploratory data analysis through unsupervised learning.

Machine learning involves computers discovering how they can perform tasks without being explicitly programmed to do so. It involves computers learning from data provided so that they carry out certain tasks. For simple tasks assigned to computers, it is possible to program algorithms telling the machine how to execute all steps required to solve the problem at hand; on the computer's part, no learning is needed. For more advanced tasks, it can be challenging for a human to manually create the needed algorithms. In practice, it can turn out to be more effective to help the machine develop its own algorithm, rather than having human programmers specify every needed step.

The discipline of machine learning employs various approaches to teach computers to accomplish tasks where no fully satisfactory algorithm is available. In cases where vast numbers of potential answers exist, one approach is to label some of the



correct answers as valid. This can then be used as training data for the computer to improve the algorithm(s) it uses to determine correct answers. For example, to train a system for the task of digital character recognition, the MNIST dataset of handwritten digits has often been used.

EXISTING SYSTEM

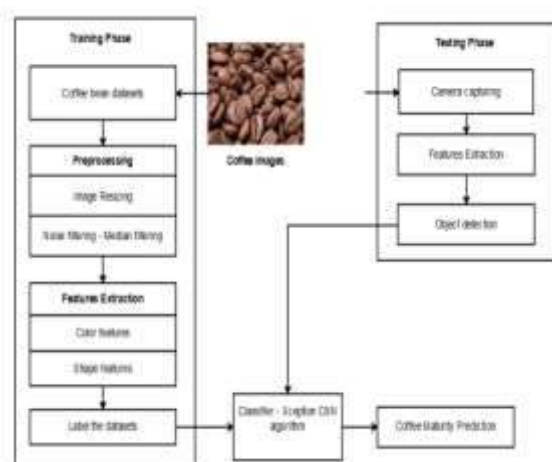
Coffee maturity classification is a crucial step in coffee production to ensure that only high-quality beans are harvested and processed. There are several existing systems for coffee maturity classification, each with its advantages and disadvantages. Visual inspection, which involves manually inspecting the coffee beans and sorting them based on their color and appearance, is a simple and traditional method that may be suitable for small-scale farms or artisanal coffee producers. Density separation, which involves separating the coffee beans based on their density, is a more time-consuming method that requires a lot of water.

Near-infrared spectroscopy (NIRS) is a non-destructive and rapid method that uses near-infrared light to analyze the chemical composition of coffee beans. Electronic nose (E-Nose) is a sensor-based system that uses an array of sensors to detect the volatile organic compounds emitted by the coffee beans. Finally, machine learning algorithms use image processing and pattern recognition to classify coffee beans, requiring a large dataset of images of ripe and unripe coffee beans. Each method has its own strengths and weaknesses and is suitable for different scenarios, depending on the size and needs of the coffee producer.

In addition to the methods mentioned, there are other approaches to coffee maturity classification, such as colorimetric analysis, which uses color sensors to measure the color of coffee beans and classify them based on their maturity. Another method is ultrasonic testing, which uses sound waves to determine the internal structure and density of the coffee beans and classify them based on their maturity. The choice of the method used for coffee maturity classification depends on several factors, such as the cost and availability of equipment, the size of the coffee farm, and the desired level of accuracy.

Disadvantage

- Time consuming and is subjective, because it is dependent on the conditions of the person performing the defect selection.
- Manual inspection systems are based on human judgement and may vary from one person to another, even though both persons are regarded as experts
- Classification accuracy is less because manual segmentation can be use.



Framework Architecture

DATASETS COLLECTION

Collecting a diverse and representative dataset is crucial for the success of the pest recognition system. The dataset should include images of different coffee beans, captured under different lighting and environmental conditions. Digital image archives can be searched for images of pests. These archives may include images captured by researchers, farmers, or other stakeholders. Dataset acquisition refers to the process of obtaining data for use in various applications, such as machine learning, data analysis, and research. Synthetic datasets can be generated using computer graphics techniques. This approach can provide a large number of images of pests in different poses, lighting, and environmental conditions. In this module, we can input the pest datasets that are collected from KAGGLE web sources. It contains the various beans details as in image format



MODEL TRAINING

Model training using Convolutional Neural Networks (CNNs) is a process in machine learning where a CNN is learned from a dataset for image classification, object detection, or other computer vision tasks. Here's a general overview of the process:

- Data preparation: Prepare the image dataset for training, including splitting the data into training and validation sets, data augmentation, and normalizing the data.
- Define the model architecture: Choose a suitable CNN architecture and design a custom architecture based on the specific requirements of the task.
- Compile the model: Define the optimizer, loss function, and metrics to be used during training.

Train the model: Train the model on the training data by feeding the images into the network and updating the weights using the defined optimizer, loss function, and metrics. The training process involves multiple iterations, also known as epochs, over the training data until the desired level of accuracy is achieved.

CONCLUSION

In conclusion, using a sequential CNN algorithm for coffee maturity classification can improve the accuracy and efficiency of the classification process. By collecting a large dataset of labeled images of coffee beans at different maturity levels and preprocessing the images to standardize their size, color, and orientation, a CNN model can be trained to accurately classify coffee beans into different maturity levels. The trained model can be integrated into a computer vision system for real-time classification in a coffee processing plant. With continued research and development, the use of CNN algorithms for coffee maturity classification has the potential to improve the quality and consistency of coffee production. Moreover, the use of CNN algorithms can potentially reduce the need for human intervention in the classification process, which can save time and resources for coffee processing plants. Additionally, the use of automated classification systems can minimize errors and inconsistencies that can occur due to variations in human judgment and visual perception. Furthermore, the implementation of a coffee maturity classification system using a sequential CNN algorithm can be extended to other areas of agriculture and food production. For instance, it can be applied to the classification of fruits and vegetables based on their ripeness, which can help optimize harvesting and processing operations.

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RESEARCH PANORAMA ON THE SECOND GREEN REVOLUTION IN THE WORLD

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1. INTRODUCTION

The foundation of existence is soil, and on it a variety of activities have been formed that, in human conception, tend to enhance the quality of subsistence. Yet, it is unclear how successful various practices and scientific advancements will be at satisfying sustenance in its entirety. The current review creates a national and international panorama of one of those activities that may already be reflecting natural changes on the ecosystem's biodiversity and ecological connections. During the Second World War, a new idea known as the "Green Revolution" was developed in an effort to find alternatives to mitigate the consequences of the growing global population and to ensure food security for said people. The so-called technology packages, which comprised irrigation, mechanisation, chemical fertilisers, pesticides, herbicides, and concentrated foods, were the basis for this type of agricultural production, which was developed in industrialised nations and consisted of optimising races and seeds. The highest global productivity was attained with this maximisation of seed (basically Norman Borlaug's concept for which he won the Nobel Peace Prize in 1970): surface cultivation per person worldwide decreased from 0.5 to 0.2 hectares between 1950 and 1995. In industrialised countries, production rose significantly between 1975 and 1995: 78% for grains, 113% for fishery, 127% for meat, 331% for eggs, and 280% for poultry (FAO, 1998) [1].

The Green Revolution and other strategies to boost food production and alleviate world hunger are subject to a variety of political, economic, and cultural constraints. One idea to raise the standard of living on the world was to explore yet another strategy inside what might be called a second Green Revolution. The World Food Summit participants believed that a second Green Revolution was necessary in order to provide food security for the 8.0 billion people who are expected to live on the planet by the year 2025. Throughout the past 30 years, the Green Revolution, which got underway in the 1960s, has contributed to keeping the food supply above demand. Production might be tripled and multiplied, giving emerging countries more time to begin addressing the population's explosive increase. One of the key proponents of the first revolution, Norman Borlaug, recognized that it was only a "temporary success". According to Borlaug, it is essential to control population growth in addition to increasing agricultural production on already-existing land.

In scientific literature, the term "transgenic" first "emerged" about 1983. The first of these (soy, corn, cotton, canola, and vegetables, particularly tomato) were made legal for human consumption in 1993. The second Green Revolution was an effort to increase seed production by horizontal transgenesis.

The goal of the "second Green Revolution" is to develop and grow "new plants." These clones are not produced using processes like crossover, hybridization, and cross-pollination. The new procedures actually focus on cell culture, protoplasts, and tissues in addition to genetic recombination techniques to produce significant biological diversity from molecular and cellular mechanisms [2]. Nowadays, advancements in in vitro cell and tissue culture techniques have made it possible to significantly advance the resolution of many issues in economically relevant crops, having attained a fresh development.

2. GREEN REVOLUTION

A state's ability to conserve, maintain, and exploit genetic resources of animal, plant, and microbial origin to ensure food production for the human population of its community is referred to when we talk about the need for food security [1]. In 1994, there were 5.6 billion people on the planet; by 2000, that number had increased to 6.2 billion. The population division of the United Nations estimates that 10540 children are born on each of the five continents every hour, or 252,960 individuals worldwide, every day. According to statistics gathered from the U.S. Census Bureau, this is how the world's population has already surpassed 7.0 billion people. The population growth does not, however, continue. Increasingly vigilant specialists in charge of investigating this phenomenon make predictions about what will occur over the upcoming years. In general, organisations like the UN project that by 2045 or 2050, there will be two billion more people on the planet than are currently counted.



The idea of the "Green Revolution" and, more recently, transgenic crops—which are currently being used in conjunction with unchecked population growth—emerged as a result of this panorama, which allowed various international organisations to discuss a strategy with which to ensure food security for developing countries. The period in the second half of the 20th century (roughly between 1960 and 1990) when rich nations transferred the most technology to the agriculture sector in order to prevent food shortages in developing countries is commonly referred to as the "Green Revolution." Mostly centred on the use of agrochemicals, genetically improved seeds, irrigation, drainage, and agricultural machinery, the positivist paradigm intended to maximise crop productivity using technical packages created for the contexts of developing countries.

The first Green Revolution, which resulted in the comprehensive application of knowledge of classical genetics developed from the discoveries of Mendel³, prompted the application to vegetable improvement. Increasing cereal yields implied a significant transformation of the agricultural systems of many developing countries. [4] Historically, its start might be regarded as occurring after the end of the First World War; nevertheless, the Second World War, when major industry, especially in the United States, generated a significant accumulation of military technology innovation, was when it began to spread globally.

The second Green Revolution was born in the United States in the 1940s, developed in Mexico in the 1950s (the Rockefeller Foundation launched its Mexican Program of Agriculture, which focused primarily on improving maize and wheat), and from there it spread across the globe with the clear intention of modernising agriculture and eradicating hunger in developing countries. Its scientific foundation is molecular genetics, which emerged from Watson and Crick's 1952 discovery of the DNA structure. The fundamental goal of the Green Revolution was the development of transgenics, also known as GMOs. These are creatures that have been developed in the lab using specific methods that involve altering an organism's natural structure and changing its DNA in order to transfer a gene responsible for a specific feature from one organism to another.

The first green revolution, which occurred in the Neolithic era (8500 BC), consisted of the initial domestication of the main vegetable species we now cultivate; [5] the second green revolution, which began in the 1990s with advancements in xenotransplantation and genetic engineering of agricultural products; and the third green revolution, also known as the bio-revolution, which is currently underway with eco-sustainability.

The Green Revolution, which is based on food security, necessitates a number of alternatives to address population growth. Some of these include expanding the range of crops used for human nutrition because we only eat 20 of the 250,000 species that have been identified; manipulating the genetic and environmental components of current crops to increase yield; and expanding the agricultural frontier, which is challenging given that European and Asian countries are densely populated and that the agricultural frontier is a relatively new concept. Understanding a few concepts that are linked to the previously listed elements is important.

2.1. Biotechnology

According to the European Federation on Biotechnology (EFB), biotechnology is the application of natural sciences to the creation of products and services using organisms, cells, or fragments of them, as well as molecular analogues. It is divided into two categories: traditional biotechnology and new biotechnology. Traditional biotechnology refers to traditional methods that have been used for many years to produce foods like cheese, wine, beer, and many others. New biotechnology, on the other hand, includes all techniques for genetic modification using recombinant DNA and cell fusion techniques as well as contemporary improvements of traditional biotechnological processes [6]. Consequently, as seen in Figure 1, the integration of several disciplines.

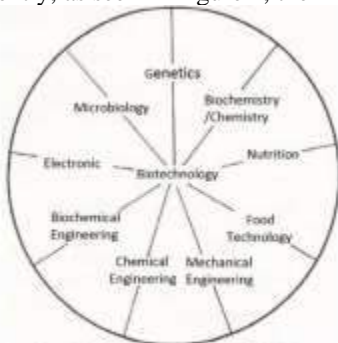


Figure 1. Disciplines integrated in biotechnology

Given that the Green Revolution (GR) was promoted by government with assistance from international organisations like the FAO, the International Monetary Fund, the Bank of Mexico, and the World Bank (Buttel et al., 1990 in Cota, H et al., [7]), one of the differences



between the GR and Agricultural Biotechnology is that the GR developed within a context of government intervention, whereas biotechnology has not had the same kind of influence. Also, it is believed that biotechnology has a stronger impact on more societal contexts than GR, which only targets the agricultural sector, particularly in terms of productivity growth.

One of the main similarities between the GR and biotechnology is that both were designed to be exclusive technologies. This is because even though the GR was widely disseminated, only commercial producers could use the entire technological package because they had the funds to purchase all the inputs and equipment required to use it. Given that commercial manufacturers also have access to technology and marketplaces to sell their products, history is being repeated with biotechnology. Because of this, small farmers and/or producers are once again left out of the "modernization" of agriculture.

2.2. Genetic Engineering

By inserting nucleic acid molecules made by any external medium into viruses, bacterial plasmids, or other vector systems that allow their incorporation into host organisms in which said process does not occur naturally and which are capable of continuous propagation, genetic engineering is defined as the creation of novel combinations of inheritable material. In its simplest form, genetic engineering entails changing an organism's genetic makeup using recombinant DNA technology.

2.3. Transgenic Crops

Recombinant DNA technology has been used in agriculture to create transgenic, biotechnological, or genetically modified (GM) crops. These kinds of organisms are made up of the introduction of foreign genes (transgenes) into the cultivated plant species' genomes from any biological source (animals, plants, microorganisms, or viruses). Since 1996, GM crops have been grown all over the world, and as of December 2010, 1 billion ha has been planted.

Soy, cotton, corn, and colza are the main GM crops used in the world today. These crops carry transgenes obtained from bacteria that give them resistance to lepidopteran insects (RLI) or tolerance to some herbicides like glyphosate and glufosinate ammonium. The creation of ingestible vaccinations against lethal diseases is a significant contribution of transgenic technology. Insect resistance and herbicide tolerance have been established as the two key attributes of GM crops that are currently for sale. Using genes taken from the actual virus, a few crops, including the pumpkin, potato, and papaya, have been developed with the trait of virus resistance. The soil bacterium *Bacillus thuringiensis* is the source of pesticide toxins produced by commercial transgenic plants (Bt).

2.4. Third Green Revolution

A third Green Revolution based on ecological, organic, or biological agriculture, according to certain authors, is currently underway. This succeeds in framing all agricultural systems that support the production of fibres and foods that are healthy, safe, and sustainable from an environmental, social, and economic standpoint. These systems aim to improve the quality of agriculture and the environment in all of its facets by using the natural fertility of the soil as the foundation for optimal output without altering the needs and inherent abilities of plants, animals, and the landscape. Consumers must be assured of every step used to produce an organic product through a certification process. carried out a study on transgenesis and culture: The article outlines the following points: Transgenic foods are currently a hot topic of controversy, but it is concluded that they are not necessary to address global food inequalities. Are our GM crops necessary? It has long been understood that distribution issues, rather than issues with food supply, are what cause famine throughout the world. Never before had so many people been registered as going hungry despite the fact that humanity generated so many tonnes of food (enough for 4.3 pounds of food per person each day). Politics and the economy are the sources of hunger.

With regard to Colombia particularly, we can see that our nation has adequate arable land in the plateaus, inter-Andean valleys, Caribbean lowlands, and even on the mountains to feed its existing and future populations. The primary restrictions concern land ownership. One of the nations with the largest tracts of fertile land is our own. Over 4 million ha of land have been transferred to a small group of people who use it for significant cow ranching over the course of the last ten years by the simple purchase of property by drug traffickers, which is possibly the largest process of modern agrarian reform in the world. Does Colombia need to import transgenic crop seeds to increase agricultural output? No, is the response.

Because there are many species connected to one another and to the cultivated and sprouting plants in an environment where food is in abundant supply, the various fields are themselves techniques for controlling pests and diseases. This helps the agrosystem maintain self-control. In a nation with so many different climates, lands, and soils, modified plants are not necessary in the face of such extreme difficulty.



3. STATE-OF-THE-ART OF THE GREEN REVOLUTION

The consideration of the benefits and drawbacks this approach may have for society, the environment, and science is at the heart of the Green Revolution's current state of development. Figure 2 depicts some of the research done in these three areas, which are the Green Revolution, transgenics, and biotechnology in general.

First, with regard to the theories surrounding the first and second Green Revolutions, [5] provides a historical account of the two movements, highlighting the results and accomplishments of the first as well as the potential effects of the second on our society and the environment in the near future. The theory of "primitive accumulation," which economists first proposed in the middle of the 19th century and which has come to be known as the modern social inequality, is discussed by the author. According to this theory, those who own the means of production accumulate more wealth than those who are employed. Some social movements contend that an analogous process is currently in full development throughout the world, despite the fact that the ten largest biotechnology companies in the world (dedicated to subproducts for the pharmaceutical industry and agriculture) make up only 3% of the totality of these types of companies while controlling 73% of sales, after 500 years of the start of the primitive accumulation and nearly 60 years of the Green Revolution. Amgen, Monsanto, and Genentech are the three biggest ones.

3.1. Research on Transgenesis and Biotechnology

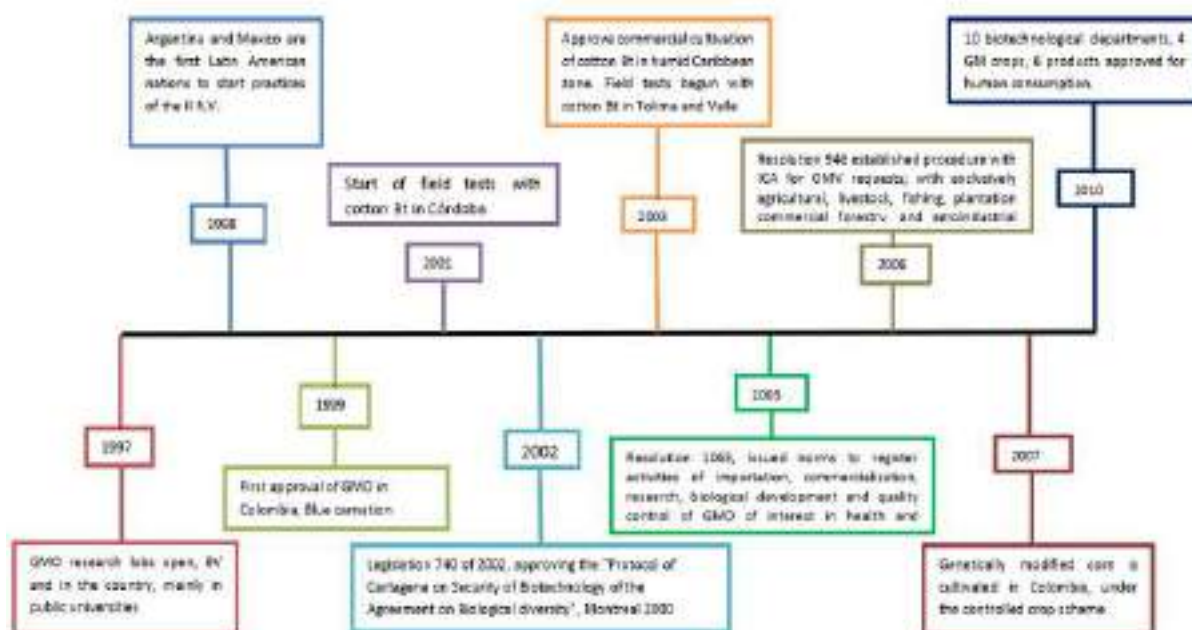
Following the historical backdrop, the majority of research on the Green Revolution points to transgenesis. Some studies in this field include:

In a study on the use of genetically modified crops around the world, Chaparro [8] identified the most popular varieties and discussed their benefits. The author also considers the biological risks, coming to the conclusion that some of these include the following: harm caused by transgenic proteins to humans and unintended species; gene flow from GM crops to non-GM crops; development of biotopes in landscapes resistant to transgenic proteins; and impact on biodiversity. Among the benefits are reduced environmental effect from eliminating active components and economic gain from lowering production costs and raising output. The study on transgenesis shown in Table 2 demonstrates how current research in this area is directed to assist humans by producing vaccines or other chemical substances that can enhance health. In terms of biotechnology, the following research areas are currently being studied: creation of novel therapies and medications for a variety of human and animal diseases; development of diagnostic tests to improve disease prevention and pollution control; enhancement of numerous aspects of plant and animal agriculture; cleaning and improvement of the environment; and creation of processes for cleaner industrial manufacturing.

Also, significant study in the subject of biotechnology has been conducted by BellverCapela, V (2012) [13], which provides a panorama of biotechnologies applied to human life while highlighting its remarkable impact on society and its dramatic evolution since the late 1990s. The author asserts that the relationship between biotechnology and society underwent a significant change in the early 21st century, leading to a second stage in the development of biotechnology, which the author proposes to refer to as "biotechnology 2.0," in light of some particularly noteworthy biotechnological achievements between 2010 and 2011.

The essay centres on biotechnology's use in human reproduction with the goal of creating predictive medicine based on our genes. Cloning embryos will enable the stem cells obtained to have the same genetic characteristics as its receptors and will, therefore, avoid rejection issues. Human embryonic stem cells will be an endless source of repair materials to regenerate our organism and cure serious diseases that are currently incurable. It is challenging to resist while looking at these hopeful possibilities. When biotechnology 2.0 is introduced, it ceases to be a tool for enhancing human life and instead serves as a means of obtaining post-human existence, which is better than human life.

Following the first "Green Revolution" in the 1960s, when fertiliser use and plant culture helped to enhance yields, there was a need for a "second Green Revolution," which included biotechnology to improve yields and agricultural availability.



DISCUSSION

The analysis is summarised on a SWOT matrix of the Green Revolution in each of the environmental components, the result of interdisciplinary study and research that was focused on the changes in the human landscape and environment, which served as the inspiration for authoring this document.

Conclusions

The term "Green Revolution" refers to a method of agricultural production developed in industrialised civilizations that maximises genetic diversity and seed potential.

The majority of agricultural genetic improvement, which led to an increase in yields, came via conventional improvement. These tools will continue to be crucial in photo-improving systems, while being slow and occasionally tiresome. In addition, GM technology can, among other desirable qualities, change a plant's genotype in a relatively short amount of time and contribute to the design of more nutrient-dense plants. Unfortunately, the old methods for improving plants are only supplemented by this new technology. To speed plant progress and help ensure global food security, conventional and new technologies should work together.

Ten departments in Colombia are currently using OMG crops, which include cotton, corn, rice, and flowers like carnations and roses. Moreover, maize is grown using the controlled crop system. Resolution 1063 regulates importation, commercialization, research, biological development, and quality control.

The Green Revolution has been used to control pests and diseases, develop crops that are resistant to herbicides, adapt to adverse weather, extend the postharvest period for agricultural products, and biofortify them.

Because of the conversion of fragile and conservation lands to crop lands with a higher percentage of transgenic crops, man introduces a conflict of use on the soil resource; these can be harmful for the soil due to loss of the physical, chemical, and biological properties, exceeding the load capacity, and decreasing self-purification.

Given the various natural phenomena being produced by the Quaternary climate changes, the ecological equilibrium of systems supported by the soil is naturally altered. However, certain human activities, such as overusing the soil, can compromise the ecological equilibrium and cause natural phenomena to move on a human scale rather than an ecological scale, endangering biodiversity. Transgenesis may seem like an obvious way to lessen the strain on the soil, but it can seriously harm genetic diversity and the human genome.

Transgenics and biotechnology are still being discussed; while the effects on human health and the environment are becoming more and more depressing, it should not be forgotten that genetics has saved lives and raised standards of living in several spheres of society.



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DESIGN AND FABRICATION OF AUTOMATED SORTING SYSTEM

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ABSTRACT

A type of machine used to transfer material constantly is a belt conveyor. The belt functions as a result of frictional force. The mining, metallurgical, and coal industries employ the belt conveyor extensively due to its straightforward construction, ease of maintenance, high transfer capacity, and long transfer distance. The major goal of this project is to develop a special form of algorithm to attain a novel level of approachability in the area of industrial automation. Without a human, these machines can perform various tasks at various locations. In our project, we created a system for automatically rejecting defective objects as they pass through the conveyor system.

KEYWORDS: smart object sort, conveyer belt, color sensor, industrial use etc.

1. INTRODUCTION

Moving, storing, controlling, and safeguarding materials during their production, distribution, use, and disposal constitutes materials handling. In industrial facilities that utilise conveyor systems, there are many material handling devices and systems. Due to its capacity to maintain consistency in the operation speed and consistency of things in motion, it moves objects from the source to the terminal rather than moving objects with people. From straightforward pallet rack and shelving solutions to intricate overhead conveyor systems, automated storage, and retrieval systems, material handling systems come in all shapes and sizes. Sorting and picking are additional aspects of material handling. Different sorting systems have been created recently. Sorting can be used for a variety of things, including literature, consumer goods, and agricultural products. The form of the criteria aggregation model generated for sorting purposes and the methodology used to define the sorting model's parameters, according to Constantine and Michael's report from 2002, can be used to categorise all sorting methodologies.

This study suggested using automatic sorting techniques as the basis for the model. Designing a model and simulating the functionalities of an automatic sorting machine utilising a capacitive proximity sensor is the goal of this project. The photographs of the things (such as plastics, wood, and steel) were captured using the proximity sensor in order to achieve these created automatic sorting methods, and the conveyer belt moves the material from one location to another. The conveyor system sorts items automatically in a way that promotes product manufacture, quality control, and profitable businesses.

It is crucial to be aware that these suggested sorting techniques do, however, have a number of issues. For instance, ineffective sorting, energy consumption, multitasking, and machine adaptability.

2. PROBLEM IDENTIFICATION

The main job that needs to be done in many sorting enterprises is object sorting. Industries that require visual inspection conducted by human operators prefer the old method of manual sorting. This conventional method is cumbersome, time-consuming, and expensive for industries. It is now challenging to find employees who are qualified and eager to embark on the laborious process of inspection. As a result, the suggested system makes an effort to create and implement an automatic method for classifying and identifying products based on their colour utilising embedded vision.

The project's issue statement is to develop an electronic material handling system that may be used to lessen worker effort and the amount of time required for component inspection during production. Additionally, it makes moving the created component to another workstation easier. The obvious factor that contributes to the installation of automation systems in businesses is;

1. Saving man power



2. Improved quality and efficiency

3. OBJECTIVES

- To make the process of sorting the material, this color based sorting machine is being designed.
 - In some of industries use man power to transfer the material from one place to other by repeating this for a period of time it will cause injuries to an operator.
 - The use of this machine make the work simple for the operator, and no longer to bend and lifts up the materials.
- This reduce the cause of injuries to the operator and increasing the work efficiency.

4. BLOCK DIAGRAM

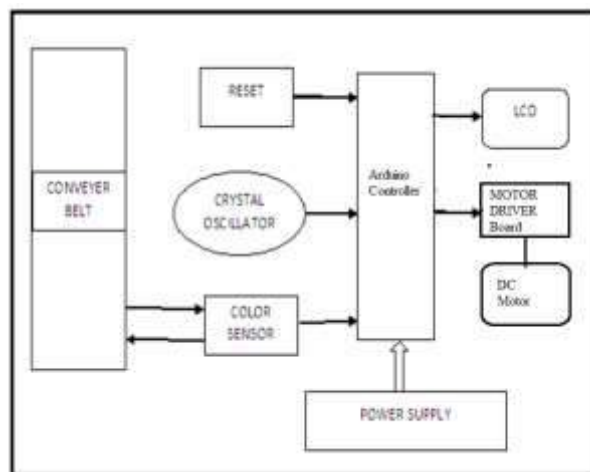


Figure 2. Project Block Diagram

5. WORKING

This device is a prototype for an industrial robot that sorts objects according to their colour. After using a geared motor mechanism to determine the colour of the sorting object, a photodiode-based colour sensor is linked to the conveyer.

Through IC hybrid bridge circuits, the MCU controls the entire movements of each of these motors in both directions. The system picks something off the conveyor belt and sorts it according to colour; it can be utilised in industries and for other things.

The product will be put on the conveyor belt.

- Once the switch is turned ON, the conveyor belt will begin to move the product to the opposite end.
- The sensor will determine the product's colour during its journey.
- The microcontroller will then receive the signal.
- As a result, the motor driver unit will deliver the appropriate signal to the sorting mechanism in accordance with the signal.
- This technique will mostly sort products that are black and white.
- The conveyer belt carried the black product regularly, but the white product was sorted from it and placed in a different container.
- In accordance with the component data provided, the sensor and microcontroller will each provide input to the sorting mechanism utilising a DC motor to activate.



6. DESIGN OF SYSTEM

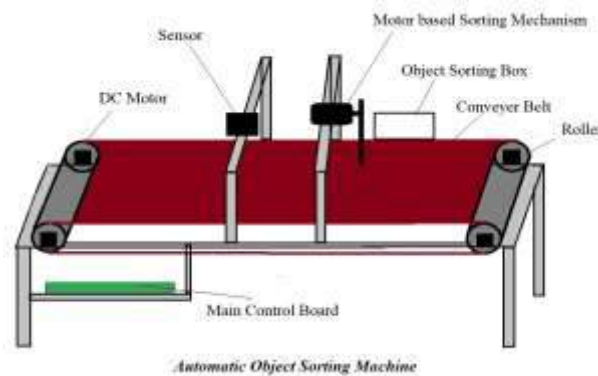


Figure.3. Design of System

7. CALCULATION

Assumptions

Design Considerations:

Open flat belt drive system

Power rating for this belt is 0.023kw

Length of belt=60 cm

Diameter=9 cm

Width of belt= 2---4 cm

Load correction factor (F_a)=1 (Normal load)

Arc of contact factor (F_d)=1 (Because $\theta=180$)

Coefficient of friction=Negligible (Because coefficient of friction between belt and pulley is very low and hence can be neglected)

Numerical Calculations for the Selection of Motor

Required V of belt:

$$V = 130/14 = 9.28 \text{ cm/s}$$

$$\text{or } 0.0928 \text{ m/s} \dots\dots\dots 1$$

No. of revolution:

$$N = V \cdot 60 / 2\pi r$$

$$= 9.28 \cdot 60 / 2\pi \cdot 4.5 \dots\dots\dots \text{from } 1$$

$$= 19.7027 \text{ rpm} = 20 \text{ rpm} \dots\dots\dots 2$$

The requirement of our project is such that conveyor belt must be able to bear travelling an approximate weight of 100 g in 10-20 seconds.

Now,

Torque(T):

$$T = F \cdot r$$

$$= m \cdot (V/t) \cdot r$$

$$= 0.1 \cdot (0.0928/14) \cdot 0.045 \dots\dots\dots \text{from } 1 \quad T = 2.98 \text{ Nm} \dots\dots\dots 3$$

Power Rating:

$$P_d = 0.0147 \cdot V / 5.08$$

$$= 0.02680 \text{ kw} \dots\dots\dots 4$$

Design Power:

$$P_r = P_d \cdot F_a \cdot F_d$$

$$= 0.0268 \cdot 1 \cdot 1 \dots\dots\dots \text{from } 4$$

$$= 0.0268 \text{ kw} \dots\dots\dots 5$$

Since the values of both power rating and design power are same, this signifies that the material selection for this project is right.

$$0.0268 = (T_1 - T_2) \cdot 0.0928 \dots\dots\dots \text{from } 1$$

$$0.28879 = T_1 - T_2 \dots\dots\dots 6$$

Angle of loop for open belt drive:

$$\theta = 180 - 2\alpha$$



$$\alpha = \sin^{-1}(D1 - D2/2x)$$

$$\theta = 180 \text{ or } 180 * \pi / 180 = \pi \text{ radians}$$

$$T1/T2 = e^{\theta}$$

$$T1/T2 = e^{3.1415}$$

$$T1 = 23.138 T2 \dots\dots\dots 7$$

$$0.288793 = 23.138 T2 - T2$$

$$T2 = 0.013045 \text{ KN}$$

$$\text{or } 13.045 \text{ N} \dots\dots\dots \text{from 6 \& 7}$$

AND

$$T1 = 0.301835 \text{ KN or } 30.1835 \text{ N}$$

Numerical Calculations for the Selection of High torque dc motor

Minimum Force required to move materials:

$$= 0.5 * 9.80665$$

$$F = 4.903325 \text{ N} \dots\dots\dots 1$$

Bore diameter = 15 mm

Thrust exerted in forward:

$$F1 = (\pi * D^2 * p) / 4 \quad (D = 0.015 \text{ and } d = 0.005)$$

$$= (3.14 / 4) * (1.5/10)^2 * (4 * 10^5)$$

$$F1 = 70.65 \text{ N} \dots\dots\dots 2$$

Thrust exerted in reverse:

$$F2 = (\pi * (D^2 - d^2) * p) / 4$$

$$= 3.14 * 0.0002 * 4 * 10^5$$

$$F2 = 62.8 \text{ N} \dots\dots\dots 3$$

Remarks: It is found that value of F is lesser than F1 & F2, Hence for given bore diameter the High torque dc motor would be able to accomplish the task.

8. RESULTS AND DISCUSSION

We have developed a sorting machine using Arduino for automatic color sorting, taking in to consideration 2 colors namely white and Black. You may note that the white object and the black object lying in different sections of the container placed on the conveyor belt.

▪ Dimensional Analysis

The prototype is designed for sorting objects of any shape but having fixed sizes of 1cm. We can of course change this parameter by adjusting the aluminum frame of the color sensor. But one may note that it usually results in a change in the light ambience forcing us to do further frequency analysis of the sensor output for test colors. The prototype will get more complicated as we increase the number of colors that have to be detected. The placement of the object on the conveyor belt is very crucial. It must be so placed that the centre of the object and that of the sensor should be aligned with the same vertical plane, so that perfect detection takes place.

▪ Time Cost

The object once placed on the first conveyor belt takes less than half a second to reach the sensor. It takes another 200ms for the sensor to detect the color. An additional 0.6secs is required if the color of the object is not black so as to position the correct compartment in the sorting container, which implies that an additional 0.6secs will be consumed to reposition the container back to the normal position on the second conveyor belt. Of course, these time values are dependent on the speed of the DC motors used.

▪ Trails

As mentioned before we have used objects of standard size and having any of the 2 colors for testing our prototype. We conducted a continuous trail with 20 objects and we got 90% correct detection. As long as the colors of the objects do not deviate from the preset values and as long as the placement on the belt is perfect, the detection process seldom fails.

The final result was quite satisfactory. The color detecting sensors worked well and it was able to detect white and black object quite nicely and change the direction of dc motor on right and left side to sort the object in proper place. Geared DC motor was used to get increased torque for the movement of the shaft as well as the conveyor belt. The belt moved from starting point to the end point through the roller without conflicting with the walls. The system performed well as programmed and detects the object according to their color.



Project Image



Figure 4. Project Image

9. ADVANTAGES

- High productivity: The pace of sorting can be quite fast.
- High precision: The margin of error is greatly decreased. Various items or veggies of various colours can be sorted using this type of machine. Pears, oranges, and other fruits of this kind are suitable choices as well.
- If utilised with PLC control, high level of intelligence. It can be controlled by a very intelligent machine.
- Long life, high quality, and low failure rate.
- Dependable operation and upkeep.

10. APPLICATIONS

Main applications can be for:

- Sorting the goods in accordance with colour.
- Making sure that mass production has quality control.
- With a few tweaks, it may be used to find any coloured object.
- It can be modified such that it can be used to determine a product's dimensions.
- It can be employed in airports by enhancing its sensing capacity.
- Additionally, it is highly helpful in labs and seminars.
- Used in the packaging sector.
- To handle bags containing biomedical waste.
- At airports and subway terminals.

11. CONCLUSION

The management of the integrity of supply of a product from raw material to completed product through quality manufacturing is of the utmost importance in today's fiercely competitive industrial industry.

It is necessary to declare a product as having excellent quality and precise dimensions. As a result, this project for automatic colour sorting is a great one due to its design and widespread application.

An industry can quickly sort the desired product according to its colour by implementing the project's notion. Although it has significant restrictions, this concept can be used in a variety of applications after minimal tweaking.

12. FUTURE SCOPE

It is very useful in wide varieties of industries along with the help of PLC and SCADA, especially in the packaging section. Automatic sorting machine enhances efficiency, practicality, and safety of operators. It ensures remarkable processing capacity as well as peerless performance including color detection. Of course we need to add high speed DC motors and sensors with appreciable response to speed up the system for industrial application.

The model can be improved by making some changes in the program and components. Some suggestions are given below.

- We can add a load cell for measurement and control of weight of the product.
- We can also add a counter for counting the number of products.
- Speed of the system can be increased accounting to the speed of production.



- The system can be used as a quality controller by adding more sensors.
- The sensor can be changed according to the type of product.

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A RESEARCH ON THE IMPACT OF MICROFINANCE ON INDIA'S ECONOMIC DEVELOPMENT

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ABSTRACT

The Indian economy is characterized by a slow rate of development, a large rural population, an over-reliance on agriculture, a high rate of unemployment and poverty, among other factors. Some recently developed solutions, including micro financing, are playing a crucial role in helping to solve these issues. Microfinance plays a crucial role in the lives of small business owners and residents of rural areas. Rural residents have very limited access to institutionalized credit, thus microfinance acts as a blessing for them by helping them to resolve their financial issues. In a developing nation like India, microfinance is viewed as an instrument for socioeconomic advancement. It is anticipated to have a big impact on development and reducing poverty. The importance of microfinance in India's economic development is highlighted in this study.

KEYWORDS: *Microfinance, Institutionalized credit, Poverty alleviation, Developing country*

INTRODUCTION

Microfinance is the provision of small loans, savings accounts, remittance services, insurance, and programmes for education and skill development for the underprivileged who are not served by conventional financial institutions. For small business owners and residents in rural areas, microfinance institutions offer a range of financial and non-financial services. These services boost the innate ability of the underprivileged to engage in business, generate revenue, create jobs, and ultimately lessen poverty.

Microfinance institutions' major goal is to give people permanent access to suitable financial services that aren't offered by traditional financial institutions. Microfinance is the provision of credit, savings, and other vital financial services for the underserved who are unable to obtain loans from traditional banks due to a lack of appropriate collateral. In general, banks are not for those who lack money; rather, they are for those who do. For unemployed, low-income business owners or farmers who are not bankable, microfinance is a service. One of the best strategies for reducing poverty and promoting economic growth and development in emerging economies is microfinance.

Commercial banks, regional rural banks, SHGs, cooperative societies, and organizations that take on numerous forms, such as NGOs and Non-Bank Financial Institutions, among others, all offer microloans. It is impossible to overstate the significance of microfinance in developing nations like India since microfinance institutions are essential for the socioeconomic uplift of the underprivileged.

OBJECTIVES OF THE STUDY

- To comprehend the Indian notion of microfinance.
- To research the significance and functions of microfinance in India.
- To investigate the issues Indian microfinance organizations are having.



REVIEW OF LITERATURE

Kumar Vipin et. al. (2015) according to the study SHGs and microfinance institutions are playing a very important role in the delivery of microfinance services for small business owners and people living in rural areas. These services all contribute to the growth of low-income and poor people in India. However, issues with group functioning, slow graduation rates for SHG members, and other factors made it difficult to deliver microfinance services effectively. Therefore, it should be considered when developing the next stage of SHG programmes.

Mahanta et al. (2012), their study revealed that lending to the poor through microcredit is not the solution to the issue, but rather the start of a new age. If properly managed, it has the potential to make a huge difference in the reduction of poverty and the expansion of emerging economies. But it needs to be combined with initiatives that boost capacity. Giving clients access to training programmes for skill development is crucial. Further provide technical and expert support for the growth of their microbusinesses. Microcredit may significantly contribute to the reduction of poverty and the expansion of the economies of developing nations if the government and microfinance organizations collaborate.

Idowu Friday Christopher (2010) In order to determine how microfinance affected Small and Medium Sized Enterprises in Nigeria, the researcher conducted a study. The study's conclusions showed that a significant number of small and medium-sized businesses benefited from the many financial and non-financial services offered by microfinance organizations. But just a small number of them were able to secure the needed sum. But the majority of small and medium-sized businesses acknowledged that the benefits of microfinance institutions assist them in expanding their market.

METHODOLOGY OF THE STUDY

The current study is based on secondary data that has been gathered through literature reviews, journals, websites, and other sources.

CONCEPT OF MICROFINANCE

According to Robinson, microfinance is a development strategy that offers or grants very small loans, savings, micro leasing, micro insurance, and money transfers to help the extremely or desperately poor start or grow their companies. Along with financial services, they also offer other services like group formation, training for group members, etc. The needy in India can obtain microfinance services through commercial banks, non-banking financial organizations, NGOs, credit unions, etc.

MICROFINANCE'S PROPERTIES

- It plays a crucial role in rural financing.
- It works with tiny loans.
- The loan's term is brief.
- Most of the debtors are low-income individuals.
- Microfinance loans are given out to produce income.
- It is one of the best methods for reducing poverty.
- It is more customer-focused.

MICROFINANCE PRODUCTS

Micro credit

Small business owners and residents of rural areas are eligible for loans from microfinance organizations. These loans are important since they are given to borrowers without any form of security. The pledge of collateral as security for loan repayment is not required from the borrower. These loans support small business owners' business growth.

Small savings

Entrepreneurs can manage savings accounts with no minimum balance. These accounts encourage savings and enable business owners to turn small amounts of money into substantial sums.



Low-cost insurance

Micro insurance is a sort of protection offered to microloan borrowers. Compared to conventional insurance plans, these insurance products have cheaper premiums. Offering insurance protection to those with low incomes both encourages investment and lessens the impact of unforeseen external shocks.

MICROFINANCE'S PARTICIPATION AND IMPORTANCE

The following ways that microfinance significantly contributes to the improvement of the Indian economy:

Credit to rural poor

Rural residents cannot fulfill their financial needs by relying on financial institutions. For their financial needs, they primarily rely on non-financial entities. The rural poor have received a variety of financial and non-financial services through microfinance.

Economic expansion

The level of living for the impoverished has increased because of microfinance. Additionally, it boosts the economy's capacity to produce products and services, which raises our nation's overall national revenue. All of these ultimately result in the expansion of our nation's economy as a whole.

Reduction of poverty

Microfinance aids the underprivileged in taking advantage of new business opportunities by fostering their entrepreneurial spirit and providing funding. Employment raises their standard of living and income, which in turn lowers poverty.

Creating jobs

Small business owners and residents of rural areas are given loans and other forms of financial support by microfinance institutions. Microfinance aids the underprivileged in taking advantage of new business opportunities by fostering their entrepreneurial spirit and providing funding.

Women empowerment

The majority of SHGs in India are created and run by women. When it comes to providing women with microfinance services, SHGs and microfinance institutions are quite important. As a result, microfinance gives underprivileged women more economic and social influence.

Mutual assistance and cooperation

Microfinance encourages members to help one another and work together. The group members work together to accomplish their goals and advance economic interest.

Mobilization of savings

Microfinance encourages people to start saving. Entrepreneurs can manage savings accounts with no minimum balance. These accounts encourage saving and enable the business owners to turn little sums of money into significant sums of money for upcoming development projects.

Improvement of abilities

Through the development of their entrepreneurial abilities, microfinance enables the underprivileged to take advantage of new business prospects. They gain leadership skills and receive training from organizations that support them. Therefore, microfinance aids in the growth of people's entrepreneurial talents.

Social services

Microfinance aids the underprivileged in taking advantage of new business opportunities by fostering their entrepreneurial spirit and providing funding. Their standard of living and income both rise as a result of employment. They might move for better health, education, etc. Therefore, microfinance promotes social welfare or advances society.

PROBLEMS FACED BY MICRO FINANCE

- Obstacles relating to technology.
- Micro financing initiatives have poor institutional viability.



- Risk of lending to the poor was thought to be considerable.
- High fees associated with micro lending.
- Lack of knowledge about investing options in micro financing.
- Measurement of the social impact of microfinance institutions is challenging.
- Lack of stock and loan financing.
- Shoddy distribution network.
- Lack of specialized solutions and microfinance models for the underprivileged.
- Microfinance institutions lack training in the subject.

CONCLUSION

As they play a significant role in economic development, financial institutions are, as we all know, an essential component of our economy. Although there are many financial institutions in India, their operations are not favorable. However, small business owners and residents in rural areas depend heavily on microfinance. Microfinance is crucial in developing nations like India since it aids in the socioeconomic improvement of low-income and poor individuals and eradicates poverty from the economy.

Any nation's economic growth is influenced by its financial services industry. Microfinance organizations offer low-income persons a range of financial services and support them in developing their entrepreneurial abilities. It improves people's quality of life. Therefore, microfinance institutions are essential to the socioeconomic growth of our nation. The RBI and the national government should make the necessary preparations for the expansion of microfinance institutions in India. The state government also takes the required steps to educate the public about the numerous services provided by microfinance organizations.

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MANAGEMENT OF GRIDHRASI THROUGH AYURVEDA W.S.R TO SCIATICA- A CASE STUDY

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ABSTRACT

Background: Gridhrasi is one of the most common disorders of Vata, which closely resembles with sciatica, which is characterized by pain or discomfort associated with sciatic nerve. Contemporary medicine has limitations giving short-term relief in pain or surgical intervention with side effect.

Aims and Objectives: The aim of this study was to access the efficacy of Ayurvedic management through Shodhana and Shamana Chikitsa.

Materials and methods: It is a single case study. A 31yrs old male who was came with complaints of severe pain in low back(lumbar region) on right side which is radiating towards the thigh, calf region & down to foot difficulty & pain while walking & sitting, stiffness in lumbar region, mild numbness in right leg since 2 months. Also having the H/O fall before 4 months. So, patient approached to Ayurvedic hospital and was treated by one course of Yoga Basti along with Shamana Chikitsa.

Result: symptomatic assessment of patient was carried out after the treatment & satisfactory outcome was observed & overall quality of life of patient was improved.

Conclusion: The above mentioned therapy gives symptomatic relief for the management of Gridhrasi.

KEYWORDS: Gridhrasi, Shodhana, Shamana, Yoga Basti, Sciatic.

INTRODUCTION

In Ayurveda sciatica disease is resembles with Gridhrasi which included under 80 types of Vataja Nanatmaja Viakara ^[1]. In this disease the gait of patient is typical that resembles of Ghridra (Vulture). Ghridrasi is divided into 2 types based on Dosha Involvement in it. One is Keval Vataja and other is Vata-Kaphaja. The sign and symptoms of Kevala Vataja is Ruk(pain) with Toda (pricking sensation), Stamba (stiffness) and repeated twitching in the Sphik, Kati, Uru, Janu, Jangha, and Pada in order. Saktikshepanigraha(i.e., restriction in upward lifting of lower limb). In Vata-Kaphaja Gridhrasi there is Tandra (drowsiness), Gaurva(feeling of heaviness) and Aruchi (anorexia) is present. ^[2]



Sciatica refers to pain that radiates along the course of the sciatic nerve, which is associated with tingling numbness, pricking sensation and stiffness. The life time incidence of sciatica varies from 13-40%. It is most common during peoples 40s and 50s and men's are more frequently affected than women's.^[3] The prevalence of sciatica varies considerably ranging from 3.8% in the working population to 7.9% in the nonworking population.

In *Ayurveda* the disease *Gridhrasi* treated as a *Vata Vyadhi*, which included mainly *Basti Chikitsa* as a *Shodhana Karma* and internal medicine as a *Shamana Chikitsa*.

CASE REPORT

A 31 year male patient visited *kayachikitsa* OPD of RPK Ayurvedic Hospital, Ilkal on date 20/7/22 with following details:

Age/sex: 31yr/male

OPD No: 2215527

DOA: 20/7/22

DOD: 27/7/22

Occupation: Software Engineer

Address: Hatti

Chief Complaints

- Low back pain radiating to right toe since 2 months.
- Difficulty and pain while walking & sitting since 2 months.
- Stiffness in lumbar region and slight numbness since 2 months.

H/o Present Illness

Patient is said to be healthy before 2 months then he gradually developed symptoms like pain in lower back region, which started gradually radiating to posterior aspect of right leg, associated with difficulty & pain while walking and sitting, stiffness in lumbar region and slight numbness which was disturbing routine work. For these complaints patient has approached allopathic hospital where he got medication i.e painkiller and pain was relieved for short duration but there is no complete recovery and there is recurrence of symptoms. So Patient approached to *kayachikitsa* OPD seeking Ayurvedic cure.

Past History

- H/O Trauma fall from bike
- N/H/O DM/HTN

Personal History

- Diet: Mixed
- Appetite: Reduced
- Bowel: clear (1 time/day)
- Micturation: Normal(5-6 times/day)
- Sleep: Disturbed because of pain

Ashtavidha Pariksha

- *Naadi: Vatakapajaja*
- *Mala: Prakruta*
- *Mutra: Prakruta*
- *Jihva : Alipta*
- *Shabda: Prakruta*
- *Sparsha: Prakruta*
- *Druk: Prakruta*
- *Akruti: Madhyama*

Nidana Panchaka

- **Nidana (Causative factors):** Irregular posture, H/o fall from bike, *Aatichankramana*(excessive walking), prolonged continuous standing, sitting and heavy weight lifting.
- **Poorvarupa (Prodromal symptoms):** Pain and stiffness in lumbar and low back region.



- **Roopa (manifestation):** Pain in the lumbar region radiating towards the thigh, calf region and down to the foot, difficulty in walking and sitting, numbness in the left leg.
- **Samprapti (Pathogenesis)**
Vata Dosha is vitiated due to *Nidana Sevena* i.e. excessive walking, irregular posture, H/o fall from bike, prolonged continuous standing, sitting and heavy weight lifting.



Vitiated *Vata Dosha* causes formation of *Rukshta*, *Kharata* in lumbar vertebra



which further leads to loss of functioning of *Shlesmaka Kapha* i.e. decreases elasticity and flexibility of disc



It result into the decreasing the functioning of joints in lumbar region, which ultimately results in disc herniation and compression of nerve i.e. *Prakshobha* of *Vatavahini Nadi*.



Compression of nerve causes radiating pain towards low back, gluteal, calf and right leg with tingling, numbness.

Samprapti Ghataka

- *Dosha – Vata Kapha*
- *Dushya – Rasa , Rakta, Mamsa, Asthi, Majja*
- *Ama – Nirama*
- *Agni – Jataragnijanya*
- *Srotas- Rasavaha, Raktavaha, Mamsavaha, Asthivaha, Majjavaha*
- *Srotodusti – Sanga*
- *Rogamarga – Madhyama*
- *Udhabhava Sthana – Pakwashaya*
- *Vyaktasthana – Sphik, Kati, Prushta, Uru, Jaanu, Jangha, Paada*
- *Rogaswabhava – Ashukari*
- *Sadhyasadyata – Sadhya*

Systemic Examination

CNS- conscious and well oriented with time and place.

CVS- S1 and S2 heard no murmur.

RS- Normal vesicular sounds heard and no added sounds.

P/A -

Locomotor examination

Inspection

- Gait : Antalgic Gait
- Deformity : No Any Deformity

Palpitation

- Tenderness – positive at L4 and L5
- Muscle tone – good
- Muscle power – both upper limb and lower limb is good
- Range of movement of spine
 - Forward flexion – limited to 20cm above ground.



- Right lateral flexion – limited to 30° with pain.
- Left lateral flexion - limited to 30° with pain.
- Extension - limited to 10° with pain.
- Schober's- less than 10cm of distance.

Special Test

Test	Right leg	Left leg
SLR Test	Positive at 35°	Negative
Bragard's Test	Positive at 35°	Negative
Bow string test	Positive	Negative

Treatment

- *Sarvanga Abhyanga* followed by *Pinda Sweda* and *Bashpa Sweda*
- **Basti - Yoga Basti**
- **Niruha Basti** – *Erandamooladi Niruha Basti*

Ingredients of *Niruha Basti* :

S.no	Ingredients	Dose
1	<i>Madhu</i>	100ml
2	<i>Saindhava lavana</i>	10gms
3	<i>Sahacharadi taila</i>	200ml
4	<i>Shatapushpa kalka</i>	10gms
5	<i>Erandamooladi kwatha</i>	400ml
	<i>Total quantity</i>	700ml

- **Anuvasana Basti** – *Sahacharadi Taila* (70ml)

Yoga Basti

21/7/22	22/7/22	23/7/22	24/7/22	25/7/22	26/7/22	27/7/22	28/7/22
AB	NB & AB	AB	NB& AB	AB	NB& AB	AB	AB

Shamana Aushadhi

1. Cap. Palsineuron-1TID A/F with luke warm water for 7days
2. Tab. *Trayodashanga Guggulu*- 2BD A/F with luke warm water for 7days
3. *Astavarga Kashaya* 3tsf BD before food with luke warm water

Followup medication

1. Tab. Neuro XT - 1 BD A/F with luke warm water
2. *Sahacharadi Kashaya* - 3tsf BD B/F with luke warm water
3. MM Oil – E/A od before bath

Assessment of patient**Table 1: Subjective Criteria**

S.no	Criteria	Before Treatment	After Treatment	
			After 15 days	After 30 days
1	Radiating pain from lumbar region to right leg	Severe pain	Mild pain	Pain reduced
2	Appetite	Reduced	Improved	Improved
3	Sleep	Disturbed	Good	Good

**Table 2: Objective Criteria**

S.no	Criteria	Before treatment	After treatment	
1	Pain while walking and sitting	Severe pain	Mild pain	Pain reduced
2	SLR TEST a) Right leg b) Left leg	a)Positive at 35° b)Negative	a)Positive at 50° b)Negative	a)Negative b)Negative
3	Bragard's test a) Right leg b) Left leg	a)Positive at 35° b)Negative	a)Positive at 50° b)Negative	a)Negative b)Negative
4	Forward flexion	Limited to 20cm above ground with pain	Limited to 10cm above ground with pain	Limited to 10cm above ground with pain
5	Left lateral flexion	30° with pain	20° without pain	20° without pain
6	Right lateral flexion	30° with pain	20° without pain	20° without pain
7	Extension	10° with pain	20° without pain	20° without pain
8	Schober's test	<10cm of distance	>10cm of distance	>10cm of distance

OBSERVATION AND RESULT

After completion of one and half month of *Ayurvedic* therapy (*Shodhana* and *Shamana*) patient had found significant relief in the lumbar pain, with increased range of movement of spine. Assessment of the patient was carried out by specific subjective and objective criteria as mentioned in table no.1 and table no.2. As per patient words, patient is now able to walk without much difficulty, able to sit on flat surface without having much pain and able to daily routine activities without pain.

DISCUSSION

Chikitsa sutra for *Gridhrasi* as per classic is *Bastikarma*, *Siravyadha*, and *Agnikarma*^[4]. As *Gridhrasi* is *Vata Vyadhi*, *Chikitsa* of *Vatadosha* is *Snehana* and *Shodhana* is needed to pacify *Vatadosha*. The treatment principle applied for the management of this disease condition is *Vedanasthapana Chikitsa* and *Vatashamana Chikitsa*.

The probable mode of action of these *Shodana* and *Shamana Chikitsa* can be explored as follows:

Erandamooladi niruha basti^[5]

Erandamoola is best *Vatahara*. *Erandamoola* has the properties of *Kaphavatahara Shamaka* and act as *Shulagna*, *Sothagna*, and also acts as *Vedanasthapana* and *Adhobhagharogahara*. As *basti* is main *Chikitsa* in *Gridhrasi* (*Vata Vyadhi*), *Erandamoola Niruha Basti* will play major role to relive symptoms of *Gridhrasi*.

Sahacharadi taila^[6]

Sahacharadi taila contain main ingredients like *Sahachara* which is *Vatakapah Shamaka* and *Dashamoola* which is *Tridosahara* it is potent oil to combat *Vatavyadhi*, *Kampa* and *Shosha*.

Astavarga kashaya^[7]

Astavarga kashaya acts as *Vatakapahara*, also called *Vatahara Kashayam* is an *Ayurvedic* proprietary medication used for *Vata* issues like rheumatic diseases. Sanctified with potent anti-inflammatory and analgesic actions, it reduces joint pain, inflammation, swelling, and stiffness. It is also vital for the treatment of rheumatoid arthritis, osteoarthritis, ankylosing spondylitis, and paralytic disorders.

Cap Neuro XT^[8]

It contains *Ekgaveera Rasa*, *Mahavata Vidwasaras*, *Vatagajankush Rasa*, *Vata Kulantaka Rasa*, all these helps for *Vata Shamana* and *Shulahara*. It is anti inflammatory, analgesic, muscle relaxant and regenerative property.

Trayodashang Guggulu^[9]

Trayodashang Guggulu is *Guggulu* based herbal formulation. It provides strength to the nerves, bones, joints, muscles and ligaments. It is effective in all types of diseases related to nervous system and musculoskeletal system. It is also beneficial in gout, pain disorders, paralysis, hemiplegia, sciatica pain and all types of joint pain.

**Palsineuron^[10]**

Improves metabolic processes in CNS & PNS, activates neuro- muscular communication. Regulates blood supply in affected areas, overcomes anoxia, stimulates cerebro-neural activity. Promotes healing of damaged nerves & blood vessels, Recanalises blood vessels. Provides nutrition support to nerves & blood vessels.

CONCLUSION

Sciatica is a major cause of morbidity that makes a person to be disabled from daily activities. These case showed that *Shodhana* and *Shamana Chikitsa* were very effective in the management of *Gridhrasi*. It has proved significant improvements in subjective and objective parameters indicating that the patient has improved in presenting the features and significant improvement found in quality of life. The patient is doing well with his daily activities. By proper assessment and treatment we can conclude that *Gridhrasi* can be successfully managed and gives satisfactory result without any side effects.

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A STUDY ON LIQUIDITY AND PROFITABILITY ANALYSIS IN SELECTED AUTOMOBILE INDUSTRY

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1.1 INTRODUCTION

Finance is regarded as the lifeblood of every commercial enterprise. Financial statements allow any corporate organization to evaluate its financial performance. One of the most crucial factors for stakeholders is the company's financial stability.

To maintain their devotion to the firm, they must be aware of whether the company will perform better in the future. Financial health measurement's main objective is to demonstrate that the company is profitable and not in immediate risk of going out of business. Evaluating the financial success of each corporate organization is crucial in the modern world.

In the modern day, it is difficult to envision a world without finance. Finance has occasionally been used to refer to the "essence" of our economic activities. Because it lowers operating expenses and boosts profitability. A key component of efficient business management is cost control. To increase an asset's output, frequent maintenance is required. A business is expected to settle its debts on time. The value, return on assets, and investment return these outcomes are encouraged by the activity's addition, etc.

1.2 STATEMENT OF THE PROBLEM

Profitability is the indication of the efficiency with which the operations of the enterprise are carried on. The efficiency of the business is measured by the amount of profit. The greater of profit, the more efficient is the business considered to be. Poor operational performance may indicate poor sales and hence poor profits. Thus, profits are the soul of the business concern without which it is lifeless. The study confines itself to issues relating to the financial performance of some selected large scale automobile industries in India. It excluded non-financial areas such as productivity, marketing, personnel and research and development from its purview. Any research study can explore only a limited field of knowledge. There are many aspects need to be researched further. Evaluation of the sample company's financial performance is done using profitability, liquidity, and analysis the financial health.

1.3 OBJECTIVES

- To Find the Profitability Position of Selected Automobile Industries in India.
- To Evaluate Liquidity Position of Selected Automobile Industries in India.
- To Monitor Market Trends by using Trend Analysis of Selected Automobile Industries in India.

1.4 SCOPE OF THE STUDY

- The study's conclusions may help executives make tactical and budgetary decisions that will eventually improve performance in the future.
- To ascertain the productivity, fluidity, and dissolve ability of the financial accounts, these clients must be investigated.
- In order to assess the overall strength and performance of the companies under investigation, the procedure involves calculating the results and comparing them to notable business undertaking statistics, competitors or venture midpoints.

1.5 RESEARCH METHODOLOGY

1.5.1 RESEARCH DESIGN

The study purely depends on the secondary data which are collected mainly from the moneycontrol.com for this study was selected based on purposive sampling method. Accordingly, the study includes top five companies. The period of study is for 5 years (2018 to 2022)



S.No	Company Name
1	Mahindra & Mahindra
2	Tata Motors
3	Ashok Leyland
4	Hero MotoCorp
5	Maruti Suzuki

1.5.2 TOOLS FOR FINANCIAL ANALYSIS

RATIO ANALYSIS		TREND ANALYSIS
LIQUIDITY RATIO	PROFITABILITY RATIO	
Current Ratio	Gross Profit Ratio	
Quick / Liquid Ratio	Net Profit Ratio	
Absolute Liquid Ratio	Operating Profit Ratio	
Fixed Assets Turnover Ratio	Return On Equity Ratio	
Capital Turnover Ratio	Return on Asset Ratio	

1.6 LIMITATIONS OF THE STUDY

- In this study only certain Automobile Industries were chosen with ten years database.
- The study only includes top five Automobile Industries with a focus on Mahindra & Mahindra, Tata Motors, Ashok Leyland, Hero Moto Corp and Maruti Suzuki.

REVIEW OF LITERATURE

Abinash Dash, Baisali Das, and Biswajit Rout (2020), The profitability of Maruti Suzuki from 2009 to 2019 is revealed in their report, "A STUDY ON FINANCIAL STATEMENT ANALYSIS OF MARUTI SUZUKI INDIA LIMITED COMPANY." "Profitability is assessed using a variety of profit ability measures, growth charts, and statistical methods.

Yadav Kumar Sujeet and Sahay Mridula (2020), "A STUDY ON AUTOMOBILE INDUSTRY GROWTH IN INDIA". Looked at the impact of the automobiles ect or on air pollution and detailed the growth patterns of this sector. As the disposable income of rural residents increases, the overall supply and demand increases, leading to increased car sales and increased environmental air pollution.

Modi Vishakhaben (2020) "TO ASSESS THE LIQUIDITY OF A NUMBER OF INDIAN AUTOMOTIVE COMPANIES" in his research. The data was analyzed using statistical methods such as Mean, Standard Deviation, and Coefficient of Variances, and the study discovered that few car companies have a poor liquidity position, while others have a good liquidity position, and only a few have a very strong liquidity position.

Bhagyalakshmi and Saraswathi (2019) "A STUDY ON THE EVALUATION OF FINANCIAL PERFORMANCE UTILISING DUPONT ANALYSIS AND PROFITABILITY RATIOS INCLUDING ROE, ROA, AND ROCE". The analysis covered the years 2013 to 2017 and focused on 10 automobile manufacturers that are listed on the NSE. Mostly secondary data were used to inform this study. The public yearly financial statements were used together the data. To determine the link between the variables and their effects on ROA and EM on ROE, correlation and regression analyses were used. All variables, with the exception of EM, were shown to be positively correlated, and there was significant variation in financial performance between ROE and ROA. Analysts and investors were advised to pay more attention to changes in profit margin than they should to changes in price.

DATA ANALYSIS AND INTERPRETATION

INTRODUCTION

The process of evaluating information and making appropriate conclusions from it using different analytical techniques is known as data interpretation. Data analysis aids researchers in categorising, modifying, and summarising data to uncover key information. The act of conducting data analysis involves looking for patterns and trends in the data. Data interpretation involves giving the information a meaning.



TABLE4.1
TABLE SHOWING CURRENT RATIO

YEAR	MAHINDRA& MAHINDRA	TATA MOTORS	ASHOK LEYLAND	HERO MOTOCORP	MARUTI SUZUKI
2017-2018	1.20	0.95	0.51	2.01	0.51
2018-2019	1.18	0.85	0.87	1.91	0.87
2019-2020	1.19	0.85	0.75	2.02	0.75
2020-2021	1.40	0.93	1.15	1.75	1.15
2021-2022	1.34	0.98	0.09	1.92	0.99

INTERPRETATION

The above table 4.1 shows current ratio position of Mahindra & Mahindra, Tata Motors, Ashok Leyland, Hero Moto Corp and Maruti Suzuki during the year 2018 to 2022. The study shows the ratio ranges from 2.02 in the year 2018 and gradually falls which results to 0.09 in the year of 2022.

CHART 4.1.1
CHART SHOWING CURRENT RATIO

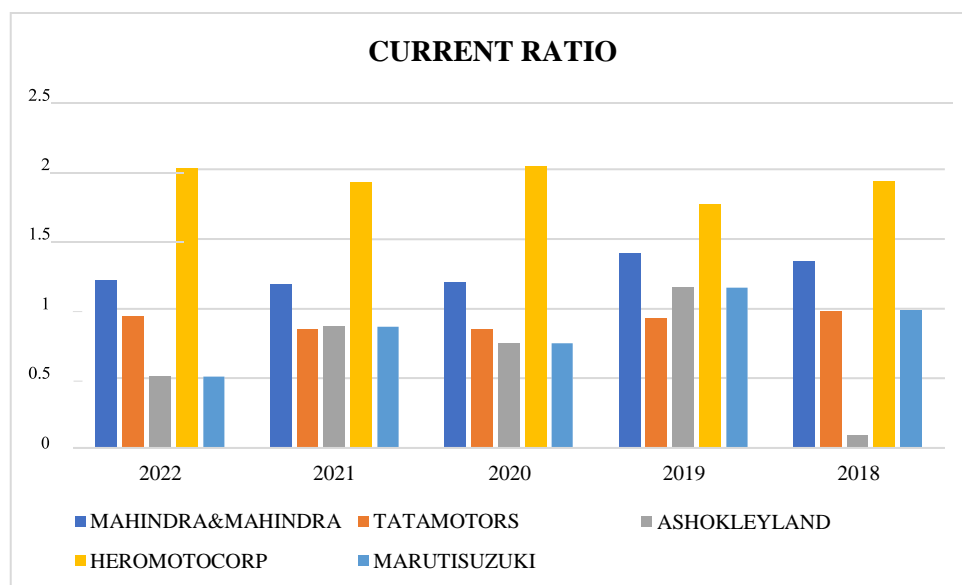


TABLE4.2
TABLE SHOWING LIQUID RATIO

YEAR	MAHINDRA & MAHINDRA	TATAMOTORS	ASHOK LEYLAND	HERO MOTOCORP	MARUTI SUZUKI
2017-2018	1.01	0.66	0.79	1.79	0.31
2018-2019	1.08	0.58	0.97	1.62	0.64
2019-2020	0.98	0.58	1.22	1.72	0.46
2020-2021	1.21	0.70	0.83	1.47	0.96
2021-2022	1.13	0.74	0.94	1.65	0.96

INTERPRETATION

The above table 4.2 shows liquid ratio position of Mahindra & Mahindra, Tata Motors, Ashok Leyland, Hero Moto Corp and Maruti Suzuki during the year 2018 to 2022. The study shows the ratio ranges from 1.79 in the year 2018 and gradually falls which results to 0.31 in the year of 2022.



CHART 4.2.1
CHART SHOWING LIQUID RATIO

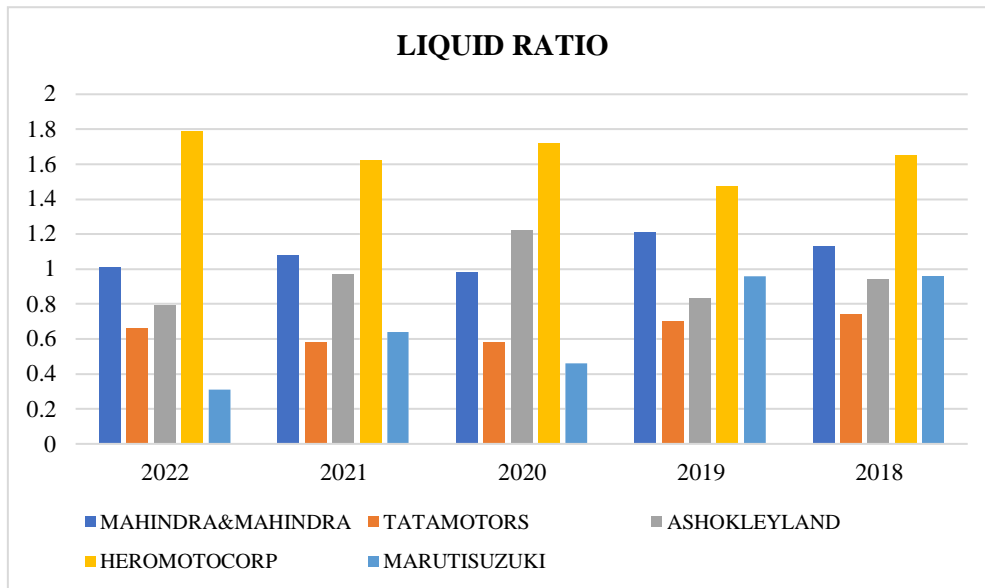


TABLE 4.3
TABLE SHOWING INVENTORY TURNOVER RATIO

YEAR	MAHINDRA & MAHINDRA	TATAMOTORS	ASHOK LEYLAND	HERO MOTOCORP	MARUTI SUZUKI
2017-2018	9.93	133.85	9.44	34.26	24.72
2018-2019	8.67	99.53	10.03	27.74	24.99
2019-2020	6.88	171.86	6.86	23.38	22.31
2020-2021	7.83	101.14	6.42	17.61	21.83
2021-2022	7.86	110.81	7.45	20.45	23.72

INTERPRETATION

The above table 4.3 shows inventory turnover ratio position of Mahindra & Mahindra, Tata Motors, Ashok Leyland, Hero Moto Corp and Maruti Suzuki during the year 2018 to 2022. The study shows the ratio ranges from 3.55 in the year 2018 and gradually falls which results to 1.77 in the year of 2022.



CHART4.3.1
CHART SHOWING INVENTORY TURNOVER RATIO

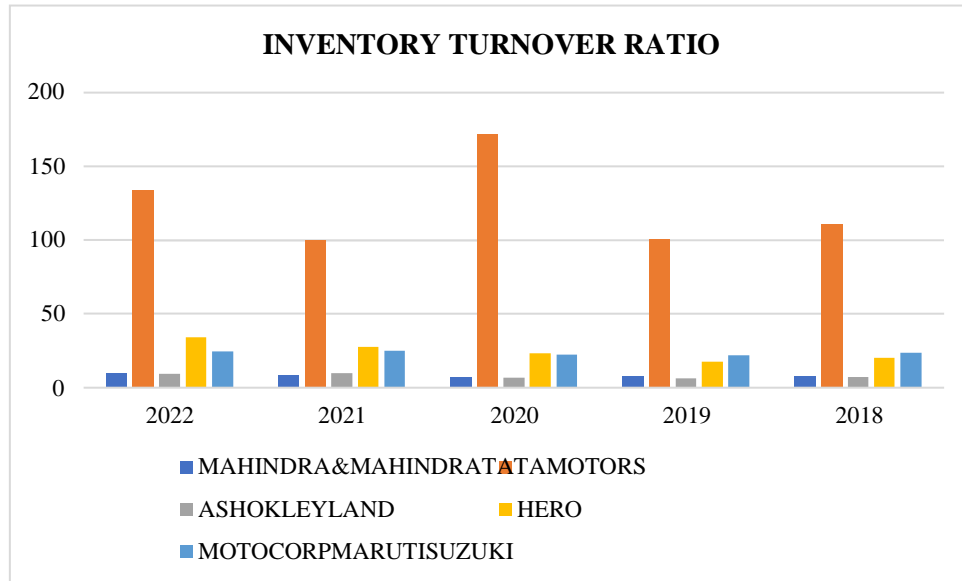


TABLE 4.4
TABLE SHOWING FIXED ASSET RATIO

YEAR	MAHINDRA & MAHINDRA	TATAMOTORS	ASHOK LEYLAND	HERO MOTOCORP	MARUTI SUZUKI
2017-2018	3.28	49.85	1.92	3.28	5.03
2018-2019	3.34	48.73	1.96	3.34	4.87
2019-2020	2.18	35.26	1.29	2.18	4.18
2020-2021	2.69	33.31	1.19	2.69	4.04
2021-2022	2.90	39.63	1.58	2.90	5.02

INTERPRETATION

The above table 4.4 shows fixed asset ratio position of Mahindra & Mahindra, Tata Motors, Ashok Leyland, Hero Moto Corp and Maruti Suzuki during the year 2018 to 2022. The study shows the ratio ranges from 49.85 in the year 2018 and gradually falls which results to 1.19 in the year of 2022.



CHART4.4.1
CHARTSHOWINGFIXEDASSETRATIO

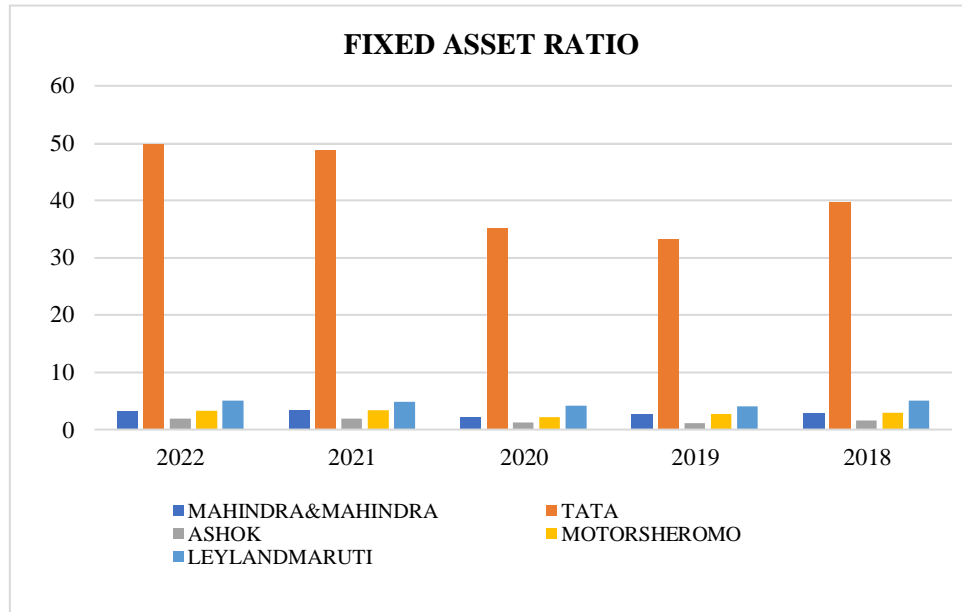


TABLE 4.5
TABLE SHOWING CAPITAL TURNOVER RATIO

YEAR	MAHINDRA & MAHINDRA	TATAMOTORS	ASHOK LEYLAND	HERO MOTOCORP	MARUTI SUZUKI
2017-2018	3.73	4.52	1.42	0.47	1.42
2018-2019	4.09	4.47	1.36	0.24	1.36
2019-2020	4.18	4.90	1.29	0.32	1.29
2020-2021	4.00	5.35	1.36	0.40	1.36
2021-2022	3.69	5.97	1.35	0.37	1.35

INTERPRETATION

The above table 4.5 shows capital turnover ratio position Mahindra & Mahindra, Tata Motors, Ashok Leyland, Hero Moto Corp and Maruti Suzuki of during the year 2018to 2022. The study shows the ratio ranges from 5.97 in the year 2018 and gradually falls which results to 0.24 in the year of 2022.



CHART 4.5.1
CHART SHOWING CAPITAL TURNOVER RATIO

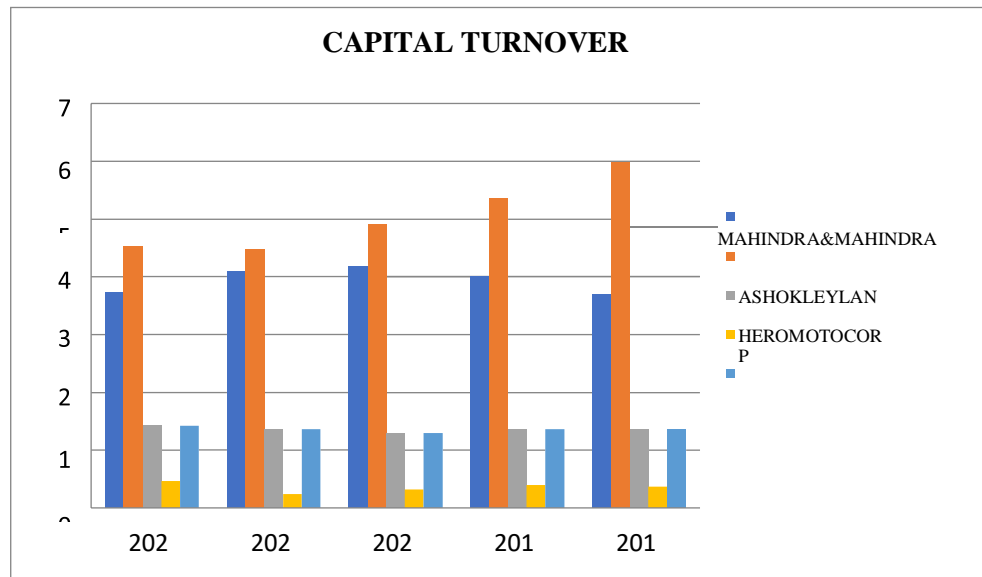


TABLE 4.6
TABLE SHOWING GROSS PROFIT RATIO

YEAR	MAHINDRA & MAHINDRA	TATAMOTORS	ASHOK LEYLAND	HERO MOTOCORP	MARUTI SUZUKI
2017-2018	6.47	2.81	8.00	14.54	11.22
2018-2019	6.17	1.55	8.23	12.83	9.19
2019-2020	5.13	4.09	3.11	10.83	4.82
2020-2021	5.65	0.26	1.41	10.78	3.15
2021-2022	6.83	3.39	0.12	9.14	3.16

INTERPRETATION

The above table 4.6 shows Gross profit ratio position Mahindra & Mahindra, Tata Motors, Ashok Leyland, Hero Moto Corp and Maruti Suzuki of during the year 2018 to 2022. The study shows the ratio ranges from 14.54 in the year 2018 and gradually falls which results to 0.26 in the year of 2022.

CHART4.6.1
CHART SHOWING GROSS PROFIT RATIO

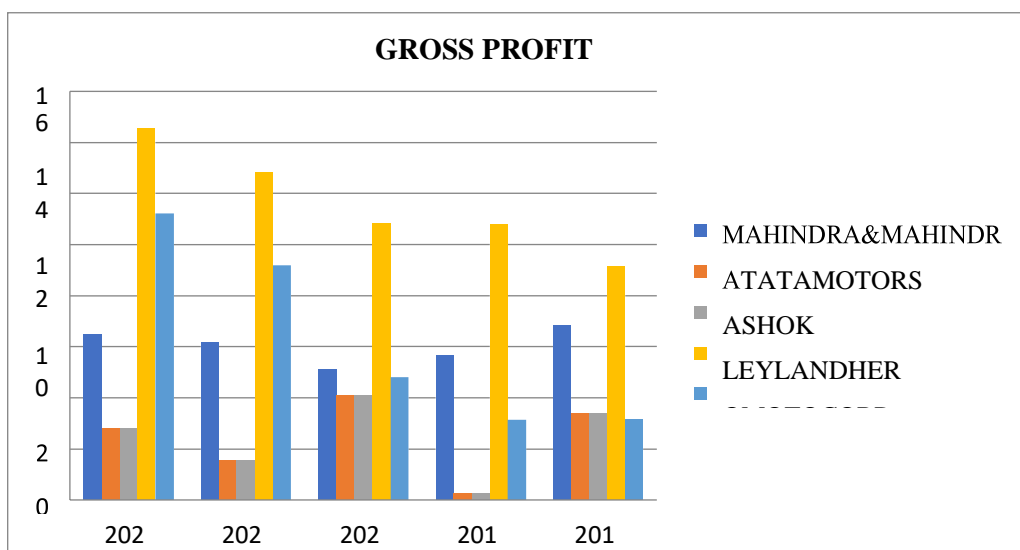




TABLE 4.7
TABLE SHOWING NET PROFIT RATIO

YEAR	MAHINDRA &MAHINDRA	TATAMOTORS	ASHOK LEYLAND	HERO MOTOCORP	MARUTI SUZUKI
2017-2018	7.44	2.31	6.14	11.31	9.67
2018-2019	4.44	9.58	6.58	10.03	8.71
2019-2020	2.24	4.20	2.08	12.39	7.35
2020-2021	3.27	5.21	0.36	9.63	6.00
2021-2022	5.99	4.03	1.12	8.55	4.21

INTERPRETATION

The above table 4.7 shows Net profit ratio position Mahindra & Mahindra, Tata Motors, Ashok Leyland, Hero Moto Corp and Maruti Suzuki of during the year 2018 to 2022. The study shows the ratio ranges from 12.39 in the year 2018 and gradually falls which results to 0.36 in the year of 2022.

CHART 4.7.1
CHART SHOWING NET PROFIT RATIO

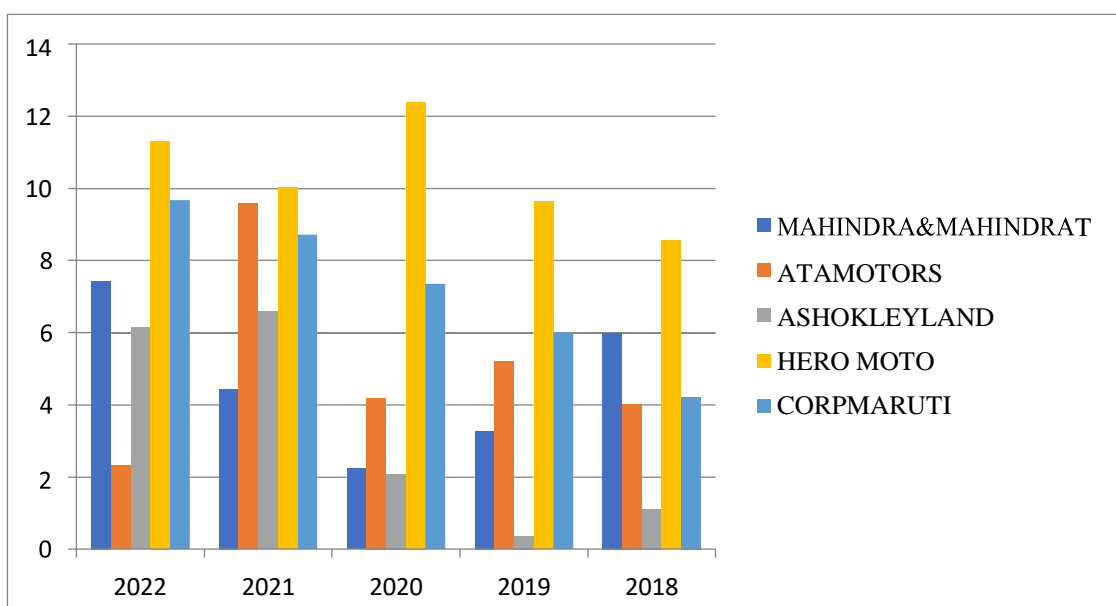


TABLE 4.8
TABLE SHOWING OPERATING PROFIT RATIO

YEAR	MAHINDRA &MAHINDRA	TATAMOTORS	ASHOK LEYLAND	HERO MOTOCORP	MARUTI SUZUKI
2017-2018	7.16	3.12	8.68	16.15	13.79
2018-2019	6.95	0.57	8.62	14.85	12.16
2019-2020	6.41	2.95	3.60	15.64	9.23
2020-2021	7.04	1.32	0.73	12.58	7.32
2021-2022	7.86	2.29	0.45	11.02	5.13

INTERPRETATION

The above table 4.8 shows Operating profit ratio position Mahindra & Mahindra, Tata Motors, Ashok Leyland, Hero Moto Corp and Maruti Suzuki of during the year 2018 to 2022. The study shows the ratio ranges from 16.15 in the year 2018 and gradually falls which results to 0.45 in the year of 2022.



CHART4.8.1
CHART SHOWING OPERATING PROFIT RATIO

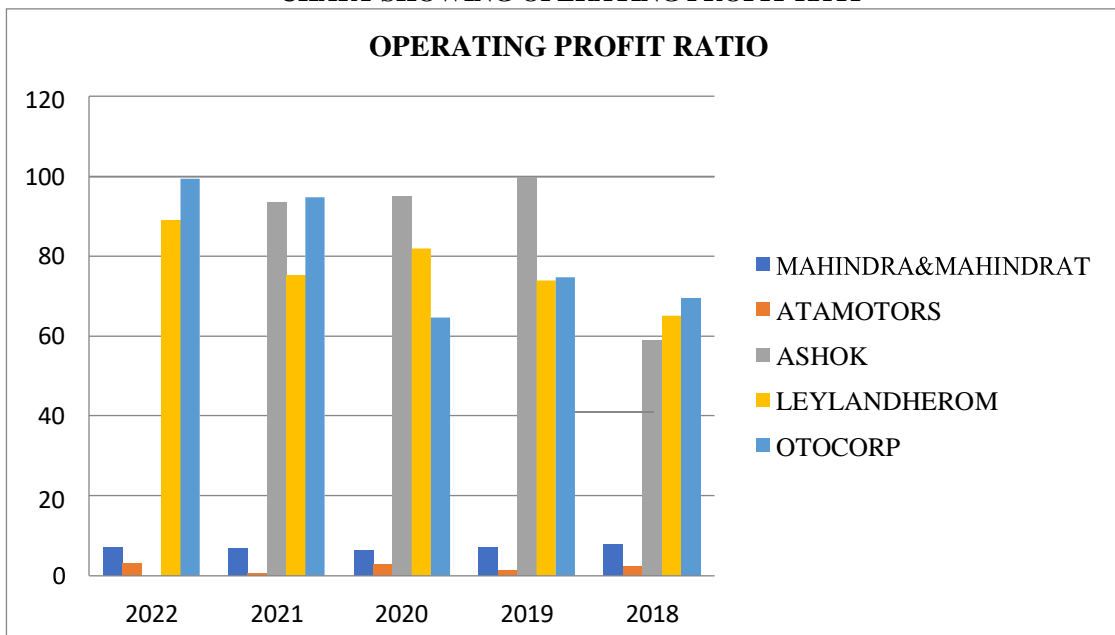


TABLE4.9
TABLE SHOWING RETURN ON ASSET RATIO

YEAR	MAHINDRA & MAHINDRA	TATAMOTORS	ASHOK LEYLAND	HERO MOTOCORP	MARUTISUZUKI
2017-2018	4.99	2.06	5.43	21.11	12.81
2018-2019	2.85	9.42	5.58	18.40	11.72
2019-2020	1.01	3.41	1.20	18.42	8.74
2020-2021	1.46	3.79	0.16	12.91	5.92
2021-2022	3.10	3.40	0.67	11.25	4.98

INTERPRETATION

The above table 4.9 shows Return on asset ratio position Mahindra& Mahindra, Tata Motors, Ashok Leyland, Hero Moto Corp and Maruti Suzuki of during the year 2018 to 2022. The study shows the ratio ranges from 21.11 in the year 2018 and gradually falls which results to 0.16 in the year of 2022.



CHART4.9.1
CHART SHOWING RETURN ON ASSET RATIO

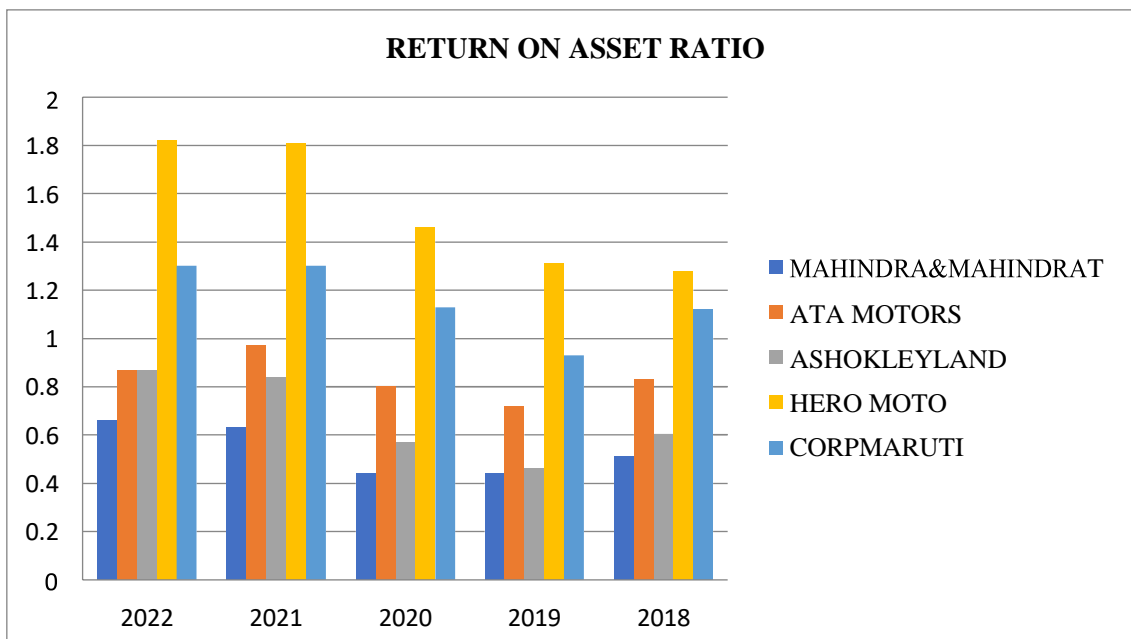


TABLE4.10
TABLE SHOWING RETURN ON EQUITY RATIO

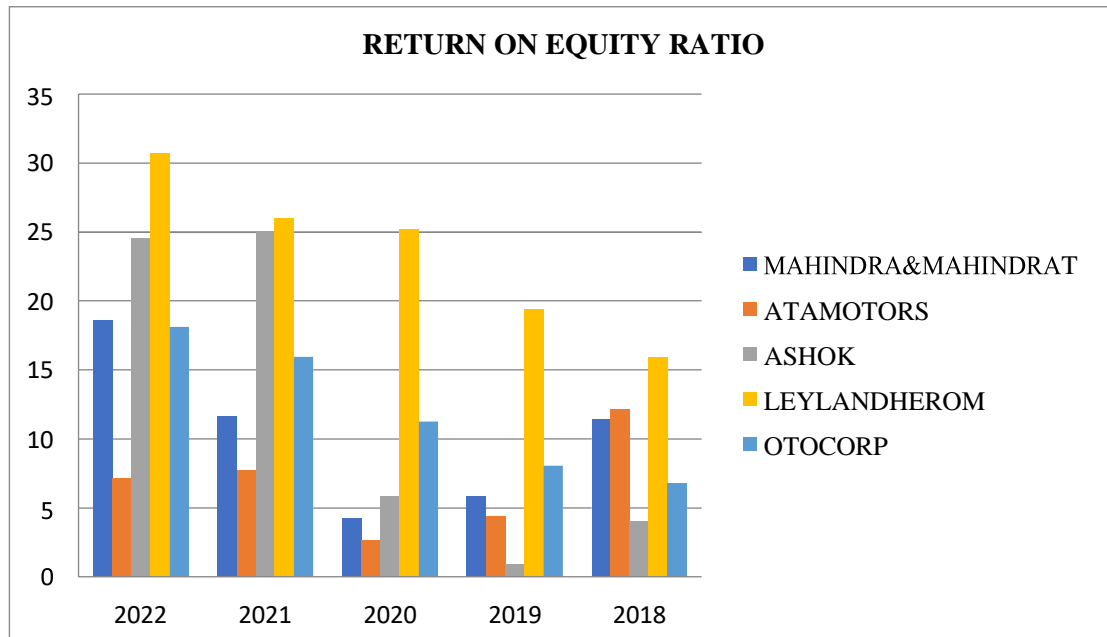
YEAR	MAHINDRA & MAHINDRA	TATAMOTORS	ASHOK LEYLAND	HERO MOTOCORP	MARUTISUZUKI
2017-2018	18.63	7.18	24.53	30.68	18.13
2018-2019	11.63	7.73	24.96	25.96	15.92
2019-2020	4.22	2.67	5.87	25.16	11.25
2020-2021	5.83	4.39	0.88	19.35	8.04
2021-2022	11.45	12.11	4.01	15.95	6.72

INTERPRETATION

The above table 4.10 shows Return on equity ratio position Mahindra & Mahindra, Tata Motors, Ashok Leyland, Hero Moto Corp and Maruti Suzuki of during the year 2018 to 2022. The study shows the ratio ranges from 30.68 in the year 2018 and gradually falls which results to 0.88 in the year of 2022.



CHART4.10.1
CHART SHOWING RETURN ON EQUITY RATIO



4.11 TRENDANALYSIS

Trend analysis is an analysis of the trend of the company by comparing its financial statements to analyse the trend of the market or analysis of the future based on past performance results, and it's an attempt to make the best decisions based on the results of the analysis done.

To put it another way, it allows for understanding a specific firm's strength or weakness in comparison to other similar firms in the industry.

The following formula can be used to construct the trend analysis formula:

- $\text{Growth rate} = \text{Current Year Amount} / \text{Base Year Amount}$



TABLE4.11
SHOWING TREND ANALYSIS IN SELECTED AUTOMOBILE INDUSTRIES

YEAR	MAHINDRA&MAHINDRA		TATAMOTORS		ASHOKLEYLAND		HEROMOTOCORP		MARUTISUZUKI	
CHANGEIN	AMOUNT	%	AMOUNT	%	AMOUNT	%	AMOUNT	%	AMOUNT	%
2018	0.00	0	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00
2019	-2454.19	-38	-35,746.38	-533	313.61	17.88	-287.41	-7.83	-223.30	-2.89
2020	-7303.37	-114	-17,781.50	-265	-1,420.03	-80.97	-67.26	-1.83	-2,159.10	-27.98
2021	-5867.30	-92	-19,783.08	-295	-1,822.91	-103.94	-706.43	-19.24	-3,496.60	-45.31
2022	-1681.60	-26	-18,078.06	-269	-2,119.94	-120.88	-1,154.81	-31.46	-3,999.10	-51.82
2023	-5494.19	-86	-24,335.65	-363	-2,922.77	-166.65	-1,261.77	-34.37	-5,357.07	-69.42
2024	-6171.82	-96	-26,354.93	-393	-3,560.41	-203.01	-1,534.64	-41.81	-6,484.22	-84.03
2025	-6849.45	-107	-28,374.21	-423	-4,198.05	-239.37	-1,807.50	-49.24	-7,611.37	-98.64
2026	-7527.08	-118	-30,393.50	-453	-4,835.69	-275.73	-2,080.37	-56.67	-8,738.52	-113.24
2027	-8204.71	-128	-32,412.78	-483	-5,473.33	-312.08	-2,353.23	-64.11	-9,865.67	-127.85

INTERPRETATION

The above table 4.11 shows trend analysis of selected Automobile Industries namely Mahindra & Mahindra, Tata Motors, Ashok Leyland, Hero Moto Corp and Maruti Suzuki. The table reveals the growth of each company for the year 2018 to 2027 where the last five years have forecasted profits.

Trend growth of MAHINDRA & MAHINDRA is anticipated to decrease. Taking 2018 as the base year, the net loss value indicates a trend value of -38% in 2019 and a projected fall rate of -128% in 2027.

The rise of the TATA MOTORS trend is anticipated to accelerate in the next years. Using 2018 as the base year, the net loss value shows a trend value of -533% in 2019 and an anticipated fall rate of -483% in 2027. Additionally, a declining value is indicated for 2021.

Trend growth of ASHOK LEYLAND is anticipated to decrease. Using 2018 as the base year, the net profit value shows a trend value of 17.88% in 2019, a decline of -80.97% in 2020, and an expected fall rate of -312.08% in 2027.

Future trend growth for HERO MOTOCORP is anticipated to decrease. Using 2018 as the base year, the trend value for net loss in 2019 is -7.83%, and it increases by -1.83% in 2020. In 2027, the firm is anticipated to decrease by -64.11 percent.

In the upcoming years, MARUTI SUZUKI trend growth is expected to go up. The net profit value of 2018 is used as the base year, showing a trend value which declines by -2.89% in 2019 and an expected fall rate of 127.85% in 2027.



CHART NO 4.11.1
CHART SHOWING TREND ANALYSIS OF MAHINDRA & MAHINDRA

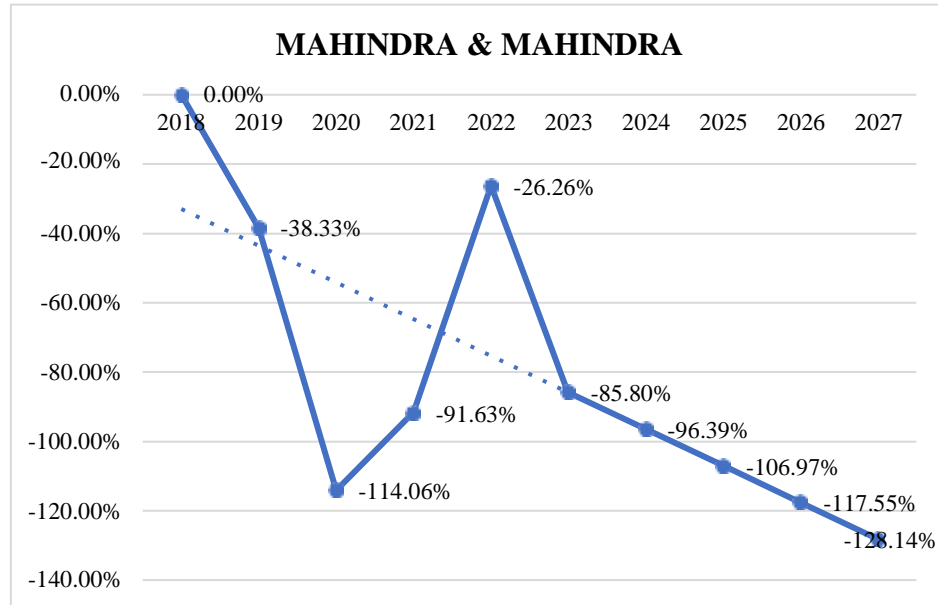


CHART NO 4.11.2
CHART SHOWING TREND ANALYSIS OF TATA MOTORS

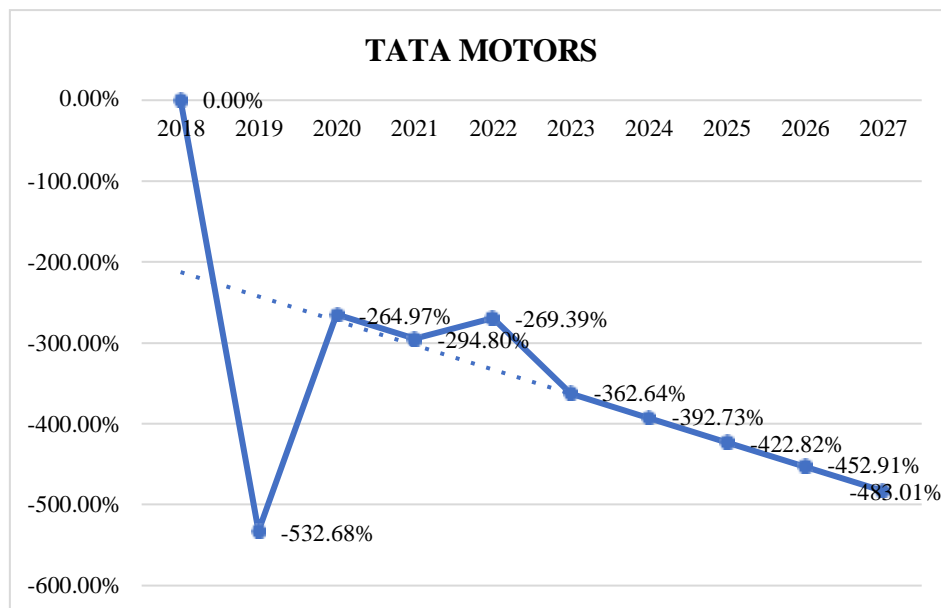




CHART NO 4.11.3
CHART SHOWING TREND ANALYSIS OF ASHOK LEYLAND



CHART NO 4.11.4
CHART SHOWING TREND ANALYSIS OF HERO MOTOCORP

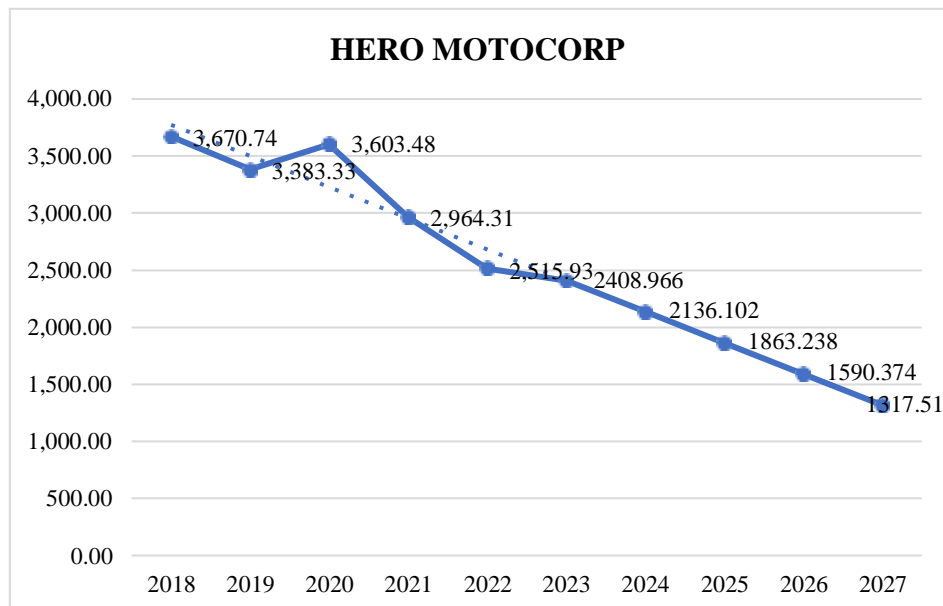
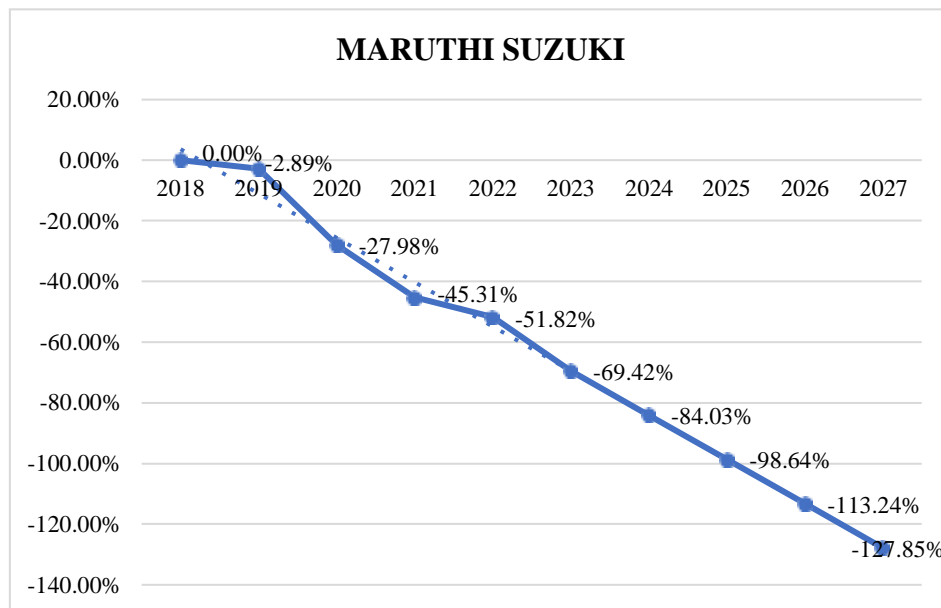




CHART 4.11.5
CHART SHOWING TREND ANALYSIS OF MARUTI SUZUKI



5. FINDINGS, SUGGESTIONS AND CONCLUSION

5.1 FINDINGS

- ❖ The year 2020 had the highest current ratio for Hero MotoCorp, the year 2021 had the highest current ratio for Mahindra & Mahindra, Ashok Leyland, and Maruti Suzuki and the year 2022 had the highest for Tata Motors.
- ❖ In the year of 2018 the Liquid ratio was in highest for Hero MotoCorp, in the year of 2020 the highest ratio is for Ashok Leyland, in the year of 2021 the companies had highest ratios were Mahindra & Mahindra and Maruti Suzuki and the company had highest ratio in 2022 was Tata Motors.
- ❖ The inventory turnover was highest for Mahindra & Mahindra was in the year of 2018, the Tata Motors has its highest in 2020, and the other three companies Ashok Leyland, Hero MotoCorp, and Maruti Suzuki had high times of turnover in the year 2019.
- ❖ In 2018 the fixed Asset turnover had their highest times of turnover for Tata Motors and Maruti Suzuki and the other companies as Mahindra & Mahindra, Ashok Leyland and Hero MotoCorp had their highest times of turnover in 2019.
- ❖ In 2022 the Capital Turnover was greatest for Tata Motors, and in 2020 the Mahindra and Mahindra has its highest. In 2018 the capital turnover ratio for Ashok Leyland, Hero MotoCorp and Maruti Suzuki has their highest turnovers.
- ❖ The gross profit for Hero MotoCorp and Maruti Suzuki was not promising from 2018
- 2022 and had their highest in 2018. Ashok Leyland also shows the same result it is also not promising its highest is in the year 2019 and the ratio goes very down after 2019, the Tata motors has high gross profit in 2020 and has an unstable growth. Only Mahindra & Mahindra has stable growth and its highest ratio is in 2022.
- ❖ Like gross profit ratio, the net profit ratio also shows a negative growth for all listed companies. The highest net profit ratio for each company were Mahindra & Mahindra and Maruti Suzuki in 2018, Tata Motors and Ashok Leyland in 2019 and Hero MotoCorp in 2020.
- ❖ Only Mahindra & Mahindra has a stable growth in operating profit and has a high operating profit ratio in 2022, the other companies had negative growth for last five year and has their highest operating profit ratio in 2018.



- ❖ In the year of 2018 the companies had their great return on assets ratio were Mahindra & Mahindra, Hero MotoCorp and Maruti Suzuki. Tata Motors and Ashok Leyland had their highest in 2019. The ratio is declining for past few years.
- ❖ The return on equity position for Mahindra & Mahindra, Hero MotoCorp and Maruti Suzuki was good in 2018, Tata motors had a high position in 2022 and Ashok Leyland had its high position in 2019.
- ❖ The result of trend analysis shows that all the five automobile companies had a declining growth and will face a negative growth rate in future.

5.2 SUGGESTIONS

- ❖ All the companies have shown a negative growth in gross profit and net profit ratios over the years. Therefore, the companies should focus on increasing their revenue and reducing their costs to improve these ratios.
- ❖ Companies like Tata Motors and Mahindra & Mahindra have shown a high inventory turnover in the past. Therefore, other companies should also focus on improving their inventory management to increase their turnover.
- ❖ The return on assets and equity ratios have declined for all the companies over the years. Therefore, the companies should focus on improving their asset utilization and profitability to improve these ratios.
- ❖ Companies like Tata Motors and Maruti Suzuki have shown a high fixed asset turnover ratio. Therefore, other companies should also focus on reducing their dependency on fixed assets and improving their efficiency in asset utilization.

5.3 CONCLUSION

This study states a study on liquidity and profitability position of selected automobile companies for a period of five years from 2018 to 2022. The result of the study says that the automobile industry is facing a decline in growth due to various factors such as economic uncertainty, rising costs, and changing consumer preferences. To overcome this decline, automobile companies should focus on improving their financial performance by increasing revenue, reducing costs, and improving their asset utilization. The recent trend in the automobile industry is towards electrification and sustainability. Companies should focus on investing in these areas to stay relevant and competitive in the market. Additionally, companies should focus on improving their digital capabilities to meet the changing needs of consumers who are increasingly using digital channels to research, purchase, and interact with automobile brands.

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THE EFFECT OF STRATEGIC MANAGEMENT PRACTICES ON ORGANIZATIONAL COMPETITIVENESS

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ABSTRACT

The project examined the effects of strategic management practices on bank's competitiveness (A study of First Bank of Nigeria Ltd & Zenith Bank Plc). The objectives the study sought to achieve are to ascertain the relationship between strategic intent and competitiveness, to identify the relationship between strategy formulation and competitiveness, to identify the relationship between strategic control measure and competitiveness and to determine the impact of IT strategy on competitiveness. To accomplish these objectives, the design of the project was descriptive survey research design while the population consists employees of Zenith bank plc and First bank of Nigeria Ltd. The sample size was 231 selected using quantitative method while data were collected using structured questionnaire. The collected data were analyzed using frequency tables, basic percentages, mean, and standard deviation, and the study hypotheses were assessed using Pearson Product Moment Correlation (PPMC) in conjunction with the Statistical Package for Social Sciences (SPSS). The study's findings indicate that the bank offers only products/services that originate from or leverage its technological capabilities; that the bank seeks new applications for its technology; that the bank's desire for specific rates of return drives its product and market decisions; that the bank will alter its market scope in order to meet its return/profit requirements; and that the bank established a primary method for convincing customers to buy its products and determining products, markets, and geographies. The test of hypotheses revealed a relationship between strategic intent and bank competitiveness, a relationship between strategic formulation and bank competitiveness, a relationship between strategic control measures and bank competitiveness, and a relationship between IT strategy practice and bank competitiveness.

1. INTRODUCTION

Businesses provide crucial social roles and contribute significantly to developing countries' economic growth; maintaining high productivity levels and performance is a perennial challenge for most firms (Jones et al., 2000). In particular, strategic management practices have been identified as essential for increased competitiveness and performance since they improve the efficiency with which a company's internal resources are produced and allocated. Jensen (2023) referred to strategic management as the procedure by which a business establishes its objectives and develops and implements a plan to reach them. Jones (2023) describes strategic management practices as the processes that ultimately result in an organization's strategic objectives, plans, and performance management. Stickland (2007) broken the time spent time by management on developing and enacting a strategy into five distinct but interconnected parts, they include developing a business concept and vision for the desired future of the organization, translating the mission into measurable long-term and short-term performance goals, selecting an approach that is realistic given the current state of the organization and will produce the desired results, putting the strategy into action efficiently and effectively, monitoring and adjusting the strategy as needed. Research has shown that strategic management practices benefit organizations of all shapes and sizes, from the very small to the very large, for-profit and non-profit (Kinyua, 2010). Strategic management practices and competition in the financial industry impact individuals' access to finance, businesses' capacity to compete and grow, the pace of economic growth, and the sector's overall stability (Syapsan, 2019).

The banking industry has experienced developing trends in global markets, including the increasing use of internet-based banking solutions like payment processing to increase customer satisfaction and streamline customer relationship management; making the Africa a more competitive market. Hence, Africa's strong economic growth has made it the second-largest banking market in the world (McKinley, 2018). High credit risk, low income, and limited access to financial services have long been seen as threats to the growth of the banking business in Africa. From 2012–2013, the number of banked Africans increased from 170 million to 300 million. This increase occurred despite low returns and delayed expansion being blamed on costly staff maintenance and labor-intensive paper-based processes that could hamper performance (CNBC AFRICA, 2018).



The growing rivalry in the banking business has affected market share and firm performance (Rahmayati, 2021). Due to more transparency on competing brands, consumers are looking for higher-quality products at more affordable prices (Schiano et al., 2020). Hence, commercial banks, in order to prosper in the face of the industry's constant upheaval, it would be wise to look at how adopting more cutting-edge strategies from competitors might boost performance (Omweri, 2021). Given the importance of business strategies in establishing a stable economic foundation, strategic management plays a pivotal role in their formulation and implementation. In 1952, the Nigerian banking sector collapsed because local banks lacked the N12,500 in paid-up capital required by law during the sector's stabilization stage. Additionally, indigenous banks failed due to ill-thought-out lending activities in a sector marked by lenient credit criteria and falling loan quality. Some of these banks survived into the 1990s, but many more closed after adopting the Indigenization Policy of 1972. Hence, several financial institutions failed due to the intense competition they faced. Bankers again practiced "armchair bank," or relaxing in their offices while waiting for customers to walk through the door.

Another tumultuous year for Nigerian financial institutions occurred between 2009 and 2010, but this time the Central Bank attributed the difficulties to ineffective management. A surplus of cash was amassed throughout the recapitalization, and instead of prudently using it to increase profits, top management frittered it away (Nwosu, 2015). These issues could have been avoided if banks had put in the time and effort required for strategic planning. So, it is clear that proactive actions must be taken to meet the ever-changing demands of a competitive market and a shifting landscape and that strategic plan updates must be made regularly. That is because the quality of a company's planning determines whether or not it succeeds. Given this context, this research aims to analyze how strategic management techniques affect banks' ability to compete in the financial sector.

The overarching goal of this research is to determine how strategic management techniques affect the competitiveness of banks. These questions, however, were posed to help direct the study:

1. What is the impact of strategic intent on competitiveness in the banking sector?
2. What is the influence of strategic formulation on competitiveness in the banking sector?
3. What is the influence of strategic control measures on competitiveness in the banking sector?

Therefore, the authors believe that the findings of this study would be extremely important for policymakers in the banking sector who are responsible for strategic management, as they are anticipated to inform and improve their understanding of the connection between strategic management practices and performance. Concerns about organizational performance are often linked to the breakdown of the various parts that make up a given strategic management strategy. Therefore, the findings of this study are critical for establishing primary principles guiding strategic management procedures, which will ultimately help enhance core commercial bank operations. The findings of this study have a multiplicative effect on strategic management studies since they will serve to direct the research of future academics and provide proposals for future research in other fields and industries.

2. LITERATURE REVIEW

2.1 Strategic Fit Theory

Strategic fit/decision theory is a school of thinking that opposes the notion that a single set of best practices for strategic management can be applied to all circumstances. According to Morrisette and Oberman (2013), strategic management principles are based on the organization's environment, business strategy, and culture. For strategic management approaches to be most effective, he stated that they must be linked with an awareness of the organization's unique context. Therefore, strategic management approaches must be matched with critical strategic fit theory aspects such as culture, external environment, and operational procedures (LeRoux & Wright, 2010). As there is no universally applicable approach to management, organizations must design techniques suited to their setting (McHatton et al., 2011).

Bryson (2011) argued that the business environment is a constant source of unique challenges that push businesses to seek out and implement new solutions; this requires management to develop a strategy that considers external factors while outlining the company's objectives in light of its competitive advantages (Bayode & Adebola, 2012). According to strategic fit, organic organizational structures are more effective than mechanistic ones in complex, unpredictable environments, but the opposite is true in simple, stable contexts. It implies that firms must first determine the nature of their operating environment before modifying their organizational structure



accordingly. On the other hand, LeRoux & Wright (2010) feel that companies must evolve from mechanistic to organic structures to respond effectively and efficiently to market and environmental changes.

Bryson (2011) asserts that organizations can better manage their resources by employing the concept of strategic fit, hence reducing operational costs and enhancing their responsiveness to environmental challenges and new possibilities. According to Omari et al. (2011), organizations rebalance their performance by investing the extra resources from the fit based on higher productivity; thus, firms should strive to maintain a strategic fit between their resources and goals because, according to Bayode & Adebola (2012), a well-aligned organization performs better and provides excess resources that can be used for growth. Therefore, it is recommended that banks adopt the notion of strategic fit through strategic management practices to more effectively manage their resources, respond to environmental change, and seize new opportunities.

2.2 Dynamic Capabilities Theory

The dynamic capabilities model suggests that in order for a business to succeed in today's competitive market, it must have the flexibility to take advantage of new opportunities as they arise, as well as the ability to integrate new sources of information and information technology into its operations (Gates, 2010). The notion describes how a firm can increase its bottom line by prioritizing environmental issues. What we mean by "dynamic capability" is that firms can flex their inner and outside strengths to meet the needs of different situations (Dudu & Agwu, 2014). Adaptable abilities are necessary for today's hypercompetitive business climate due to the quick depletion of extraordinary firm-specific resources and talents (Bagnoli & Megali, 2011). Nonetheless, it is vital to remember that emotional skills, being organizational processes, take time to cultivate and fully embed into a company. They are utilized for restructuring the business's resources, which may involve removing obsolete items or combining resources in novel ways (Analoui & Samour, 2012). Hence, because banks see their dynamic capacities as a critical path shaped by their past actions and asset stock, they need to develop them to utilize them to achieve long-term goals. Therefore, organizations must endeavor to build their dynamic capacities to utilize them to achieve long-term goals, as they are seen as a critical path shaped by the banks' past activities and asset stock.

2.3 Strategic Intent

An organization's "strategic aim" determines its future course of action (Sneddon & Mazzarol, 2002). *Strategic intent* was defined by Nyaga & Kinyua (2022) as an "enduring obsession with winning" across the entire organization. This fixation on achievement weakens the safeguards to protect valuable resources and expertise. According to Danook (2022), a company's long-term viability depends on its strategic goal, which is especially important for multinational corporations. Therefore, a company's strategic purpose is the path it hopes to take. It is a short, compelling statement of the company's future aspirations and objectives, often couched in terms of competition. Therefore, a certain amount of action (strategic action) and behavior is required to achieve a strategic objective; these activities include refocusing the organization's attention on the essence of winning, motivating people through the communication of the target's value, allowing for individual and team contributions, sustaining enthusiasm through the provision of new operational definitions as circumstances change, and consistently allocating resources in accord with the target (Palah et al., 2022). According to Ice (2007), indecisive management, employee dissatisfaction, wasted resources, and a muddled market are all symptoms of a company that needs to learn what it is trying to do strategically and is instead attempting to pursue numerous goals at once.

2.4 Strategy formulation

Branislav (2014) argues that the process of developing a strategy entails several distinct steps, including the formulation of a mission and vision statement, the identification of external threats and opportunities, the assessment of the internal environment (strengths and weaknesses), the development of long-term objectives, the development of alternative tactics, and the implementation of policy guidelines and norms. The process of formulating a winning strategy can be streamlined with the help of a well-defined mission statement and situational analysis tools, as stated by Burugo and Owour (2017). Therefore, scanning and analyzing the surroundings are essential to developing a strategy. These discussions should lead to developing strategies that help businesses realize their visions and goals (Ahmed & Mukhongo, 2017). Given that goals and objectives are the "ends" that an organization wishes to achieve. Strategy is the "means" by which it intends to do so, and strategy formulation is the process by which an organization determines the most appropriate courses of action to achieve those goals and objectives (Ahmed & Mukhongo, 2017). Alese (2017) emphasized the importance of conducting a thorough and objective analysis of all information gathered during environmental scanning in order to formulate a strategy that will be used to achieve the organization's short- and long-term objectives. Strategy is typically developed at all



three levels of an organization (i.e., corporate, business, and functional). Therefore, businesses of all sizes and types increasingly need to adhere to well-defined and effectively implemented plans to succeed and gain an edge over the competition (Branislav, 2014). While there are many potential courses of action for managers, the situation ultimately determines the most effective. Thus, the best approach is the one that solves the current problem while also allowing the business to remain competitive (Branislav, 2014). According to Muriuki et al. (2017), organizations' strategies must consider their individuality and be carefully tailored to their specific internal and external environments.

2.5 Strategic control

Muriuki et al. (2017) pointed out that a company's implementation and control activities are crucial to its effective strategic management practices; managers need to know immediately when specific strategies are not operating as they should. It is important for every business, but it is especially important when done on time because it can help management spot potential issues before they escalate. Developing a strategy for putting it into practice is a one-and-done deal, argues Ahmed and Mukhongo (2017); as a company's internal and external environments evolve, so make the adjustments that must be made to an existing strategy. Therefore, a well-thought-out strategy and solid execution are required for a company to maintain competitiveness and success in this industry (Koech & Were, 2016; Mutemi et al., 2014; Vitkauskait, 2017). Despite this, as Makanga and Paul (2017) point out, all strategic plans must prioritize resource efficiency while working toward their stated goals.

2.6 Organizational Competitiveness

Globalization, accelerated environmental change, increasing competitiveness, and complex consumer needs are challenges businesses face today (Streimikiene et al., 2021). According to Ageron et al. (2012), the need to innovate, adapt, and set oneself apart from the competition is greater than ever due to the constant flux, rivalry, and open marketplaces that characterize today's business environment. Managers must focus on the firm's competitiveness to construct and improve capabilities, maximize the effectiveness of resources, and exert influence over the variables that ultimately determine the company's performance in the market (Salem et al., 2016). Hence, Zhu and Cheung (2017) define competitive advantage as the employment of a method not previously employed by enterprises to achieve cost reduction, exploit the market opportunity, or mitigate the threat." Innovation and technology, profits, costs, and product diversification are just some of the many outcomes of a competitive edge (Kuo et al., 2017).

A company's ability to adapt and thrive in the fierce market competition is the true litmus test of its competitiveness, as outlined (Porter, 1980). Barney (1991) defines *organizational competitiveness* as the ability to design, manufacture, and introduce products into international markets in competition with international enterprises. Therefore, several variables affect how competitive a company is. Constraints can be overcome with effort and forethought, such as how well one can plan in a crowded marketplace (Andreeva & Kianto, 2012). Companies' actions and strategies in competitive markets are impacted by external forces outside their control (Zhao et al., 2015). It has often been believed that organizations can improve their competitive standing by concentrating on both internal (making the most of in-house assets like staff learning and knowledge) and external (reducing expenses) elements (Saranga et al., 2018). Therefore, it is vital to make conditions favorable for company growth to boost competitiveness. One way to achieve this goal is through promoting institutions and introducing economic or industrial policies that allow businesses to use their competitive advantages better (including lowering costs) (Aschehoug & Boks, 2012).

2.7 Empirical Literature

Olanipekun et al. (2015) studied competitive advantage and organizational performance and looked into the role strategic management played in both. Frequencies, means, percentages, and standard deviations were used for descriptive analysis, while Chi-square tests and one-way analysis of variance were used for inferential analysis (ANOVA). The results show that businesses can gain a competitive edge and ensure their long-term success by adopting and implementing strategic management plans, allowing them to respond effectively to and promote good change.

In order to explore how strategic management affects an organization's success, Mohamud et al. (2015) conducted a study. A descriptive and a correlational research strategy were used to investigate the connections. The data were evaluated using the Spearman correlation method to determine the relationship between the factors. The results showed that strategic management and organizational performance had a relatively positive and statistically significant association.



Abdel-Aziz and Saed (2014) looked at the effect of strategic management on the bottom lines of Jordanian pharmaceutical manufacturers. 13 of the 16 businesses were surveyed, with a total of ninety managers who filled out valid surveys. The results showed that firms effectively incorporated the balanced scorecard variables, with learning and performance receiving the highest average scores, followed by internal procedures, financial perspective, and customer perspective.

The impact of strategic management on the success and expansion of businesses was studied by Muogbo (2013). Sixty-three workers were questioned from 21 establishments in three separate senatorial districts. The study's four aims were achieved using descriptive statistics, and the Chi-square test was utilized to assess the three hypotheses. Strategic management positively affected competitiveness, employee performance, and organizational productivity. It was also found to improve structural development in businesses, despite being relatively uncommon among manufacturing firms.

Mohamud et al. (2014) explored the link between strategic management and business success. The focus was on demonstrating how strategic management may improve business outcomes. The study used a combination of descriptive and correlational research approaches to identify the nature of the correlations, and data were analyzed using the spearman correlation statistical method. The study's findings suggest a positive and statistically significant link between strategic management and the performance of organizations.

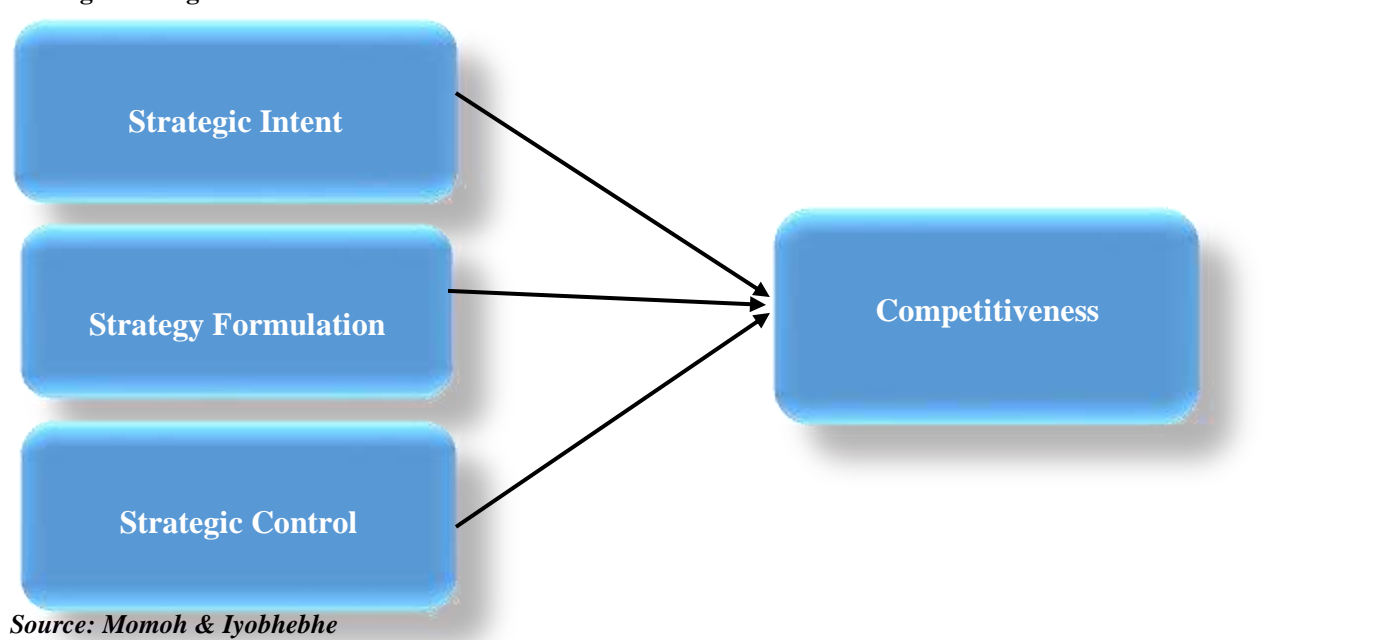
Waweru and Omwenga (2015) investigated how corporate strategy affected the success of private Kenyan construction companies. The researchers used a basic random selection technique to select 68 participants, and pre-made questionnaires were used to gather the primary data. The study included closed-ended, open-ended, multiple-choice, and dichotomous survey items. Furthermore, quantitative but computationally subjective conclusions were obtained via Likert scale questions. Primary and secondary sources provided the information used in the analysis. After collecting the data, SPSS was utilized to analyze the data, and the findings show that all three construction firms had implemented strategic management practices that had improved productivity.

Umar (2005) looked into how strategic management influenced the success and efficiency of mergers and acquisitions at Nestle and Lever Brothers PLC. The research showed that effective strategic management is fundamental to any enterprise's success, growth, and sustainability, and a positive link was found between strategic management and performance.

2.8 Conceptual Model of the Study

This conceptual model describes the link between strategic management practices in terms of Strategic intent, Strategy formulation, and Strategic Control. This is described in relationship with competitiveness.

Strategic Management Practices



Source: Momoh & Iyobhebhe



The conceptual model illustrates a connection between strategic management and a bank's ability to compete successfully in the marketplace. The concepts of strategic intent, strategy development, and strategic management are portrayed precisely. A company's competitiveness is measured by analyzing the nature of the interplay between the three components of SMP. In order to build and improve capabilities, maximize the use of available resources, and control external factors that could affect business performance, managers must focus on competitiveness. The goals of any business are survival, competitive advantage through time, and superior performance. For this reason, the study defines strategic management practices as strategic intention, strategy development, evaluation, and strategic control and implementation. If all else is equal, a competitive advantage is assumed to arise from properly managing these strategic activities.

3. RESEARCH METHODS

As part of the quantitative primary data collection utilized to conduct the study, electronic survey questionnaires were developed using Google Forms, and a link was provided to the HR department to distribute to workers. The survey questions focused on strategic management procedures and competitiveness. Likert-type scales are the most often used survey instrument for measuring opinions because they conform to current research practice, can be constructed easily, and are evaluated according to norms consistent with test theory (Bartikowski et al., 2010). In order to quantify the range of opinions expressed, we used a standard 5-point Likert scale, with one representing strongly disagreeing, five representing strongly agreeing, and three representing having no strong feelings one way or the other. The survey was distributed to 240 employees with the expectation of 240 responses; however, only 231 valid responses were received.

4. RESULTS

Hypotheses One

H₀₁: Strategic intent has no significant influence on bank's competitiveness.

Table 1: Pearson product moment correlation between relationship between strategic intent and competitiveness of the banks

		Strategic Intent	Competitiveness of the Banks
Strategic Intent	Pearson Correlation	1	.272**
	Sig. (2-tailed)		.000
	N	231	231
Competitiveness of the Banks	Pearson Correlation	.272**	1
	Sig. (2-tailed)	.000	
	N	231	231

****.** Correlation is significant at the 0.01 level (2-tailed).

The analysis results in Table 1 depict that the r value for the relationship between strategic intent and competitiveness is 0.272, which is positive and statistically significant at the 0.000 level. Since the p -value (0.000) is less than the stated threshold of 0.01, we conclude that an organization's strategic intent influences its competitiveness. It suggests that an organization's competitiveness rises in tandem with the level of strategic intent and falls as the opposite occurs. Therefore, H_0 is discarded in favor of H_1 .

Hypotheses Two

H₀₂: Strategic formulation does not have a significant influence on competitiveness

Table 2: Pearson product moment correlation between strategic formulation and competitiveness of the banks

		Strategic Formulation	Competitiveness of the Banks
Strategic Formulation	Pearson Correlation	1	.580**
	Sig. (2-tailed)		.000
	N	231	231
Competitiveness of the Banks	Pearson Correlation	.580**	1
	Sig. (2-tailed)	.000	
	N	231	231

Correlation is significant at the 0.01 level (2-tailed).



Table 2 displays the analysis results showing a positive and statistically significant ($p=0.000$), and r value of 0.580 between strategy formulation and competitiveness. Our conclusion that a company's strategic formulation affects its competitiveness is supported by the p -value (0.000) being less than the predetermined threshold of 0.01. It implies that a company's competitiveness improves as strategy formulation advances and deteriorates in its absence. Therefore, the null hypothesis is rejected (H_0), and the alternate hypothesis is accepted (H_1).

Hypotheses Three

H₀₃: Strategic control measure does not influence organizational competitiveness.

Table 3 Pearson product moment correlation between strategic formulation and organizational competitiveness of the banks

		Strategic Control Measure	Competitiveness of the Banks
Strategic Control Measure	Pearson Correlation	1	.156*
	Sig. (2-tailed)		.000
	N	231	231
Competitiveness of the Banks	Pearson Correlation	.156*	1
	Sig. (2-tailed)	.000	
	N	231	231

Correlation is significant at the 0.01 level (2-tailed).

The analysis results are shown in Table 3 and reveal a positive and statistically significant relationship between competitiveness and the strategic control measure, with an r value equal to 0.156 and 0.000 level of significance. It implies that an organization's strategic control measure influences its competitiveness because the p -value (0.000) is less than the predetermined threshold of 0.01. This finding suggests that a company's competitiveness improves with the sophistication of its strategic control mechanisms and deteriorates when the two are out of sync. This lends credence to H_1 , the alternative hypothesis, and casts doubt on H_0 , as the null hypothesis is rejected."

4.1 Discussion of Findings

The findings demonstrated a favorable and statistically significant relationship between strategic aim and an organization's ability to compete. This is because the corporation does not dabble in unrelated areas of technology and instead specializes in those areas exclusively, constantly seeking out new uses for its technology, and allows its desire for a certain level of return to guide its decisions regarding products and markets, thereby expanding the market's scope in order to achieve its return/prosperity goals.

This research also discovered a link between strategic planning and an organization's ability to compete successfully. This is so because an operating budget defines the parameters within which firm managers are expected to allocate available capital, effectively align its spending plan with its strategy, increase accountability, improve feedback flows, and actively involve managers in developing the company's goals and objectives.

In addition, strategic control measures significantly affect a company's market competitiveness. This is possible because management practices strategic monitoring, conduct routine checks to ensure strategies are being adhered to, has a system in place for disseminating information about critical success factors to keep employees on track, and has an optimal feedback mechanism in place while putting plans into action.

These results showed an unmistakable connection between strategic management approaches and organizational performance. These findings are consistent with Mohamud et al. (2015), who investigated the link between strategic management and business success. In order to find out if there was a connection between the variables, a descriptive and correlational research method was used, and the data were analyzed utilizing the Spearman correlation methodology. Strategic management was found to have a favorable and statistically significant association with the performance of organizations.

Similar findings were found by Mohamud et al. (2014), who studied the correlation between strategic management and business success. The focus was on providing evidence that strategic management can improve business outcomes. The study used descriptive and



correlational research approaches, such as the spearman correlation statistical methodology, to ascertain the character of the connections. A positive and statistically significant link between strategic management and corporate success was shown to exist in the investigation.

5. CONCLUSION

The study lends credence to the idea that strategic management practices are reliable predictors of an organization's performance in a competitive industry. As a result, for organizations to continue at the top of their pitch, they need to supply services that satisfy and exceed their client's expectations. According to the study's findings, organizational competitiveness improves when factors like strategic intent, strategy formulation, and strategic control measures are implemented. Therefore, organizations in any industry that want to stay ahead of the competition would do well to implement strategic management practices that give importance to the characteristics outlined in this study.

5.1 Recommendations

- i. The study recommends that business leaders prioritize the company's long-term strategic goals to maintain competitiveness in their respective industries. Incorporating strategic management practices can help an organization achieve goals like delivering products and services based on its technological capabilities, finding new applications for the company's technology, expanding the company's target market to satisfy its return and profit objectives, and gaining customer loyalty.
- ii. Managers can mitigate the effects of market volatility by continually refining their strategic management methods. This means that organizations can improve resource management, connect the budget with corporate strategy, increase feedback flows, and assess the efficacy of alternative strategic development paths through more efficient use of operating budgets through strategic management practices.

5.2 Contribution to Knowledge

The study adds to the growing body of knowledge from academia and industry that informs the development of fundamental policies on strategic management practices that boost organizations' competitiveness. It shows the importance of evaluating such policies according to their strategic goals, strategy development, and management.

5.3 Suggestion for Further Studies

Other researchers would broaden the study's scope to include other companies and concepts, such as strategic innovation practices, strategic total quality management (TQM), competitive practices strategic planning, strategic capabilities, etc.

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PRELIMINARY PHYTOCHEMICAL ANALYSIS OF ASHODHITA AND GOKSHEERA SHODHITA DATURA BEEJA (DATURA ALBA LINN)

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ABSTRACT

In Ayurveda, datura is a well-known and commonly used medicine. Ayurveda recommends a series of steps called Shodhana (purification operations) in order to transform the seeds of this plant into a safe therapeutic medication because they are thought to be extremely hazardous. Datura, also known as Datura alba Linn in botanical terms, is one of the upavisha Vargas. Any upavisha group, such as the drug class datura, cannot be employed in treatment very efficiently unless it has through certain purifying procedures known as shodhana. To identify the chemically active principles, a comparative examination of the phytochemical components of the ashodita and goksheera shodhita datura beeja is conducted in the current study. To determine a plant's active ingredient and determine whether it has therapeutic potential, the phytochemical analysis is very useful. The current study will analyse the phytochemical parameters in ashodita (unpurified) and shodhita datura beeja. After the evaluation, the extractive values of shodhita datura beeja as compared to the ashodita datura beeja are decreased. The extract from the samples of datura beeja was done for primary phytochemical analysis and was found to have less toxic chemical constituents compared to ashodita datura beeja and with safe and more therapeutic value.

KEY WORDS: *Datura beeja, phytochemical constituents, shodhana, Goksheera*

INTRODUCTION

Datura is a deadly toxin that is listed in the *Upavisha*. Although its seeds are extremely poisonous, during *shodhana samskara* (purification), they acquire medicinal properties and are commonly utilised in medicine. If utilised wisely, any powerful poison can be employed in Ayurveda treatment as a wonderful remedy. According to numerous animal studies^{6,7} the seeds of datura are extremely poisonous. Tropane alkaloids, which are extremely poisonous and even lethal, are present in potentially deadly amounts in all parts of the datura plant. When ingested, it can cause symptoms such as dry mouth, nausea, vomiting, dysphasia, dysarthria, diplopic delirium, hallucination, dry and hot skin (due to inhibition of sweat secretion), red skin (due to dilation of cutaneous blood vessels), skin especially on the face and chest, drowsiness, and later on, intoxication.

To lessen a harmful drug's toxicity before transforming an ingredient into a secure therapeutic medicine, Ayurveda discusses a *samskara* (process) known as *shodhana* (purification).⁹ It is the procedure by which unwelcome contaminants are eliminated from the medicine, thereby enhancing its potency and effectiveness.¹⁰

Greek word 'phyto' is a synonym for plant. Phytochemicals, also called phytonutrients, are inert, non-essential chemical substances that are naturally present in plants. Vegetables, grains, legumes, beans, fruits, herbs, nuts, roots, leaves, and seeds are all sources of them. These substances are responsible for the colour, flavour, and smell of the plant. These are in charge of giving medicinal herbs their



therapeutic qualities and positive health effects. Additionally, phytochemicals also contain hazardous and dangerous substances that are present in plants¹¹. *Goksheera* is mentioned as *shresta* under *ksheera* *varga*. It is of *snigdha guna*, *sheeta virya* and *madura vipaka*.¹²

MATERIALS AND METHODS

The drug is collected and authenticated. *Goksheera shodana* was done for one sample. Later the extraction of *ashodita* and *goksheera shodita datura beeja* was done and phytochemical analysis is performed.

Preliminary Phytochemical Tests¹³

Test for alkaloids

Wagner's Test: About 1ml of leaf extract and 1ml of Wagner's reagent (dilute iodine solution) were added and mixed. Formation of reddish brown precipitates indicates the presence of alkaloids.

Dragendroff's Test: To a few milligrams of extract dissolved in alcohol, a few drops of acetic acid and dragendroff's reagent were added and shaken well. An orange red precipitate formed indicates the presence of alkaloids.

Mayer's test: To a few milligrams of extract dissolved in acetic acid, a few drops of mayer's reagent was added. A dull white precipitate formed indicates the presence of alkaloids.

Test for Carbohydrates

Fehling's Test: A few milligrams of extract were mixed with equal quantities of Fehling's solution A and B. The mixture was warmed on a water bath. The formation of a brick red precipitate indicates the presence of carbohydrates.

Benedict's Test: To 5 ml of Benedict's reagent, a few milligrams of extract was added, and boiled for two minutes and cooled. Formation of a red precipitate indicates the presence of carbohydrates

Test for Steroids

Libermann Burchard Test: To the extract dissolved in chloroform, 1 ml of acetic acid and 1 ml of acetic anhydride were added, then heated on a water bath and cooled. Few drops of con.H₂SO₄ were added along the sides of the test tube. Appearance of bluish green color indicates the presence of steroids.

Salkowski Test

The extract was dissolved in chloroform and equal volume of con. H₂SO₄ was added. Formation of bluish red to cheery red colour in chloroform layer and green fluorescence in the acid layer indicates the presence of steroids.

Test for Saponins

To a few milligrams of extract, distilled water was added and shaken. Stable froth formation indicates the presence of saponin.

Test for tannin

To the extract a few drops of dilute solution of ferric chloride were added, formation of dark blue colour shows the presence of tannins.

Test for Flavonoids

Shinoda's Test: To the extract in alcohol, a few magnesium turnings and few drops of conc. H₂SO₄ were added and heated on a water bath. Formation of red red to pink colour indicates the presence of flavonoids.

Test for Glycoside: Keller Killiani test. A solution of 0.5 mL, containing glacial acetic acid and 2-3 drops of ferric chloride, was mixed with 2 mL of extract. Later, 1 mL of concentrated H₂SO₄, was added along the walls of the test tube. The appearance of deep blue colour at the junction of two liquids indicated the presence of cardiac glycosides.



ASHODITA DATURA BEEJA (table 1)

TEST	AQUEOUS	ALCOHOL
ALKALOID		
DRAGENDORFF'S TEST	-	+
MAYER'S TEST	-	+
WAGNER'S TEST	-	+
CARBOHYDRATE		
BENEDICT'S TEST	+	-
FEHLING'S TEST	-	-
TANNIN		
BROMINE	+	-
LEAD ACETATE SOLUTION	-	+
ACETIC ACID		
GLYCOSIDE		
LIEBERMANN'S BURCHRD REACTION	-	-
BORNTRAGER'S TEST	-	-
STEROID		
SALKOWSKI REATION AND IEBERMANN'S	-	-
SAPONIN-FOAM TEST	-	-
FLAVANOIDS	-	-
MUCILAGE	-	-

GOKSHEERA SHODITA DATURA (table 2)

TEST	AQUEOUS	ALCOHOL
ALKALOID		
DRAGENDORFF'S TEST		+
MAYER'S TEST		+
WAGNER'S TEST		+
CARBOHYDRATE		
BENEDICT'S TEST	+	
FEHLING'S TEST		+
TANNIN		
BROMINE		
LEAD ACETATE SOLUTION	+	+
ACETIC ACID		
GLYCOSIDE		
LIEBERMANN'S BURCHRD REACTION		
BORNTRAGER'S TEST		
STEROID		
SALKOWSKI REATION AND IEBERMANN'S		
SAPONIN-FOAM TEST	+	
FLAVANOIDS		
MUCILAGE	+	

RESULT

Extraction of two different samples of *datura beeja* was done. Preliminary phytoconstituents screening of two sample extracts showed the presence of various phytoconstituents. The chemical constituents like alkaloids which are present in alcohol solution of *ashodita*



datura beeja were absent in *goksheera shodhita datura beeja*. Carbohydrates and tannins like bromine which were present in *ashodita datura beeja* are absent in *goksheera shodhita datura beeja*. Saponin foam test and mucilage test are positive for *goksheera shodhita datura beeja* which were negative in *ashodita datura beeja*.

DISCUSSION

In Ayurveda, *datura* is a well-known and commonly prescribed medicine. Ayurveda recommends particular procedures since its seeds are thought to be particularly poisonous. This plant's main uses are as a narcotic and hallucinogen¹⁴. The entire plant, particularly the leaves and seeds, is used to cure a variety of conditions, including aesthetic, antispasmodic, anodyne, antiasthmatic, antitussive, bronchodilator, animal bites, hallucinogenic, hypnotic, and mydriatic¹⁵. It is well-known and frequently used in India to cure conditions including epilepsy, hysteria, heart illness, insanity, fever with catarrh, cough, convulsion, diarrhoea, and skin problems, among others¹⁶. The broad category of glycosides known as saponins is found in many plant families. Inhibiting protozoa (defaunation) appears to be saponins' main impact in the rumen, which may improve the efficiency of microbial protein synthesis and protein flow to the duodenum.¹⁷ According to published research, saponins have biological functions and therapeutic qualities such hemolytic factor¹⁸, anti-inflammatory¹⁹, antibacterial²⁰, antifungal²¹, antiviral²², insecticidal²³, anticancer²⁴, cytotoxic²⁵, and molluscicidal activity.²⁶ Additionally, saponins are said to decrease cholesterol in both humans and animals.^{27,28,29} The mucilage might be useful in a variety of situations. Among them, it serves as a healing agent, either sporadically or in the context of conventional or traditional treatment. Pharmacologists have examined the mucilage of some of these plants and discovered that it contains biologically active components. However, they all share a curative impact on diarrhoea and dysentery as well as burns, wounds, ulcers, external and internal inflammations and irritations.³⁰ When applied externally, mucilage hydrates and protects the skin in addition to having anti-cancer, anti-diabetic, anti-cancer, and anti-decomposition properties when taken internally.³¹

CONCLUSION

The purpose of the current study was to conduct a preliminary phytochemical analysis and assess how *shodhana* affected the drug's toxicity. Based on the analysis's findings, it can be concluded that *goksheera shodhana of datura beeja*, which removes some chemical components that were highly toxic and fatal, has more therapeutic benefits and safety than *ashodita* (unpurified) *datura beeja*. Additionally, there were chemical components like saponins and mucilage present that were not present in *ashodita datura beeja* yet had greater medicinal benefit. Therefore, the current investigation demonstrates that the *shodhana* treatment aids in lowering drug toxicity and also confers other features that are more advantageous therapeutically.

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IMAMI MOTURIDI'S SCHOOL OF KALOM AND THE TEACHER-STUDENT RELATIONSHIPS IN THIS SCHOOL

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ABSTRACT

In this article, the impact of the teaching of Moturidia on the spiritual and moral education of young people, including the relationship between teacher and student in the spiritual and moral legacy of Imam Moturidi are reflected

KEY WORDS: *Morality, teacher-disciple, Moturidia school, knowledge, goodness, knowledge of the kalom, belief, intellect, speech.*

Abu Mansur Moturidi (d. 333/944), the great mutakallim, played an extremely important role in the development of kalom science in Movarounnahr. By the time he lived (the end of the 9th century - the first half of the 10th century), the number of different groups and sects that began to appear in the Islamic religion had increased. This situation caused many conflicts in matters of faith. One such group was the Mutazilites, who preferred intellectual evidence to narrative evidence (Qur'an and hadith) when interpreting doctrinal issues. As a result, among the Salaf and Ahl al-Hadith scholars, critical thoughts about the science of the word began to appear. It was in such complex conditions that the great scholar Abu Mansur Moturidi grew up and made a great contribution to solving the problematic situation on a scientific basis. In this way, Moturidi created his own school of kalom based on the teachings of Abu Hanafa (699-767), the founder of the Hanafi sect.

According to the sources, Abu Mansur Moturidi was born in the village of Moturid (Moturit) in Samarkand, his full name is Abu Mansur Muhammad ibn Muhammad ibn Mahmud Hanafi Moturidi Samarkandi. He learned Hanafi jurisprudence from Abu Bakr Juzhani, traditional Islamic criteria and its comprehensive coverage, coherent analysis, intellectual thinking, and theological discussions from Abu Nasr Iyadi.

The scientific environment of Samarkand has a special role in the formation and development of the Movarounnahr School of kalom. The development of this kalom school can be divided into three periods.

- 1) Pre-Moturidi period (IX).
- 2) The era of Moturidi and his followers (X).
- 3) Restoration period (XI-XII).

In order to have a more complete picture of the activities of the Movarounnahr Kalom school, it is necessary to refer directly to Moturidi and his students and their theological achievements.

Hanafi mutakallims of the 11th and 12th centuries, in the process of reviving the doctrine of Moturidiya, ignore his thoughts reflecting his social views. Later, Moturidi became interested in jurisprudence and kalom issues, took lessons from scholars of the Hanafi school, and improved his knowledge. During this process, he communicates and debates with many famous jurists and muhaddiths, and writes works related to this field.



Abu Ahmad Nasr ibn Ahmad Ayadi can be mentioned among the first students of Moturidi. Another scientific connection can be seen between the Iyodi family and Moturidi. Abu Ahmad Nasr ibn Ahmad Iyadi was the eldest son of Moturidi's teacher Abu Nasr Iyadi, who studied theology. Together with Moturidi, he studied science from his father.

Another student of Moturidi is Abu Hasan Ali ibn Syed Rustufaghni. The following discussion about the science of the word took place between Moturidi and Rustufaghni. It was about *ijtihad* (judgment), to be more precise, when *mujtahid* (Arab. "striving", "zealous" in medieval Islam, a person with the right of *ijtihad*, i.e. a person who can make a verdict) is doing *ijtihad*, can he make any logical mistake or not?. It is not clear how Rustufaghni and Moturidi responded to this issue, but it is clear that they made the right decision. Abu Yusuf Pazwadi, one of the famous representatives of the Moturidiya kalom school, grew out of the dynasty founded by Pazwadi. The second is Fakhr Islam Abu Hasan Pazwadi. Both of them were representatives who had their place. Abu Yusuf in his work "*Kitab usul din*" said that all the information about Moturidi was passed down from his grandfather to them.

Another student of Moturidi is Abu Muhammad Abdulkarim ibn Musa Pazdawi. The difference from other students is that he did not gain fame in either kalom or jurisprudence. However, he has a great role as a mediator in the school of Moturidiya kalom. Information about this is given in one of the famous works "*Kitab alim va muta'allim*". In the work, it is mentioned that Abu Muhammad conveyed the words he heard from Moturidi to Muhammad Nasafi. Scholars speak of him not only as a mediator, but also as a disciple of Moturidi. Abul Mu'in Nasafi is another famous representative of the Moturidiya kalom school. He belonged to a great family of jurists and was considered one of the disciples of his grandfather Makhul Nasafi Moturidi. Abul Mu'in Nasafi, considered one of the representatives of that generation, is the author of the works "*Tabsirat Adilla*", "*Bakhir Kalam*".

Abul Mu'in Nasafi praised Moturidi's great character and strong potential and said: "Abu Mansur al-Moturidi was the greatest of imams of the nation. His interpretation of the Qur'an is a work that reveals all the complexities, drives away the dark clouds of doubt in the human heart, and is created with great skill. May God send his peace to the one who wrote such a book." In addition, it is narrated that after the death of Moturidi, Abul Mu'in al-Nasafi ordered the following words of praise to be written on his grave: "This grave belongs to a great person who embraced knowledge until his breath, who took a lot of pains to spread it, whose legacy was praised a lot, and who was able to pick many fruits from his tree of life."

In conclusion, it can be said that in all his works, Abu Mansur Moturidi is far from any form of error, he gave sharp rebuttals to the religious fanatics and supporters of destructive ideas of that time, he promoted people's efforts to healthy spiritual thinking in the existing socio-spiritual environment with his pure religious-philosophical views, and the teaching of Moturidiya and the school of Moturidiya, which he founded, gained great fame in all Muslim countries, because positive qualities such as correctness, goodness, humanity, justice, learning, and respect for the teacher are closely related to the views and aspirations of all Muslim people.

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PRAGMATIC CHARACTER OF NAMES OF PROFESSIONS IN THE ENGLISH AND UZBEK LANGUAGES

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ABSTRACT

In the article professional names are discussed in the context of their pragmatic value. From the linguopragmatic point of view names of professional names perform various communicative functions, including evaluation, negotiation, expressiveness, etc. which show the importance of naming.

KEY WORDS: *Pragmatics, professional names, elements of communication, professional activity, professional speech, referential function, communicative function, professional field, borrowings.*

Annotatsiya

Ushbu maqolada kasb nomlari pragmatik yondashuv jihatdan muhokama qilinadi. Lingvopragmatik jihatdan kasb nomlari muloqotning unsurlari sifatida qaraladi va kasb nomlarining muhim jihatlari yoritiladi.

Kalit so'zlar: lingvopragmatika, kasb nomlari, muloqot unsurlari, kasbiy faoliyat, kasbiy nutq, referensial vazifa, kommunikativ vazifa, kasbiy soha, o'zlashtirma so'zlar.

Pragmatics is a science in which scholars deal with the problems of communicative effectiveness, public relations and advertising (in the broadest sense of the word), speech etiquette, theory and practice of translation, etc. Usage-based pragmatic approach studies the use of language taking into account age, gender, social status and professional characteristics of communicating, as well as specific conditions and goals of speech act. For the names of profession the interpretive function, including evaluation, negotiation, expressiveness, etc. are especially important. It is also significant how a specialist is evaluated, in what forms knowledge about him or her is represented in the process of conceptualization during the professional speech.

The pragmatic approach considers professional names as elements of speech communication that is used in discourse since the main difference between a professional language and a commonly used one, according to Cummings L. (2005) and Fillmore Ch. J. (1996), is not only in their linguistic nature, but also in the pragmatic character, which is based on the communicative criteria.

The professional names include various concepts, in addition to the language, the use of other semiotic systems (sign systems) - road signs, models, figures, diagrams, graphics, mathematical signs, letters, etc., which are interpreted through the language in conjunction with the knowledge and experience of specialists of that very profession. The presence of concept field, as Cummings, L (2005) and Fillmore Ch. J. (1996) point out names of professional performativity that is absent in other types of names (for example, *manager, performer, presenter*).



As for the language functions corresponding to the elements of the Jacobson's speech communication model, the above mentioned scholars believe that the referential function dominates in professional speech and names, but the phatic, metalinguistic and expressive (emotive) may also be present (for example, in official letters and speech). Based on Jacobson's model of speech communication, Cummings L. (2005) and Fillmore Ch. J. (1996) identify the following elements in relation to professional names: 1) a message (a specialized names from a certain professional field associated with a certain place and time, a result of a certain intention: to transmit information, describe, create and develop knowledge, classify, regulate, create and comply with norms, as well as argumentation: *accountant, moderator, manager, guide*), 2) the addressee and addresser (*teacher, future teacher*), 3) field of presentation (field of knowledge), 4) communication channel (written, sound or psychological for communication).

Furthermore, the most important factors of the communicative significance of names of profession are: the integration of the economy into the international space; the functioning of a significant number of joint ventures and foreign companies as well as the related needs of professional communication; the expansion of the number of communicative-intensive professions requiring knowledge of foreign languages.

The borrowed names of professional field in a shortened form contain significant information about the relevant field of professional activity and, being a cognitive-communicative unit of a symbolic nature, set a program of activity and behavior for participants in professional communication. An important communicative characteristic of the names of persons by profession of a borrowed nature is their brevity: *blogger, viner, producer, clip-maker, actor, minister*.

The most stable place in the system of professional names is occupied by international borrowings. International units in the names of persons by profession reflect the most communicatively significant elements of professional and general cultural knowledge. International names of persons by profession record professional knowledge that has a supranational character, belonging to a number of cultures. They become the basis for the implementation of cross-cultural contacts of representatives of certain fields of activity, serve as signs of shared knowledge.

According to Levinson S. (1983) Ormerod R. J. (2006), a professional name is used in order to achieve a certain communicative goal in a certain professional field. Jacobson identifies the following functions: referential (in the center there is a context), emotive (oq halatli najotkorlar), conative, phatic (contact), and poetic (message) (Jacobson, 1975 (1960): 1261-1264).

Moreover, according to D. Ashurova, emotions and emotiveness are important constituent of communication. It is worthy of note that emotionally charged speech acts owing to sensuality of human psychics are more effective means of impact than devices of logic. This type of impact can be accomplished by almost all types of speech acts. This speech event can be found in stylistic devices. The main stylistic device is euphemism which is ironically presented here to reveal its function of concealing the state of things as they really are. Suffice it to compare the following expressions: *secretary – office manager, charwoman – cleaning lady, undertaker – funeral director, press agent – public relations counsel*. In social communication euphemistic expressions are often used to denote the so-called “non-prestigious professions” or “unfavorable”, “unreliable” jobs: *Uncle Bob - wedding photographers, Bean counter- an accountant, sanitation engineer- janitor, etc.*

In conclusion, the ability of a particular language to directly assimilate foreign lexical elements related to professional fields of activity can be qualified as its advantage, not its weakness. Using euphemistic names in the professional field is also regarded as the most vivid example of the pragmatic character of professional names, as on a social and sociolinguistic dimension, issues of professions' implicit and explicit social and cultural identities have to be seen as dependent on pragmatic factors of the language development.



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A STUDY ON FINANCIAL PERFORMANCE OF PUNJAB NATIONAL BANK

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ABSTRACT

Finance is a branch of economics that deals with the allocation and management of resources, specifically money. It encompasses a wide range of topics, including investments, banking, personal finance, financial planning, insurance, and accounting. The main goal of finance is to make the most efficient use of money and resources to achieve an individual or a company's financial objectives. Companies with strong financial performance are generally considered to be in a better position to weather economic challenges, attract investment, and pursue growth opportunities.

INTRODUCTION

Financial performance is important for investors, creditors, and other stakeholders because it provides a snapshot of a company's financial situation and helps to predict future performance. Companies with strong financial performance are generally considered to be in a better position to weather economic challenges, attract investment, and pursue growth opportunities. The term financial statement includes at least two statements which the accountant prepares at the end of an accounting period. The two statements are: The Balance Sheet and profit & loss account helps a firm to identify short and profit & loss term and long-term growth forecasting

STATEMENT OF THE PROBLEM

The project work is titled with regard to Financial Statement performance of Punjab National Bank in view of Investment. The focus of financial analysis is on key figures in the financial statements and the significant relationship that exists between them. The analysis of financial statements is a process of evaluating relationship between component parts of financial statements to obtain a better understanding of the firm's position and performance for the purpose of investment.

OBJECTIVES OF THE STUDY

- To provide a strong theoretical framework for analysing financial statements.
- Find the net profit margins and operating profit margins of Punjab National Bank for five consecutive years.
- To study the financial position of the company and operation of Punjab National Bank.

METHODOLOGY OF THE STUDY

An Analytical research design is chosen for the study. This research is conducted to find out facts about the given topic from the answers obtained develop new and useful ways during things.

TOOLS

✓ Ratio analysis

REVIEW OF LITERATURE

- **Ram Bilas Agarwal, Dr.Mredu Goyal(2021) 3**, the author entitled is, "Non-Performing Assets of Banks". The study analysis COVID 19 pandemic has further worsened the NPA position of Banks. No study came across which is done on the basis of primary data collected from the small and marginal farmers directly to find out the difficulties faced by them in repayment of loan in their self-actual version.



- **M. Saptarshi, Jayadatta. S, Pragati Pattan, Sejal. K. Bhurat (2021) 4**, “A Study On NonPerforming Assets Management With Reference To ICICI Bank” studied on the Nonperforming assets management with reference to ICICI bank. This study uses historical research method for collection and analysis of data. And intends to find out the strategy required to reduce NPAs. The conclusion suggests that banks should follow the credit assessment procedure, adequate paperwork, frequent loan monitoring and internal risk reporting mechanism to reduce NPA.

ANALYSIS AND INTERPRETATION

YEAR	Current ratio	Cash ratio	ROA	Return on Networth	Net Profit Ratio	Debt Equity Ratio	Debt To Owners Fund Ratio	Proprietary Ratio
2018	0.12	0.03	-0.01	-23.03	-138.03	118.32	18.8	0.04
2019	0.09	0.04	-0.07	-66.5	-135.21	50.65	17.6	0.05
2020	0.09	0.04	-0.06	-39.67	3.62	46.39	13.09	0.06
2021	0.08	0.03	-0.06	37.56	-15.77	24.95	13.72	0.06
2022	0.01	0.04	0.05	32.43	28.05	26.96	13.48	0.06

FINDINGS, SUGGESTIONS AND CONCLUSION

LIQUIDITY RATIO

- The cash ratio has fluctuated over the years, starting at 0.03 in 2017-18, increasing to 0.04 in 2018-19 and 2019-20, decreasing to 0.03 in 2020-21, and then increasing again to 0.04 in 2021-22.
- The current ratio has also fluctuated over the years, starting at 0.12 in 2017-18, decreasing to 0.09 in 2018-19 and 2019-20, decreasing again to 0.08 in 2020-21, and then increasing to 0.10 in 2021-22.

PROFITABILITY RATIO

- Punjab National Bank's net profit has fluctuated over the years, starting at a loss of -14,138.30 in 2017-18, increasing to a smaller loss of -135.21 in 2018-19, increasing again to a profit of 3.62 in 2019-20, then decreasing to a loss of -15.77 in 2020-21 and increasing to a profit of 28.05 in 2021-22.
- Return on net worth (RNW) measures a company's net income compared to its shareholder's equity. Punjab National Bank's RoNW has also fluctuated over the years, starting at a negative value of -23.03 in 2017-18, decreasing to a larger negative value of -66.5 in 2018-19, increasing to a smaller negative value of -39.67 in 2019-20, then increasing to a positive value of 37.56 in 2020-21 and decreasing to 32.43 in 2021-22.
- Return on assets (ROA) measures a company's net income compared to its total assets. Punjab National Bank's ROA has also fluctuated over the years, starting at a negative value of -0.01 in 2017-18, decreasing to a larger negative value of -0.07 in 2018-19, increasing to a smaller negative value of -0.06 in 2019-20, then increasing to a positive value of 0.06 in 2020-21 and decreasing to 0.05 in 2021-22.

SOLVENCY RATIO

- The debt ratio of Punjab National Bank remained constant at 1 from 2017-18 to 2021-22, indicating that the bank's total debt is equal to its total assets during these years.
- The proprietary ratio, which measures the proportion of assets financed by the owners' equity, has increased steadily from 0.04 in 2017-18 to 0.06 in 2021-22.
- This suggests that the bank has been able to generate more equity financing relative to its assets over the years. The constant debt ratio suggests that the bank has been maintaining a consistent level of debt relative to its assets. However, it is important to analyse this ratio in conjunction with other financial metrics, such as profitability and liquidity ratios, to gain a comprehensive understanding of the bank's financial health.

SUGGESTIONS

- From the research carried on working capital management of Punjab National Bank has shown that the bank has much concentrating on collecting deposits and advances. It is understood that the bank should pay some kind of concentration towards the upliftment of rural and downward trodden sectors.
- It has also put some interest on social and economic improvement of priority sector. Moreover, the bank has employed working capital very successfully and maintained a balanced structure of borrowed and owned capital but the lending policy should be vary and it should give more attention for increasing the loan facilities to the small and medium scale industries.



- From this study, we analyse that the investment policy of Punjab National bank should be improved and modified. In a nutshell the bank's performance, financial activities, working capital management and development activities or in a well-established manner.

CONCLUSION

Now-a-days, it is common for a commercial banks to maintain is liquidity position Financial strength, Working capital empowerment, Credit creation policy and Lending policy to survive in the competitive world of finance. The financial structure and portfolio management are well established by Punjab National Bank in a very successful manner. It is noted from this research that this bank has a predominant role in the financial market of India. It covers a wide area throughout the country by providing Long-term loans to the Large scale Organizations. The bank provides financial assistant to all types of organizations next to State Bank of India in the country. As a financial analysis, this research gives the result of better balancing of capital structure and working capital management by the Punjab National Bank during the last five years.

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ALTERNARIA DISEASE OF POTATO AND ITS CONTROL (REVIEW)

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ABSTRACT

Diseases caused by *Alternaria* fungi are considered one of the most common and dangerous diseases of many plants around the world. These fungi primarily damage annual plants, especially vegetable crops, as well as leaves, stems, flowers and fruits of fruit trees and crops. The damage caused by *Alternaria* fungi in various plants is among the highest yield losses of any pathogen. This review provides general information on potato *Alternaria* disease, its causative agent, prevalence, development, its effect on yield, and control measures against it. When we analyzed the information provided by world phytopathologists, it became clear that the *Alternaria solani* fungus is one of the main pathogens that damage all green parts of potatoes and tubers. Air temperature of 22...26 °C is optimal for the development of the disease. As a result of the strong development of the disease, the yield can be reduced to 5-78%.

KEY WORDS: plant, potato, disease, *Alternaria*, fungus, *Alternaria solani*, conidium, disease control.

INTRODUCTION

The year-by-year increase in the number of people in the world causes the demand for food to increase. The tubers of the potato plant (*Solanum tuberosum* L.) are considered one of the main food products in the world and are cultivated in more than 150 countries today. According to FAO data, the potato plant is the fifth main source of energy in human nutrition, which is cultivated annually on an average of more than 20 million hectares and produces more than 375 million tons¹.

In recent years, the increasing damage of *Alternaria* disease to potatoes has attracted the attention of phytopathologists and plant protection specialists in many countries. Significant infestation of plants by this disease is observed in countries - Sweden, Germany and the Netherlands where the disease was not previously considered particularly harmful. It is assumed that it is related to the decrease in the use of dithiocarbamates, also to the warming of the climate, which previously enabled to keep effectively the prevalence of disease [3].

In recent years, the quantity and quality of agricultural crops has been decreasing due to the influence of harmful organisms. The reason for this is the adaptation of pathogenic microorganisms to climatic conditions and the failure to take effective measures against them in time. The development and implementation of modern control measures against pathogenic microorganisms allows to obtain a high and quality harvest from agricultural crops [5; 6; 7; 26; 27; 28].

MAIN PART

Diseases of various cultivated, wild and weed plants called *Alternaria* are known to all phytopathologists and plant protection specialists. The cause of *Alternaria* is damage to plants by microscopic immature fungi of the *Alternaria* genus. Species of this genus are found all over the world. Some of them are harmless saprotrophs, while others are parasitic species that cause harmful diseases of agricultural crops [2].

Currently, the average loss of the potato crop due to *Alternaria* disease is 5% per year. In some years, the number of infected plants reaches 100%, and the yield decreases from 5 to 78% [1].

Diseases caused by *Alternaria* fungi are among the most common diseases of many plant species worldwide. They primarily affect the leaves, stems, flowers, and fruits of annual plants, especially vegetables and ornamentals, as well as as citrus

¹<https://www.fao.org/faostat/ru/#data/QCL>

and fruit trees. The total losses caused by different *Alternaria* fungi in all plants are among the highest losses caused by any pathogen [9].

Alternaria species, under favorable conditions for their development, manifest pathogenic properties and are pathogens of a number of economically important diseases in various crops representing the country's biological resources, and can damage a wide range of host plants. The harmfulness of the disease is manifested in decrease of the yield due to the reduction of the photosynthetic surface of the leaves. Mycosis metabolites, i.e., various mycotoxins, which are dangerous for human life and all kinds of farm animals, can accumulate in products infected with *Alternaria* [2].

The genus *Alternaria* is found in various regions of the world. One of the economically important representatives of this genus is *Alternaria solani*, which causes Alternaria disease in potatoes and tomatoes. During an epidemic, the disease can cause significant yield loss as a result of severe damage and shedding of plant leaves [18; 22; 24; 25].

Diseases caused by *Alternaria* fungi usually manifest as leaf spots and rots, but they can also cause seedling wilt, collar rot, root rot and fruit rot [9].

Alternaria disease in potatoes is caused by the fungus *A. solani* (Sorauer 1896) [32]. The disease affects the leaves, stems, and tubers of potatoes (Fig. 1). Symptoms on the leaf usually appear 5-20 days before flowering in the form of brown or dark brown spots, often surrounded by concentric circles. Spots may appear on the second or third day after invasion under favorable temperature and humidity. On the third or fourth day, when the spots reach 3 mm in diameter, dark gray conidia of the pathogen develop.



Figure-1. Potato leaves invasion by Alternaria disease

Conidia are spread by wind and raindrops. At the optimal temperature (22...26 °C) and in the presence of moisture in the form of droplets for at least 2 hours, conidia can form and penetrate into the plant tissues through the hyphae. Then the fungus develops in the intercellular spaces. The fungus produces an alternative acid that causes necrosis of stems and leaves.

The optimal temperature for the infestation of tubers is 13...16 °C. The development of the disease is insignificant at temperatures above 5...7 and 25 °C. The disease develops especially strongly in hot weather with heavy rain and dew. The incubation period of the disease is 3...8 days. Sources of infection are mycelium and conidia stored in plant residues, soil, tubers [8].

Colonies of the fungus *A. solani* are gray, greenish-gray, and grow rapidly. Intensive sporulation is observed in B-4 medium in bright light, sporulation is poor in some isolates under any conditions. Conidia are single, very rarely in two chains, color is yellowish brown. The body of mature conidia is elongated oval or ellipsoid, $109-115 \times 18-26 \mu\text{m}$, consists of several 7-11 transverse lobes and 1 (2) longitudinal lobes. The apical growth is simple, sometimes consists of two, rarely three branches, 60-118 μm long (Fig. 2). Previously, *A. solani* was considered the causative agent of Alternaria (macrosporiasis, dry spot) of potatoes, tomatoes, and eggplants, but this species is mainly limited to potatoes, and it has been found that it only occasionally infects tomatoes. A morphologically similar species, *A. tomatophila*, is common in tomatoes. On the potato leaves affected with *A. solani* fungus, brown or gray circular spots develop with clearly visible concentric circles. The diameter of spots on some varieties of potatoes reaches 1.5 cm. The affected tissue becomes dry and brittle [2].

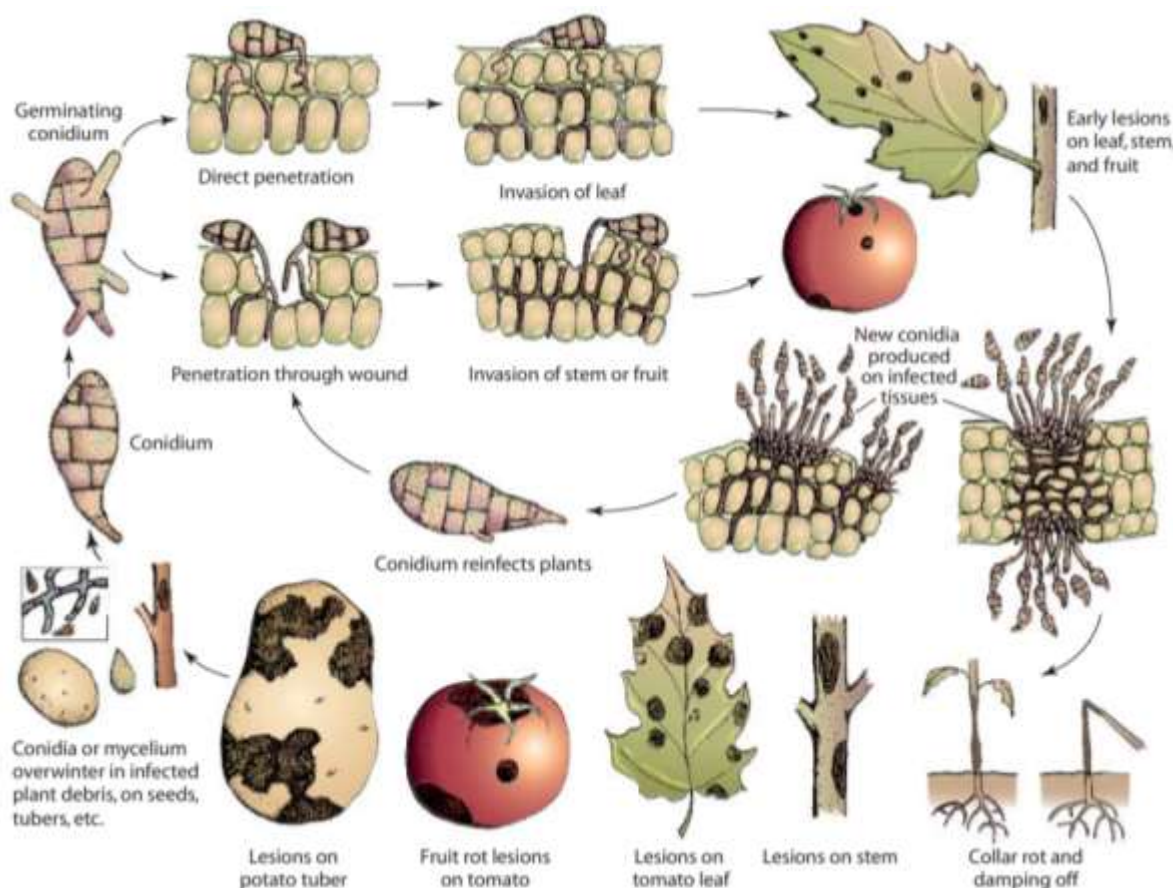


Figure-2. *Alternaria* fungi development and disease symptoms [9]

Disease control. Control measures for this disease include 3-5 year crop rotation, regular application of fungicides and use of healthy transplants. Fungicide treatments are generally the most effective control measures, but are not economically feasible in all regions of the world and may not be effective under favorable weather conditions for epidemic. Disease-resistant cultivars are potentially the most cost-effective control measure because they can extend fungicide spray intervals while maintaining disease control [11].

Any reduction in the use of labor or chemicals to protect crops from disease has significant economic and environmental benefits. This is especially true for protection against *Alternaria solani*, the second deadliest potato leaf blight pathogen worldwide after *Phytophthora infestans*. *A. solani* causes tuber rot, which leads to a yield loss of up to 50% [14; 16]. To limit this damage, it is necessary to apply plant protection agents frequently [10]. In the last decade, the need for effective use of fungicides has grown rapidly, along with awareness of the adverse effects of agrochemicals on the environment [31].

In current agricultural practices, protection from *A. solani* begins during the growing season when crops are in bloom, as their susceptibility to *A. solani* increases throughout the season. Damage caused by *A. solani* is exacerbated when plant becomes weak by abiotic stress such as nutrient deficiency or drought, biotic stress such as insect damage, and by other diseases. Standard crop protection measures against *A. solani* correspond to (1) an early warning system based on weather forecasts and (2) a *P. infestans* treatment scheme based on farmer visual observation [31].

Control measures for *Alternaria* disease of potato is usually started after the symptoms of the disease are detected on the lower leaves, subsequent treatments are carried out every 7-10 days, depending on the intensity of the disease. According to recent experiments conducted in the Netherlands, control of *Alternaria* was most effective after flowering [3].

Chemical protection of potatoes from *Alternaria* is not always effective, while there is a tendency in crop science to reduce the use of synthetic pesticides and expand the use of microbiological fertilizers based on highly effective bacterial strains. With an ecologically correct approach to plant cultivation, biological control of potato diseases can be an important component of the complex protection system of this useful crop. According to in vitro and in vivo studies of A.Sh. Aldiba et al. (2019), *Trichoderma sp.*, *Bacillus thuringiensis* and *Pseudomonas jessenii* showed a strong reduction of *A. solani* in growth in vitro. *Trichoderma sp.* and *Bacillus thuringiensis* were proven to be able to protect potato from *Alternaria A solani* in vivo [1].



Bacillus species are known for their ability to produce large amounts of antifungal compounds to inhibit or kill the growth of pathogenic fungi [12]. Among them, non-ribosomal cyclic lipopeptides are the best studied [17; 20; 21; 30]. However, these non-volatile antibiotics cannot be distributed long distances. In recent years, volatile organic compounds (VOCs) produced by *Bacillus* have been evaluated as a new approach to control fungal plant diseases. Due to their ability to diffuse between soil particles and disperse over long distances through the atmosphere from the site of initial application, VOCs can exert their inhibitory activity without direct or physical contact between the producing microorganisms and the target pathogens [15; 19]. Their strong antifungal activity, together with the nature of being ecologically friendly to both the environment and humans, makes VOCs a promising and sustainable replacement of fungicides for the control of plant pathogens in the future [13; 23; 29; 33].

CONCLUSION

Alternaria disease in potatoes is one of the most dangerous diseases of potatoes in all potato-growing countries of the world, especially in temperate climates. This disease affects all green parts of potato and its tubers. Leaf symptoms usually appear 5-20 days before flowering as brown or dark brown spots often surrounded by concentric circles. Under the favorable temperature and humidity, spots can appear on the second or third day after the damage. On the third or fourth day, when the spots reach 3 mm in diameter, dark gray conidia of the pathogen develop. Conidia are long oval or ellipsoid, $109-115 \times 18-26 \mu\text{m}$ in size and consist of several (7-11) transverse lobes.

Controlling this disease involves establishing a 3-5 year crop rotation, regular application of effective fungicides, and the use of healthy planting materials. Fungicide sprays are generally the most effective control measures, but are not economically feasible in all regions of the world and may not be effective when the weather is favorable for disease outbreaks. Planting disease-resistant cultivars is potentially the most cost-effective control measure.

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A STUDY ON FINANCIAL PERFORMANCE OF BRITANNIA INDUSTRIES LIMITED

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ABSTRACT

This study analyzes the financial performance of Britannia Industries Limited, a leading food company in India, over a period of five years from 2016 to 2021. The study employs various financial performance indicators such as revenue growth, profitability, asset utilization, liquidity, and solvency ratios to evaluate the company's financial health. The analysis reveals that Britannia has consistently demonstrated strong financial performance, with steady revenue growth, high profitability, efficient asset utilization, and healthy liquidity and solvency ratios. The study provides insights into the factors contributing to the company's financial success and highlights areas for potential improvement. Overall, the study serves as a valuable resource for investors, analysts, and other stakeholders interested in assessing the financial performance of Britannia Industries Limited.

INTRODUCTION

Britannia Industries Limited is a well-established and highly respected food company that has been in business for over 130 years. The company was founded in 1892 in Kolkata, West Bengal, and has since grown into a multinational corporation with a presence in over 70 countries. Britannia is known for its high-quality food products, including biscuits, cakes, bread, and dairy products. The company has a reputation for innovation and has introduced many new products to the Indian market over the years. In fact, Britannia is credited with introducing the first cream-filled biscuit in India, which became an instant hit with consumers. The company has a rich heritage and has been a part of India's journey towards independence.

STATEMENT OF THE PROBLEM

Britannia Industries Limited is a well-established and highly respected food company that has a rich heritage and a reputation for quality and innovation. However, while Britannia has been successful in introducing new products and expanding its reach, it is essential to evaluate the company's financial performance to ensure its long-term sustainability. This study aims to analyse Britannia's financial statements and evaluate its profitability, liquidity, solvency, and efficiency. By understanding the company's financial health, we can gain insights into its success and identify areas where it can improve. The findings of this study can help investors, stakeholders, and the management of Britannia to make informed decisions about the company's future strategies and investments. Overall, the study of the financial performance of Britannia Limited is crucial for ensuring its continued growth and success in the highly competitive food industry.

OBJECTIVES OF THE STUDY

- To understand the current position of the Britannia Industries Limited.
- To analyse the financial performance of Britannia Industries limited over a period of five years using financial ratios such as profitability ratios, liquidity ratios, and solvency ratios.
- To evaluate the overall performance of the management of the company by looking into the return on equity and return on assets of the company.

METHODOLOGY OF THE STUDY

An Analytical research design is chosen for the study. This research is conducted to find out facts about the given topic from the answers obtained develop new and useful ways during things.

**TOOLS**

- ✓ Ratio analysis

REVIEW OF LITERATURE

- **Akansh Garg and Anshu Tyagi(2022)**, they concluded that, the FMCG industry is booming due to all of the favorable reasons. It generated \$68.4 billion in revenue in 2018 and is expected to generate \$103 billion in revenue in 2020. According to estimates, India's retail industry would increase from US\$840 billion in 2017 to US\$1.1 trillion by 2020, with contemporary trade predicted to grow at a rate of 20% to 25% annually. My analysis of the three FMCG companies led me to the conclusion that Indian Tobacco Company Ltd. (ITC) has a high profitability and it is generating enough profit from its sales and it is able to contain its operating costs and overhead costs, it gives more return on investment to its investors, its ability to pay its short-term obligations is better, its ability to pay off current debt obligations is also better than Hindustan Unilever Limited (HUL) and Dabur Ltd.
- **Dayananda Reddy and K. Vigneshwar (2020)**, he found that Britannia Industries is one of India's leading food companies with a 100 year legacy and annual revenues in excess of Rs. 9000 Cr. Britannia is among the most trusted food brands, and manufactures India's favourite brands like Good Day, Tiger, Nutri Choice, Milk Bikis and Marie Gold which are household names in India. Britannia's product portfolio includes Biscuits, Bread, Cakes, Rusk, and Dairy products including Cheese, Beverages, Milk and Yoghurt. Most of the respondents are influenced by priced which many generations of Indians have grown up with and our brands are cherished and loved in India and the world over. Britannia products are available across the country in close to 5 million retail outlets and reach over 50% of Indian homes.

ANALYSIS AND INTERPRETATION

Year	Operating Profit	Current ratio	Quick ratio	Net Profit Ratio	ROA	ROE	EPS
2022	15.14	1.91	1.33	10.13	19.36	0.29	41.83
2021	15.67	1.90	1.27	10.49	18.58	0.27	48.24
2020	15.89	1.43	1.01	12.09	17.91	0.32	58.32
2019	19.10	1.22	0.85	14.19	23.30	0.53	77.37
2018	15.57	0.96	0.55	10.79	20.29	0.60	63.30

FINDINGS, SUGGESTIONS AND CONCLUSION**FINDINGS**

1. The return on assets (ROA) of the company has improved from 19.36% in 2018 to 20.29% in 2022.
2. The current ratio has been decreasing consistently over the last five years, indicating a weakening of the company's short-term liquidity position.
3. The earnings per share (EPS) have shown an increasing trend, with a CAGR of 16.66%
4. The market value of the company has shown a fluctuating trend over the last five years.
5. The company has a strong asset base, with total assets increasing from INR 5,187.92 crore in 2018 to INR 7,514.72 crore in 2022.
6. The company has been investing in research and development, which has helped it to launch new products in the market

SUGGESTIONS

1. The company should focus on improving its inventory management to enhance its operational efficiency and reduce costs.
2. The company should aim to improve its short-term liquidity position by increasing its current assets or decreasing its current liabilities.
3. The company should explore alternative financing options to reduce its reliance on debt financing and improve its financial stability.
4. The company should continue to invest in research and development to develop new products and enhance its market position.
5. The company should focus on expanding its product portfolio to reduce its dependence on the biscuit industry.

CONCLUSION

Britannia Industries Limited has shown steady growth in its financial performance over the last five years, with consistent increases in net profit and net sales. However, there are areas where the company can improve, such as inventory management, short-term liquidity, and debt financing. The company should continue to invest in research and development and expand its product portfolio



to reduce its dependence on the biscuit industry. The company's strong brand presence and customer loyalty are key strengths that should be maintained.

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UDC 591.5

ECOLOGICAL FEATURES OF THE COMB GERBIL (*MERIONES TAMARISCINUS*) IN THE SOUTHERN ARAL SEA REGION

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ABSTRACT

The problem of anthropogenic transformation of landscapes in various modifications has become one of the most priority and leading areas of population ecology. In the South Aral Sea Meriones tamariscinus is widely distributed, but unevenly. Significant changes in the size of the gerbil population over the years were revealed. The population dynamics of Meriones tamariscinus and reproductive processes are influenced by various environmental factors.

KEYWORDS: *the lower reaches of the Amudarya, population dynamics, ecology, environmental factors.*

At present, in all regions there is an intensive impact of anthropogenic pressure on the Earth's ecosystems, where, as a result, the transformation of natural landscapes occurs. The problem of anthropogenic transformation of landscapes in various modifications and the adaptation of biota to such transformations has become one of the most basic trends in the field of population ecology. In order to bioindicate ecosystems, it is possible to successfully apply indicators of ongoing processes in the functional components of biota [1, 6].

As is known, the responses of populations and communities to exogenous environmental impacts determine the stability of ecosystems. Numerous works show the ecological vector of transformation of the main parameters of biosystems under the influence of anthropogenic impact [6, 7, 14, 16]. In terms of ecological and morphophysiological features, small mammals are the most dynamic component of biocenoses and play a significant role in the functioning of the ecosystems of the South Aral Sea region.

According to scientists, small mammals have a wide dynamism, high fecundity, rapid restructuring of the sex and age structure; they are an ecological bioindicator of the state of the natural environment as a whole [1, 7].

The combed gerbil (*Meriones tamariscinus*) is a mesophilic background species in the lower reaches of the Amu Darya in the Aral Sea region and, regardless of biotopic conditions, is found everywhere. *Meriones tamariscinus* is sufficiently adapted to living in deserts and semi-deserts from the Lower Volga region to Uzbekistan, Tajikistan, and Southeast Kazakhstan [5, 10, 13]. Outside the CIS, it occurs in Northwestern China [14, 15].

In the lower reaches of the Amu Darya, *Meriones tamariscinus* very often inhabits tugai and reed beds and irrigated areas. Also, the gerbil prefers to settle in the thickets of licorice, comb, as well as along canals and ditches, in gardens and on sown lands of farms in the Republic of Karakalpakstan [11, 13].

Experts noted that the subspecies taxonomy is still not fully understood. According to scientists, 6-7 subspecies have been described so far, and in the region of the South Aral Sea - 1 species (*M. t. Tamariscinus Pallas (1773)*) [5, 12]. significantly higher than in the desert zones of the North-Western Kyzylkum. On the Ustyurt plateau, the population of *Meriones tamariscinus* is quite low (no more than 5 holes per 1 km, or 0.5% of falling into traps) [5, 12]. in the lower reaches of the Amu Darya, the population of *Meriones tamariscinus* is quite high, sometimes reaching up to 23-27 holes per 1 km, or 8-10% of the hit.



The main habitat of *Meriones tamariscinus* is a hole where the animals hide in case of danger from natural situations. According to experts, *Meriones tamariscinus* very often digs single burrows under combing bushes, which are relatively simple. According to our observations, the depth of the burrow is about 1.5 m, and the average diameter of the inlet is up to 5-6 cm. The burrows are vertical. Burrows are the birthplace of cubs and the place of their winter hibernation. In permanent burrows, *Meriones tamariscinus* arranges nesting chambers (up to two on average) located at different depths, which is consistent with the literature data [5, 10, 12]. Individuals of *Meriones tamariscinus* are most active at twilight and at night (including in winter) [15].

In the South Prearalie, the population of *Meriones tamariscinus* breeds from March to September, most intensively from April to June. An active lifestyle of *Meriones tamariscinus* begins in the middle of March [11, 13, 17]. The seasonal life of gerbils is in direct connection with the natural and climatic conditions of the environment. Under favorable natural conditions, gerbils are very active throughout the year, as well as in the presence of a sufficient food supply. Seeds and vegetative parts of plants are the main food resource in the diet of gerbils. In spring and summer, rhizomes and green parts of plants are recorded in the diet of *Meriones tamariscinus*. In other seasons of the year, it makes good use of fruits, seeds, and branches of various plants in its diet [10].

Among the wide variety of adaptive ecological mechanisms of animals to changing environmental conditions, a special place belongs to structural and population adaptations, including the very labile age structure of populations [7, 8].

One of the priority directions of the adaptive evolution of small mammals is the complication of the age structure of populations. The complex age structure of the population increases the adaptive capabilities of populations and increases the resistance of animals to the impact of adverse environmental factors [5, 7, 15]. For small mammals, this aspect is of particular importance, since individuals are characterized by relatively low individual stability and the ability of group adaptation to very changing habitat conditions [8, 12, 15].

The study of the age structure of rodent populations makes it possible to assess the biological originality and the significant role of individual generations in the reproduction of species [12, 13].

Based on the materials of long-term surveys (2015–2022) of the comb gerbil in the lower reaches of the Amu Darya, we set the task of parametrizing the dependence of body length and weight on age for two variants of ontogeny: “rapid growth, puberty in the current year” and “slow growth and puberty next year”.

As is known, growth in mammals is traditionally classified as asymptotic, i.e. with the onset of puberty, growth inhibition is observed. For many species of small mammals adapted to the specific conditions of an arid climate, including the combed gerbil (*Meriones tamariscinus*), a seasonal feature of the reproduction process is typical, i.e. one breeding period (from March to September), where females bring several litters during this period (from 1 to 2, rarely up to 3 generations) [15].

In the course of the studies, it was found that *Meriones tamariscinus* is characterized by two variants of ontogeny: monophasic growth for underyearlings that mature in the year of birth, and biphasic growth for overwintered individuals, whose puberty occurs only the next year after their birth. The second peak of biphasic growth occurs in the spring and also depends on the time of puberty of newly arrived individuals [5, 9, 17].

For a comparative analysis of the nature of the growth of non-maturing (0) and maturing (1) underyearlings, a parametric equation of the Michaelis-Menten type was used [4]:

$$y = a \cdot x / (b + x),$$

where **a** is an estimate of the population mean of the upper asymptote, **b** is a “constant”, numerically equal to the value of the abscissa (age), at which the ordinate reaches half of its maximum value. The following parameter estimates were obtained with a 95% confidence interval: for body length (mm):



$$Y(0) = 93,2[94,5-96,2] * x / (0,7[0,6-0,9] + x);$$

$$Y(1) = 101,2[96,1-101,6] * x / (0,2[0,02-0,4] + x)$$

Since the confidence intervals do not intersect, it can be noted that maturing underyearlings are not only characterized by higher asymptotes, but also reach their half value approximately 0.5–1 week earlier.

The results obtained are consistent with the concept of the signaling role of photoperiodicity in the growth and development of small mammals in an arid climate [1, 9].

Thus, in the South Prearalie, the population of *Meriones tamariscinus* is widely distributed, but unevenly. Significant changes in the size of the gerbil population over the years have been revealed, and along with the intensity of reproduction, various environmental factors (drought, enemies, competitors, diseases, etc.) influence the population dynamics.

The most powerful anthropogenic pressure, the development of land for irrigated agriculture in the lower reaches of the Amu Darya in the Aral Sea region, leads to a reduction in suitable habitats and a decrease in the population of combed gerbils. The obtained estimates of ontogeny parameters allow us to conclude that the increase in body length outstrips weight gain by about two weeks, and the average terms with a 95% confidence interval correspond to 50% of the increase in body length and weight. These results are in good agreement with the concept of the signal role of photoperiodism in synchronizing the growth and maturation of small mammals in the lower reaches of the Amu Darya.

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BIOECOLOGICAL SAFFLOWER CHARACTERISTICS (*CARTHAMUS TINCTORIUS L.*) PLANT

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ANNOTATION

*The article contains information about the beneficial properties of the Safflower (*Carthamus tinctorius L.*) plant and its cultivation in the conditions of Karakalpakstan..*

KEY WORDS: *marigold seeds, soaking in water, soil preparation, simple sowing, germination.*

INTRODUCTION

safflower is a common oilseed crop in Central Asia. It is drought resistant. Safflower oil is used directly in food and is used in making margarine.

25-32% semi-drying light-yellow oil is obtained from the seed. They are not inferior to sunflower oil in terms of quality. The safflower produced by processing safflower pistachios has a more bitter taste, but can be fed to cattle in small quantities.

Its 100 kg cake contains 7-8% fat. It can also be used as a Safflower seeds are good feed for poultry. Safflower has long been known as an oilseed crop in India, Afghanistan, Central Asia, and the Caucasus. Carthamine, a dye, is extracted from its petals. The petals are used as a colorant for pilaf. In the following years, the area of safflower cultivation in Uzbekistan increased several times. Currently, 15-20 thousand hectares are planted in dry lands of Uzbekistan. As it is drought resistant, its green mass is also grown for fodder. The average seed yield is 10-12 s/ha, 19-22 s/ha in irrigated lands.

Botanical description. Safflower is a member of the Asteraceae family, *Carthamus L.* genus. Its 19 species are known, of which only one species, *Carthamus tinctorius L.*, is cultivated. Cultivated Safflower has a strongly developed, branched, arrow root system that penetrates the ground to a depth of 2 m or more. The stem grows upright, rough, white, branches a lot, 40-90 cm tall. The stem branches from the bottom to the tip or from the top. Leaves are sessile, glabrous, thick, lanceolate, lanceolate-oval, elliptic, toothed or flat-edged, with or without thorns. The leaves at the ends of the stem and side branches are crushed and become the outer leaf cover of the flower.

Inflorescence is a basket, 1.5-3 cm in diameter. One plant produces 5-50 baskets. Baskets with or without thorns. Multi-flowered, multi-seeded, 30-70 pistachios per basket. The basket is lined with rolled leaves, so the pistachios do not spill out when picked. Flowers are bisexual, forming a five-lobed tubercle, golden or yellow, sometimes red and white. It has five blades, one slotted knot, a long column and a beak. Pollinated from outside. The fruit is a white, hairless, shiny, four-sided pistachio-oval, narrowing at the base. The pistachio pod is hard, shielded, thick, makes up 50-60% of the weight of the pistachio, 1000 pistachios weigh 40-50 g [1, 2, 5].

BIOLOGICAL PROPERTIES

Safflower is a heat-loving, drought-resistant plant adapted to the continental climate with dry summers and cold winters. It is very heat demanding during the flowering and ripening phase. Grass can withstand temperatures up to 5-6°C. When



safflower is planted in the fall in the conditions of Uzbekistan, its lawns winter well. Safflower planted in autumn gives a higher yield than that planted in spring. During the flowering period, if there is hot, cloudy weather, the flowers are poorly pollinated, pistachios are produced less, and the basket begins to rot. Safflower is not demanding on the soil. It grows in dryland, gray, meadow, meadow-gray soils in the irrigated region. Due to its tolerance to salt, it can also grow in saline soils. It gives a high yield in high-fertility, well-moistened soils [4, 5].

Varieties. Milyutinsky - 114 variety of safflower was created in Uzbekistan "Galla" Union IICh. Thornless, 60-70 cm tall, with 4-5 first order branches. The diameter of the basket is 3.0-3.5 cm, one plant has 6-8 baskets. The flower is golden-red, turns red when it fades. 1000 pistachios weigh 34-50 g. The growing period is 95-120 days. The yield of seed and blue pulp is high. It is included in the State Register for dryland planting in Samarkand, Jizzakh, Syrdarya, Tashkent and other regions.

Planting. Seeds with a purity of 95% and fertility of not less than 85% are used for planting. Safflower begins to grow very early in the spring at the same time as grain crops. It is common to plant safflower at 30 and 45 cm between rows. Sowing rate is 10-12 kg/ha. The planting depth is 5-8 cm. Care consists of horizontal harrowing of lawns, 3-4 working between rows. In irrigated lands, it is watered 3-4 times. Irrigation rate is 600-800 m³/ha. The crop is reaped and threshed in a single-phase method, in the phase of full ripening, in re-equipped combines [1, 3].

Planting the safflower plant. The safflower plant was planted on April 30, 2022. The distance between rows is 70 cm, and the distance between each bush is 40 cm.

Plants began to germinate on May 5. The time of the grass stage of the plant was between May 5 and May 11. If we consider the number of seeds sown as 100%, 91% of them germinated. This indicator proved that Safflower (*Carthamus tinctorius L.*) can easily grow in the soil of Karakalpakstan.

The real leaves of the plant were formed 5 days after the plant came out of the earth. In this case, the leaves of the plant are long lanceolate with straight edges. When the plant develops 5-6 leaves, the stem of the plant becomes evident. The height of the safflower plant in the conditions of Karakalpakstan was 45-70 cm. The plant formed side branches from the height of 30-35 cm of the stem and produced up to 5-12 side branches.

The budding stage of the plant was observed on 42-55 days of plant vegetation. The flowering period of the plant was observed in 65-83 days. The total flowering time of the plant was 74-79 days.

The period of plant seed formation was observed in 72-90 days of the plant. The end of the plant vegetation period corresponds to 105-110 days. The vegetation period of the safflower plant grown in the conditions of Karakalpakstan was 110 days.

The safflower plant was watered 1 time during the growing season until it formed a true leaf, 2 times after the formation of a true leaf, and 1 time at the beginning of flowering. Safflower is not a very demanding plant, so it is not recommended to water it a lot.

Based on the experience of the world, it should be said that in order to get a high and quality harvest from the safflower crop, first of all, it is necessary to fully follow the recommendations given by experts. Quality preparation of the land for planting by farms, implementation of planting works in short periods when the temperature in the soil is 10-12 degrees depending on the soil and climate conditions, organization of planting seeds at the specified depth (4-5 cm) and standards using pneumatic seeders adapted to planting safflower, science it is necessary to implement agrotechnical activities with full use of scientific achievements. Cultivation of safflower plant in the conditions of Karakalpakstan gives effective results. The safflower plant can be used for many purposes in medicine. Mainly, safflower can be used in the prevention and treatment of cardiovascular diseases.



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UDC 58

DOMINANT AND SUBDOMINANT PLANT SPECIES IN THE VICINITY OF THE CITY OF NUKUS IN THE KYZYLKUM DESERT

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ANNOTATION

The article deals with dominant and subdominant plant species in the vicinity of the city of Nukus in the Kyzylkum desert. Edificators, builders or dominants are recognized as significantly dominant species in the vegetation cover, i.e. dominants in the upper part of the biocenosis, and subdominants are considered as secondary dominants in the lower part of the biocenosis.

KEY WORDS: *biocenosis, dominant, subdominant, edificator, Kyzylkum, desert, association, phytocenosis.*

Dominant species create significant biomass in biogeocenosis and play a very important role in the formation of landscape components, plant cover, and soil. Each phytocenosis consists of different types of plants, and common species are distinguished by their special importance in this association. Their differences are explained by the influence on the life cycle in biogeocenosis (or phytocenosis), dominance in all associations.

Edifiers, builders, or dominants are recognized as significantly dominant species in the vegetation cover, i.e. dominants in the upper part of the biocenosis, and subdominants are considered as secondary dominants in the lower part of the biocenosis.

When determining the dominant and subdominant species of plants, distributed in the vicinity of the city of Nukus, the works of A. Bykova [4; 3-462 p.] and "The establishment of the protection of Uzbekistan and the path of its rational use" [11; 5-404 p.].

It should be noted that the plant cover of this region consists of halophilous and psammophilous representatives of Chenopodiaceae, Asteraceae, Brassicaceae, Poaceae, Fabaceae, and Polygonaceae families, which grow in various degrees of humus and sand.

The main part of the surroundings of the city of Nukus in the Kyzylkum desert is made up of xerophytic species characteristic of the desert zone. The vegetation cover was formed as a result of adaptation to the arid climate of the Kyzylkum over several million years.

In the course of the research, it was established that 20 important plant species dominate and subordinate in the vegetation cover of the vicinity of the city of Nukus in the Kyzylkum desert zone. Table 1 lists these plant species and their various phytocenotic properties.

**Table 1****Dominant and subdominant plant species distributed in the vicinity of the city of Nukus in the Kyzylkum desert**

№	Plant species	Ecomorphology	Growing conditions (the soil)	The degree of dominance in the vegetation cover
1	<i>Haloxylon aphyllum</i>	Haloxerophilous trees	Saline sand	5
2	<i>Haloxylon persicum</i>	Psammoxerophilous trees	Sand	4-5
3	<i>Calligonum aphyllum</i>	Psammomeso-xerophilous shrubs	Sand	4-5
4	<i>Halostachys belangeriana</i>	Halomesoxerophilous shrubs	Saline	3-4
5	<i>Tamarix hispida</i>	Halomesoxerophilous shrubs	Saline	3
6	<i>Ammodendron conollyi</i>	Psammomesoxerophilous shrub	Sand	3
7	<i>Salsola richteri</i>	Psammomesoxerophilous shrub	Sand	3
8	<i>Salsola arbuscula</i>	Haloxerophilous shrub	Saline sand	2-3
9	<i>Astragalus ammodendron</i>	Psammomesoxerophilous subshrub	Sand	2-3
10	<i>Salsola orientalis</i>	Haloxerophilous subshrub	Saline sand	2
11	<i>Halocnemum strobilaceum</i>	Halomesoxerophilous subshrub	Saline sand	2
12	<i>Artemisia terrae-albae</i>	Xerophilous subshrub	Sand	2
13	<i>Poa bulbosa</i>	Psammoxerophilous perennial herb	Sand	1
14	<i>Ferula assa-foetida</i>	Mesoxerophilous perennial grass	Sand	2
15	<i>Stipagostis pennata</i>	Psammomesoxerophilous perennial herb	Sand	2
16	<i>Convolvulus hamadae</i>	Psammomesoxerophilous perennial herb	Sand	2
17	<i>Heliotropium arguzioides</i>	Mesoxerophilous perennial grass	Sand	1
18	<i>Carex physodes</i>	Psammomesoxerophilous perennial herb	Sand	1
19	<i>Halimocnemis karelinii</i>	Halomesophilic annual herb	Saline sand	1
20	<i>Climacoptera lanata</i>	Halomesophilic annual herb	Saline sand	1

Among the dominant and subdominant species in the vegetation cover, there are 2 tree species, 6 shrubs, 2 semi-shrubs, 2 semi-shrubs, 6 perennial herbs and 2 annual herbs. As can be seen from the analysis, cereals and perennial grasses dry out more. However, individuals of related species, such as *Haloxylon*, *Calligonum*, *Ammodendron*, *Salsola*, *Astragalus*, *Salsola*, *Artemisia*, *Stipagostis*, predominate in the composition of populations.

Based on the above information, the species listed in Table 1 dominate the composition of plant communities, while the rest of the plant species participate as companion species.

The diversity of the plant world is largely due to the terrain, soil, and groundwater at different depths. Due to the severe lack of moisture and the balance of air and soil temperatures, plants continue to adapt to the local conditions and show a certain degree of resistance to the existing adverse ecological conditions [57; 277-283 p.].

In the vicinity of the city of Nukus in the Kyzylkum desert, there are very few varieties of plants. They lengthen their growing season in harsh environmental conditions. It is distinguished by the speed of vegetation of plants (ephemera and ephemeroïds), resistance to drought (xerophytes), deep penetration of plant roots into the soil (phreatophytes), and the ability to continue vegetation even in saline soils (halophytes).



Among the plant species widely distributed in the desert, we can point out the types of wormwood (*Artemisia*), which grow together with the cherkiz (*Salsola*), dzhuzgun (*Calligonum*) and other plant species. White saxaul (*Haloxylon persicum*) are widespread only in compacted sands.

The range of black saxaul is limited compared to white saxaul, they are found mainly on plains, takyr and takyr-like soils. White saxaul together with feather grass (*Stipa*), moss (*Bryophyta*) occupy vast areas. Black saxaul is found together with buurgun (*Anabasis salsa*), boyalich (*Xylosalsola*), keyreuk (*Ferula*), annual grasses, sometimes found together with tamarix (*Tamarix*). Saxaul belongs to the category of pastures that can be used all year round. Shrubs are widespread on desert sandy plains. Shrubs and semi-shrubs include Circassian (*Salsola*), Yuzgun (*Calligonum*), Sand Locust (*Ammodendron*).

Wormwood (*Artemisia*) occupy large areas of the desert. Basically, they grow well on flat plains, in mountains and on mountain slopes, on desert-sandy soils. On the plains of the foothills there are teresken, buyurgun, dzhusan and black saxaul.

On brackish soils and typical brackish areas, halophytes and hydrohalophytes, i.e., groups of plants resistant to soil salinity, are scattered. Phytocenoses or associations of sarsazan (*Halocnemum*), karabarak (*Halostachys caspica*) are often found.

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AWARENESS OF NAAN MUTHALVAN SCHEME AMONG COLLEGE STUDENTS WITH SPECIAL REFERENCE TO SELECTED COLLEGE IN COIMBATORE DISTRICT

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ABSTRACT

The goal of this study is to ascertain how well-informed college students are about the Nann Muthalvan plan in particular Coimbatore district colleges. An programme of the Tamil Nadu government known as the Nann Muthalvan scheme offers financial aid to college students from less fortunate households. The study will investigate students' opinions of the program's advantages, their level of programme awareness, and the variables that affect that awareness. A mixed-method approach will be used for the research to collect both quantitative and qualitative data. The study's findings will offer perceptions into the efficiency of the Nann Muthalvan initiative and make recommendations for ways to increase student engagement and understanding.

INTRODUCTION

- The Chief Minister of Tamil Nadu recently launched the 'Naan Mudhalvan' scheme.
- The scheme aims to provide skills to the 10-lakh youth across the state.
- The youths will be able to recognize their talents and interests through this scheme.
- A portal to register for the scheme and get related information about the scheme was also launched.
- The career and academic guidance to the students will be granted under the scheme. They will be given proper learnings and training sessions.

STATEMENT OF THE PROBLEM

The reason for this problem needs to be identified and necessary intervention needs to be recommended both to the government and to the educational institutions for bringing down the adverse effect of unemployment. This acute problem has stimulated the researcher to focus research in this area. The present study would help the arts college students I carrying out selfintrospection about their own competency level. It would also help the arts college educational institutions to identify and strengthen themselves in key result areas, such as teaching- learning process, technical and soft-skill training, infrastructure facility, institution culture and many more. This would in turn facilitate better employability status of the students.

OBJECTIVES OF THE STUDY

- To understand the socio-economic profile of the respondents
- To study the awareness of Naan Muthalvan scheme
- To determine the academic guidance of Naan muthalvan scheme
- To ascertain the soft skills under Naan muthalvan scheme

RESEARCH METHODOLOGY

Research design

Research design is the plan, structure to answer whom, when, where and how the subject is under investigation. Here plan is an outline of the research scheme & which the researcher has to work. The structure of the research is a more specific outline and the strategy out, specifying the methods to be used in the connection & analysis of the data



Type of research

The present type of research belongs to the category of 'Descriptive study'. Descriptive study are undertaken when the researcher is interested in knowing the characteristics of certain groups, assessing behaviour, making projections or for determining the relationship between 2 or more variables.

Sources of data

The research should keep in mind two types of data while collecting data via primary data and secondary data.

- ✓ **Primary data:** Primary data is gathered from sample respondents through the questions that was made available online alone with random sampling
- ✓ **Secondary data:** Secondary data refers to the data, which is not newly generated but rather obtained from o Published sources.
 - Unpolished sources i.e., information about the performance of the company
 - Report on the study. o Review of literature etc

Sampling design

Sampling plan is a definite plan for obtaining a sample from a given population. It refers to the various techniques for selecting items for the sample. This plan calls for three decisions.

Sample size

120 respondents were taken for the study.

Sampling procedure

Non-probability sampling is a sampling technique where the samples are gathered in a process that does not give all the individuals in the population equal chances of being selected. A core characteristic of non-probability sampling techniques is that samples are selected based on the subjective judgement of the researcher, rather than random selection (i.e., **probabilistic methods**), which is the cornerstone of probability sampling techniques.

Convenience Sampling

When the population elements are selected for inclusion in the sample based on the ease of access is known as the convenience sampling. The research design is descriptive which is concerned with narration of facts and description of various characteristics of particular group of employees. Here the respondents are chosen on the basis of non-probability sampling under which convenience sampling design was used.

MODE OF DATA COLLECTION

The mode of data collection is survey method. The survey method is more appropriate to the study.

Data collection instrument

The instrument used for data collection through Questionnaire. A questionnaire is simply a formalized set of questions for elicit information.

TOOLS USED FOR THE STUDY

The test is carried out using SPSS tool where the variables that are to be tested for independence is entered and results are identified. The various tests are done by using SPSS are Percentage analysis, and chi-square

Percentage Analysis

Percentage method refers to a specified kind which is used in making comparison between two or more series of data. Percentages are based on descriptive relationship. It compares the relative items. Since the percentage reduces everything to a common base and thereby allow meaning comparison.

$$\text{Percentage} = \frac{\text{Number of respondents}}{\text{Total no of respondents}} \times 100$$

Total no of respondents.

Chi-Square Method

The chi square test procedure tabulates a variable into categories and computes a chi square statistic. This goodness-of-fit test compares the observed and expected frequencies in each category to test that all categories contain the same proportion of values or test that each category contains a user-specified proportion of values.



The chi-square test for independence examines whether knowing the value of one variable helps to estimate the value of another variable. The chi-square test for homogeneity examines whether two populations have the same proportion of observations with a common characteristic.

Formula:

$$\chi^2 = \frac{\sum (O_i - E_i)^2}{E_i}$$

Where, O_i Denotes Observed No of Respondents and
 E_i Denotes Expected No of Respondents.

REVIEW OF LITERATURE

THE NEW INDIAN EXPRESS

Published: 27th December 2022 09:52 AM | Last Updated: 27th December 2022 09:52 AM

CHENNAI: The Directorate of Collegiate Education (DCE) is set to implement Naan

Mudhalvan scheme in government arts and science colleges across the state from January. It's with an aim to make the arts and science students more employable by equipping them with required skills that the government has decided to implement the scheme in colleges.

The Tamil Nadu Skill Development Corporation (TNSDC) is busy mapping and identifying the courses that will be suitable for students of various undergraduate courses. "The TNSDC will provide us details of the courses in the next few days, and we are planning to implement the Naan Mudhalvan scheme in colleges from January, when the new semester begins," said a senior official of DCE.

Earlier, the scheme was implemented for the engineering students, and the higher education department found the skills imparted to the students are proving beneficial for them. "It will be easier for industries to recruit our students, as they are already trained," said a higher education official.

The subjects taught in Naan Mudhalvan will be supporting course, and it will be offered in a blended manner with both online and offline content. Officials said apart from the modern emerging technical programmers, the portal will also give the students opportunity to learn Cambridge English, technical skills and help them crack competitive exams.

ABP LIVE Updated at : 28 Jan 2023 03:05 PM (IST)

Chennai: The Tamil Nadu government's flagship 'Naan Mudhalvan' scheme, aimed at the up skilling students to make them industry-friendly, will now be extended to students of Arts and Science colleges of the state.

It was launched after massive complaints that students graduating from engineering colleges of states lacked proper skills.

After the launch of the 'Naan Mudhalvan' scheme, several students were up skilled and it helped them be confident while giving interviews for jobs.

The TNSDC is presently offering training in Information Technology, Mechanical Engineering, Civil Engineering, Manufacturing, Banking and Finance, Green Energy, Logistics, Electrical and Electronics Engineering, Personality development as also training for appearing in competitive exams

DINAMANI

PUBISHED ON 03RD MARCH 2022 01.46 PM

Cricketer Natarajan has thanked the Tamil Nadu Chief Minister for inviting him to the inaugural function of Naan Mudhalvan scheme.

Tamil Nadu Chief Minister M.K. Naan Mudhalvan, a skill development program for school, college students and youth, was launched on his birthday at the Kalaivanar Arena in Chennai Stalin started it. The main objective of the scheme is to empower and empower 10 lakh youth annually.

To recognize and promote the talents of students studying in government and government aided schools and colleges.



In this case, Natarajan said on Instagram about his participation in the launch of the development program for school, college students and youth, was launched on his birthday at the Kalaivanar Arena in Chennai Stalin started it. The main objective of the scheme is to empower and empower 10 lakh youth annually.

NEWS 18 TAMIL

LAST UPDATED: MARCH

01, 2022, 13:00 IST

Tamil Nadu Chief Minister and DMK President M. K. Stalin, who is celebrating his 69th birthday, launched his dream project 'Nan Muthaluvan' in a program held at Kalaivanar Arena, Chennai. Speaking at the launch of this project, the Chief Minister said that the 'Nan Muthaluvan' project is my dream project. He said that the aim of this program is to make students and youth leaders.

A new program called 'Nan Muthaluvan' is a skill development and guidance program for school, college students and youth of Tamil Nadu to make them successful not only in studies but also in life.. The main objective of the 'Nan Muthaluvan' program is to develop 10 lakh youth in education, knowledge, thinking, energy and skills to the country every year.

The highlight of this scheme is to identify and promote the individual talents of the students of Government and Government Aided Schools, Colleges and Universities.

It has been informed that a committee headed by the District Collector will implement the scheme in 20 districts.

Created for this naanmudhalvan.tnschools.gov.in

THEORITICAL ANALYSIS

The extensive Tamil Nadu Naan Mudhalvan Scheme was unveiled on March 1st, 2022 by MK Stalin, the state's chief minister. Through this initiative, the government will annually give 10 lakh children in the state the abilities they require to reach their potential for the welfare of the country.

Advantages

- A distinct training system will be formed at the college and district levels as a result of this
- The government has announced plans to establish a technical institute in accordance with industry norms
- Under this scheme, students will receive spoken English courses to help them prepare for interview panels
- The government will offer the training both in-person and online

Disadvantages

- It was not implemented in all colleges
- Not providing much importance to all the skills

DATA ANALYSIS

CRITERIA	OPTIONS	NOOFRESPONDE NTS	PERCENTAGE
Gender of the responders	Male	86	72
	Female	34	28
Marital Status of the respondents	Married	15	12
	Unmarried	105	88
Family members at home	1	2	1
	2	4	3
	3	40	33
	More Than 4	74	62



Age of the respondents	16-18 Years	7	6
	18-21 Years	80	67
	21-23 Years	25	21
	23 and above	8	7
Family income	Rs 10000-20000	19	61
	Rs 21000-30000	17	17.1
	Rs 31000-40000	20	17
	Rs 41000-50000	21	17
	Above 50000	43	36
First Generation Graduate of Family	Yes	67	56
	No	53	44
Nature of College	Government College	17	14
	Government Aided	30	25
	Self Finance	73	61
Duration Of Knowlwdge	3 Months	56	47
	6 Months	48	40
	One Year	16	13
Source Of Knowlwdge	Through Newspaper	45	37
	Through Magazine	47	39
	Through Friends	28	23
Opinion	Excellent	28	23
	Good	57	47
	Average	31	26
	Poor	2	2
	Very Poor	2	2
Kind of Support Provided	Financial assistance in the form of loan and grants	32	27
	Skill development training and mentoring	61	51
	Market linkage and network opportunities	6	5
	All the above	21	17
Benefits Of Participating	Improper way of communication	27	22
	Access to funding and other resources	45	37
	opportunities to develop skills and knowledge	47	39
	Access to business networks and markets	28	23
	Tutoring	16	13
Type of Academic Support	Study Materials and Resouces	50	42
	Mentoring	23	19
	Career Guidance	31	26
	Academic performance	28	23
Benefit From Academic guidance	Referrals from Teachers	29	24
	Self referral by students or their families	31	26
	All the above	32	27
	Ministry of Finance	12	10
Responsible	Ministry of Rural	42	35
	Ministry of Skill Development	60	50
	Minstry of youth Affairs	6	5
	Providing more resources and support for students who are struggling academically	31	26
Opinion	Helping students develop better study habits and time management skills	36	30
	Providing more opportunities for hands-on learning and practical experience	16	13
	Offering more specialized support for students pursuing specific fields of study	14	12



	Providing more support and guidance for students in their transition to college	23	19
Academic Guidance	Strongly Agree	28	23
	Agree	35	29
	Netural	27	22
	Disagree	13	11
	Strongly Disagree	17	14

FINDINGS

1. 72% of the respondents are male
2. 88% of the respondents are unmarried
3. 62% of the respondents have more than 4 family members
4. 67% of the respondents are coming under the age group between 18-21 years
5. 36 % of the respondents said their family income is above 50,000
6. 56 % of the respondents said they are first generation graduate of their family
7. 56 % of the respondents said they are belongs to self-finance college
8. 47% of the respondents said they know about Nann Muthalvan scheme before 3 months
9. 39% of the respondents they know Nann Muthalvan scheme through magazine
10. 30% of the respondents are rated good about a portal to register for the scheme and get related information about the scheme was also launched
11. 51% of the respondents said skill development training and mentoring support is provided under the Naan Muthalvan Scheme
12. 39% of the respondents said benefits of participating in the Naan Muthalvan Scheme is opportunities to develop skills and knowledge
13. 42% of the respondents said study materials and resources academic support are provided by the institutions to students through the Naan Muthalvan scheme
14. 27% of the respondents said all of the above Naan Muthalvan scheme identify students who would benefit from academic guidance

CONCLUSION

This project helped me in getting information about the Naan muthalvan scheme. The reason for analyzing this project is to know how many of the under graduates are aware about Naan muthalvan schemes. The sample size was taken 120. And the respondents have mixed reactions. Some of them have aware of Nann muthalvan scheme.

Thus the scheme would be good for student has they would get more knowledge and personal development of student which would help them in future to get a good job opportunity.



PROFESSIONAL COMPETENCE AS A QUALITY INDICATOR OF EDUCATION

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ABSTRACT

Recently, there is more and more evidence that the success of the education systems of the leading countries of the world is explained primarily by the quality of teacher training, the rigor of selection of personnel for teaching and the status of a teacher. Neither the amount of money invested in education, nor the size of the country, nor the indicators of equality of educational opportunities showed such a strong correlation with student outcomes as the quality of the teaching staff. An analysis of the experience of countries that have achieved high indicators of the quality of education through the development of the capacity of their teaching staff may be of great interest to our country .

KEY WORDS: *professional competence, quality of education, teacher, personnel policy.*

In the conditions of competition in the market of educational services, the quality of training of specialists becomes the main indicator of the competitiveness of a higher educational institution. One of the main factors affecting the quality of the educational process is the level of professional competence of a university teacher.

In the development of the conceptual apparatus competence-based approach in vocational education the contribution was made by the studies of V.I. Baidenko , E.F. Zeera , I.A. Zimney, Yu.G. Tatura , A.V. Khutorsky and others [1, 2, 3].

The trend of movement from the concept of "knowledge" to the concept of "competence" is global. This trend is expressed in the fact that the strengthening of cognitive principles in modern production is not covered by the traditional concepts of "knowledge", "skills" and skills. The concept of "competence" becomes more adequate. For a modern specialist, it is not so much knowledge that is important, but the ability to apply them to resolve specific situations and problems that arise in professional activities and in life. With this approach, knowledge becomes the cognitive base of the competence of a specialist. What is competence?

Competence is a set of properties (characteristics) of a person that allows her to qualitatively perform certain activities aimed at solving problems (tasks) in any industry. In addition to the concept of "competence", there is a similar concept of "competence" (in the scientific literature, they are often used as synonyms).

Competence is what a person claims, it is a range of issues in which he is well aware, has knowledge and experience. Competence is a characteristic of a place, not a person, i.e. parameter of a person's social role. If a person corresponds to this place (social role), then it is considered that he has competence in this range of issues. Competence is what a particular specialist has achieved; it characterizes the degree of mastering the competence and is determined by the ability to solve the tasks prescribed by the "place".

The professional competence of a teacher is a system of knowledge, skills and abilities that form the basis of his professional activity as a teacher and scientist.

The data of numerous international studies irrefutably testify that success in the development of education in a country depends most of all on the quality of teaching staff and the effectiveness of personnel policy.



The analysis of the literature showed that a number of authors consider professional competence as an element or an integral part of a specialist's culture, others as a personality trait, and still others as the ability and readiness to carry out professional activities [1, 2, 3]. In the structure of professional competence, many include, in addition to knowledge and skills, professionally significant personality traits, work experience. Common to all definitions is that the term "competence" is used to express a high level of professionalism of a specialist. We understand professional competence as a characteristic of a specialist's personality, expressed in the unity of his theoretical knowledge, practical preparedness, ability to carry out all types of professional activities.

Professional competence is a systemic integrative unity of cognitive and activity components, personal characteristics and experience. It does not come down to individual qualities of a person or their sum, or to individual knowledge, skills and abilities, it not only reflects a person's potential and ability to use it, but also allows a person to be successful professionally. In our understanding, the structure of professional competence of specialists is determined by the types of professional activity.

It should be noted that the formation and development of professional competence of a specialist occurs throughout his professional life. In the framework of this work, the formation of professional competence is considered as its formation at the stage of mastering a specialty. To solve this problem, a strategy is needed that involves:

- integrity, continuity and successive relationship of all disciplines of specialist training;
- the orientation of the content of educational material, forms, methods and means of teaching each of the disciplines of training for the formation and development of professional competence;
- reflection in each of the disciplines of training specialists of the components of their professional activities by solving problems that model, imitate or reflect professional activities;
- immersion of students in active professional activity at all stages of continuous educational and industrial practice.

Considering the technology we are developing as a system, which is a functional complex of interconnected elements that implements a single target function, we have identified the following objectives:

- at the global level - the development of those abilities of the individual that are needed by him and society; its inclusion in socially valuable activity; providing opportunities for self-education;
- at the university level - the education of the personality of a professional who is ready theoretically and practically to carry out all types of professional activities;
- at the operational level:
- at the level of discipline - the formation of components of professional competence: design, production - technological, organizational - managerial and scientific - research;
- at the level of the topic of the discipline - the formation of knowledge, skills at the required level of assimilation and professionally important qualities of the specialist's personality. To solve the desired problem - the training of competent light industry specialists - within the framework of this methodology, various technologies are used at the particular methodological and local levels, including a set of forms of organization, methods, training and diagnostic tools that provide more effective results in achieving the goals of each of the stages.

In our opinion, the invariant activities of a modern specialist can be taken as the basis for the classification of key competencies. Regardless of the profession, he must be ready to perform the following activities: cognitive, communicative, managerial, value-semantic, civil - social, informational, research, health - saving and cultural-leisure.

Therefore, it is advisable to include the following in the list of key (basic) competencies of any specialist, including a teacher:

- cognitive or cognitive;
- communicative;
- managerial or social - organizational;



- competence in value - semantic orientation;
- competence in the field of civil and social activities;
- information and computer;
- creative;
- competence in health care ;
- competence in the field of cultural and leisure activities.

Taking into account the specifics of the pedagogical activity of the teacher, in which educational cooperation, communication and other forms of interaction with students are carried out, as well as the combination of pedagogical activity with research work, some key competencies, in our opinion, become elements of his professional competence .

Based on these differences in the structure of the teacher's professional competence, the following should be distinguished:

- special knowledge and skills in the field of taught science (discipline);
- psychological and pedagogical competence;
- communicative competence;
- socio-organizational (management) competence;
- creative competence.

In the structure of the personality and activities of any person, including a teacher, the most important place is occupied by motives. Special knowledge and skills in the field of taught disciplines that characterize the scientific qualifications of a teacher, as a rule, are at a good level. As for the psychological and pedagogical qualifications of a university teacher, it often needs to be improved .

Analysis and generalization of the work experience of universities show that effective methods and forms of improving the scientific and methodological qualifications of teachers include:

- systematic independent work (self-education) in order to deepen knowledge in the field of the science (discipline) taught, in psychology and pedagogy, in teaching methods;
- scientific and methodological work aimed at creating educational and methodological complexes in the taught disciplines and at improving the content of methods and organizational forms of education;
- participation of teachers in the work of scientific and methodological conferences and seminars; - joint attendance of classes with their subsequent analysis;
- study, generalization and implementation of advanced pedagogical experience;
- an appeal to the history of pedagogy and experience in the field of higher education in our country and abroad;
- preparation and defense of dissertations (master's, candidate and doctoral) on the subject of psychology, pedagogy and teaching methods;
- organizing seminars of pedagogical skills for young teachers, giving them lectures on the psychology and pedagogy of higher education;
- training of teachers in leading universities of the country and abroad;
- study of young teachers at courses and faculties for improving scientific and pedagogical qualifications.

The results of this analysis of the activity and personality of the teacher are recommended to be used when clarifying his professional and qualification characteristics and the corresponding educational standard, in the system of certification of teachers and in improving their psychological and pedagogical qualifications.

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THE ROLE OF THE FAMILY IN THE SPIRITUAL AND MORAL EDUCATION OF THE GROWING GENERATION

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ANNOTATION

The article deals with the issues of spiritual education, the formation of culture and values in the family. Its role in strengthening moral principles and stability in society is shown.

KEY WORDS: family, society, culture, upbringing, morality, gender approach.

Spiritual and moral education of schoolchildren is a paramount task of modern education. It is one of the main components of the social order for the educational system. Spiritual and moral education is an aspect of education, which has as its goal the assimilation by students and the implementation of higher spiritual values into practical action.

The importance of the spiritual and moral education of the younger generation is especially relevant in the modern period due to the loss of the moral meaning of people's own lives, which results in growing aggressiveness, some infantilism of young people, lack of spirituality. The lack of moral values and the neglect of moral and ethical standards are becoming a widespread phenomenon. Ensuring the spiritual and moral development and education of the personality of a citizen of Uzbekistan is a key task of the modern state policy of the Republic of Uzbekistan.

The problems of the moral development of the individual were dealt with by such scientists as F.I. Ivashchenko, E.G. Belyakova, I.S. Maryenko, B.M. Bim-Bad, I.F. Kharlamova, V.I. Slobodchikov, T.V. Tsyrlina, D.A. Leontiev and others. V.A. Sukhomlinsky, developing an educational system about the comprehensive development of the personality, considered moral education to be its backbone feature. Education, as the encyclopedia points out, in the pedagogical community "... is the specific activity of an adult to include the child in specific situations in the life of the community, to create conditions for his internal development - the implementation of self-education. In education, there is a differentiation of value systems, the recognition of traditional ones or the development of new ones" [1].

In the Pedagogical Encyclopedic Dictionary, edited by B. M. BimBad, spirituality is defined as a concept that generally reflects values (in other words, meanings) and the experience corresponding to them. They are opposite or different from the empirical ("material", "natural") existence of man. Spirituality (from the word "spirit") is a person's appeal to the highest values and to the ideal. It is understood as a conscious striving for perfection. The authors point out that in sociological thinking, spirituality is reduced to culture. However, culture and its norms are not necessarily idealized. It follows that spirituality is opposed to sociality and cannot be defined. As the authors point out, a formal definition exists. We agree with their opinion that spirituality is the overcoming of everyday life with the introduction of uplifting meanings into it [2].

For the most complete and in-depth study of the problems of spiritual and moral education of adolescents, a comprehensive view of this process is required, within which gender differences are its essential characteristic. Modern social life can be understood only on the basis of a gender approach. At the same time, the study of the works of foreign researchers (A. Oakley et al.) [3] allows us to conclude that the word "gender" is absent in the studies. Thus, in Western sociology this term is used as a tool for observing the differences between men and women, and the linguistic understanding of the word "gender" as "kind, experience of the kind" does not allow for its scientific interpretation, which is followed by most scientists in Russia and abroad, using the concept "gender" in order to highlight the social aspect.

The specificity of gender leaves an imprint on the peculiarities of the organization of educational work. As noted in the work of S.I. Golod, "the awareness of gender is so widespread that it is considered to be inherent in the genes, while in fact gender differences are constantly created and recreated precisely in the course of human interaction" [4, p. 127]. In this regard, the socio-cultural characteristics of sex are determined not only by the biological and psychological characteristics of the sexes, but also by society. A special role in social factors must be assigned to the pedagogical impact on the individual, on the education system, taking into account the gender aspect. From this we can conclude:

1. Fundamental changes taking place in the twenty-first century. in the labor, political, economic life of women, their wide inclusion in the spheres of public life led to the need to consider the dialectic of the general and the special in the relationship



between the two sexes as an important social factor that determines various aspects of public life. Thus, any social theory that tries to reveal the main characteristics of a person and society as a whole must not only consider all phenomena and processes from the point of view of the general characteristics inherent in the human race, but also identify their specificity, which introduces sexual differentiation into social processes. In this case, we are talking about a holistic approach to all the characteristics that determine the behavior of the individual. We are talking about the study of the unity of the biological, psychological and social.

2. The gender approach is significant for studying the holistic interaction of people in society - both adult male and female representatives, and children. This approach makes it possible to reveal the dialectical relationship of biological, psychological, and social factors in determining the role of the latter when it is used in pedagogy.

3. Gender studies on an equal footing include the study of both women and men, but women's issues are leading. This indicates that the social status of women has changed significantly in the last decade, while the position of men has not undergone major changes.

Education is the most important part of the process of socialization of a person's personality, it is a purposeful transfer of knowledge and experience of previous generations to the next, and spiritual and moral education is its integral component. First of all, the spiritual and moral development of the individual takes place in the family. It is the most important factor in the formation of a child's personality. As noted in [5], it is in the family that special psychological and pedagogical conditions are created, aimed at the formation of a spiritual and moral personality. Depending on the socio-cultural context in family education, certain methods and factors are dominant in the formation of a spiritual and moral personality. V. Rozanov notes that "... the school gives only a staff to a person who is formed by the family" [6]. The orientation of the child in life largely depends on family education. But modern family education is experiencing some crisis associated with the ever-increasing role of the so-called "consumer society", characterized by a race for material goods, prestige and image. For Chechen society, the problem of family breakdown is also relevant. More and more children are growing up in single-parent families, and this is becoming the norm. This is a huge stress for the psyche of the child, which negatively affects his development. The difficult economic situation that has developed in our country recently also does not contribute to the revival of the best traditions of family education.

Parents involved in the financial support of the family are increasingly shifting the responsibility for the upbringing and development of the child to kindergarten, school and other social institutions. Of course, the sphere of education has a huge impact on the spiritual and moral education and development of the child's personality, but this does not exclude the importance of family education. The school is one of the first and main institutions of human socialization, and it is she who forms the social orientation of the individual. The content of education at school is grouped around basic national values. Chechen national traditions, customs, adats, family, spiritual and cultural values are passed down from generation to generation. National values are the semantic basis of the space for the spiritual and moral development of students. Art, literature, history, and world artistic culture are gaining relevance. School extracurricular educational activities should also be focused on basic values, such as family, homeland, work: holidays, matinees, games, competitions. They are also reflected in the activities of circles, art schools, sections and other forms of additional education. Today, in the Republic of Uzbekistan, close attention is paid to spiritual and moral education, it is one of the priority areas of youth policy.

Morality and adherence to its principles are not inherited. Each person is called upon to go through the process of moral education on his own, but by himself he cannot become a moral person. This is possible only in the family, in educational, labor and military associations, in communication, etc. Where does the introduction of a person to morality, its principles, begin? Where is personality formed? In family. It is in the family that the views and attitudes of people towards life are formed. At the state level, it should be treated as the most important value. Many thinkers of the past saw the meaning of human existence in work. Thus, the great humanist Nizami wrote that we came into this world for the sake of labor, and not for the sake of empty talk. The thinker compared the working people who create the blessings of life with honey bees [12].

The French writer and philosopher - educator Voltaire wrote: "To live is to work. Labor is man" [7]. In this regard, the task of social responsibility of parents is updated. In our opinion, the social responsibility of a parent is the conscious fulfillment of social requirements for his activities aimed at educating children in the spirit of universal, moral principles, preparing them for an independent working life, the ability to foresee the result of this activity and bear responsibility for it.

Social responsibility requires the parent to nurture love and respect for the person. As R. Abdulatipov writes: "A person who has not learned to love others will not learn to love himself. Only by limiting self-love can one learn to love others too."

Life confirms that success in the formation of spiritual and moral values in the family depends on how educational efforts of adults are pedagogically expedient, pedagogically literate, how much they correspond to the general tone of family life, the behavior of adults, how much moral behavior patterns cultivated in the family correspond to real moral ones. patterns that adults carry and how these patterns correspond to generally accepted social patterns. It is known that even the highest pedagogical culture of adults can be powerless if parents want to form in a child moral qualities that they themselves do not possess.

The crisis situation that has developed in the modern family is manifested with particular force in the spiritual life of society. With the inexhaustible cultural potential accumulated by previous generations and our contemporaries, there is a spiritual impoverishment of the people. Mass lack of culture is the cause of many troubles in various spheres of the development of society.



The decline of morality, bitterness, the growth of crime and violence are evil shoots on the basis of lack of spirituality. Nowadays, family traditions are of particular importance. They have their roots in ancient times and in one way or another have always been connected with the way of family life of the people, with their way of life. Family traditions regulate the behavior and actions of family members, leave a peculiar imprint on the formation of thoughts and feelings.

A prosperous family with high spirituality and humanism is characterized by a focus on moral values: love, friendship, mutual assistance, moral responsibility for their actions, behavior, for their work, goodwill in interpersonal relationships. These moral values have evolved over the centuries in the lives of many generations, whether they are Russians, Ukrainians, Belarusians, Tatars ... the peoples of the Caucasus or people of many other nationalities. And the task of the state, its legal and social structures, labor collectives is to help families preserve their humanistic potential, protect them from enmity, from national hostility, from wars, conflagrations, and environmental disasters.

The family, together with the school, will have to bring their positions closer in the requirements for children, for their studies, for obtaining the education necessary for life and work, for choosing a profession, determining the right orientations in the combination of material and cultural values.

We cannot turn a blind eye to the negative phenomena associated with the troubles in many families, with divorces, with the fact that tens of thousands of children remain abandoned, and their parents, father or mother, often both lead an immoral lifestyle. And this gives rise in many cases to the social pathology of children, their entry into the path of delinquency, the commission of crimes [10].

Great role in the family education of the word. Without verbal instruction there is not and cannot be education. From childhood, a person must hear (just hear!), What is possible, what is not, why one deed is evil, the other is good. The word is a great teacher! Here is how the great teacher V.A. Sukhomlinsky: "Education with a word is the most difficult and most difficult thing in pedagogy. Absolute absurdity is the assertion that the vice of educational work in many schools (as well as in families) is verbal education. It is necessary to talk about something else: about the primitiveness of verbal education, about the inability of individual teachers to educate with the word" [9].

The relationship between children and parents remains a serious problem. It is no secret that some young people, in order to get rid of the hassle and worries, under various pretexts, hand over their elderly parents to nursing homes. The ancient Greek thinker and philosopher Plato once noted: "Sons ... expect that they will be allowed to accuse their father of insanity when he is overwhelmed by illness or old age. This is indeed the case where morals are worthless. After all, neither God nor any person with reason will advise anyone to neglect their parents.

Intra-family relationships are largely dependent on family dialogue. In a family dialogue, as Professor V.T.Pulyaev rightly emphasizes, it is necessary to find a human means and a humanistic meaning for moving towards each other and understanding each other. A true family is built with truth and is aimed at the benefit of people in life, at the exaltation of a person, his spiritual strength and beauty.

In family relations, a woman-mother has played and continues to play an extraordinary role, since she gives birth to children, gives men her youth and beauty, and largely determines family comfort. In relation to the mother woman, the integrity, moral strength of a person, his spiritual wealth, his love for the Motherland, which does not deny, but on the contrary, presupposes love for humanity and humanity, is determined.

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EXCHANGE VALUE AS A MODERATED VARIABLES PROFITABILITY DETERMINANTS

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ABSTRACT

The purpose of this study to determine the factors that affect the company's profitability. The independent variables include activity, capital structure and firm size. The moderating variable is the currency exchange rate.

Design/methodology/approach: *the subjects of this research are food and beverage sub-sector manufacturing companies listed on the Indonesia Stock Exchange from 2006-2017. The sampling method used purposive. Panel data were analyzed using multiple regression..*

Finding: *The result showed that the activity ratio had a positive effect, the solvency ratio had no effect, the size of the company had no effect on profitability. But the exchange rate can moderate the effect of solvency on profitability.*

Original/Value: *This model was developed by including the exchange rate as a moderating variable. This is to explain exchange rate fluctuations, if there is currency depreciation, the amount of debt will increase which result in a decrease in profitability and vice versa.*

KEYWORDS: *Firm Activity, Capital Structure, Firm Size, Exchange Rate and Profitability.*

1. INTRODUCTION

Information on Profitability Company is always awaited by stakeholders. In line with signal theory, financial information submitted by companies provides signals for creditors, shareholders, government and society in making decisions. Profitability is the main indicator for creditors to decide to provide loans. Therefore, profitability is an indicator for shareholders to invest. For the government, the profitability of companies contributes to revenue that comes from taxes, so as to maintain the sustainability of the country. To increase company profitability, in line with the pecking order theory, companies prefer to use internal sources of funds and then external sources of funds.

Companies prefer internal funds because they do not need to pay transaction fees. The cost to obtain external financing is greater than internal. This is in line with the pecking order theory. The limited internal sources of funds, it is encouraging companies to use external sources of funds originating from loans and issuing shares are the last options.

In a free market, for neutral investors facing risk and a floating exchange rate applies, capital mobility between countries is smoother and investors place their wealth in assets that can provide the highest yield (1). The depreciation of the value of the domestic currency causes the price of imported goods to be more expensive and the price of exported goods is cheaper, this has a positive effect on the profitability of companies that export and has a negative effect on the profitability of companies that import raw materials (2). The increase in firm value is influenced by investment decisions, the lack of internal funds for investment can be overcome with external capital (3). Financing through foreign debt will affect the value of the company in the event of depreciation of the local currency (4)(2).

Although there are many studies to show the effect of solvency on financial performance (4) (5) almost all majorities provide exchange rates as an independent variable. Exchange rate is a variable whose value variation cannot be influenced by the company (uncontrollable variable) so it should be used as a moderating variable.

To fill the research gap, a model was developed by including the exchange rate as a moderating variable. This is to explain exchange rate fluctuations, if there is currency depreciation, the amount of debt will increase which result in a decrease in profitability and vice versa. It can strengthen or weaken the relationship between capital structure and profitability. The moderating variable can strengthen or weaken the relationship between the independent variable and the dependent variable (6).



Based on the foreign debt statistical report (SULNI) issued by Bank of Indonesia, foreign debt in the food and beverage sector tends to increase. The increase in foreign debt is related to the exchange rate. Table 1 shows the amount of external debt in the food and beverage sector.

Table 1. Amount of External Debt in the Food and Beverage Sector

Year	Amount Payable (Million US\$)
2012	397
2013	348
2014	421
2015	408
2016	416
2017	530

Source: Bank of Indonesia Foreign Debt Statistics Report (SULNI).

The increase in the amount of foreign debt was followed by the weakening of the rupiah exchange rate. In 2012 the IDR/USD exchange rate was IDR 9,387 and in 2017 it became IDR 13,381 which meant that the rupiah depreciated by 42.55 percent (ADB, 2019). The amount of this depreciation rate has an impact on the company's financial performance (4). (7). The high foreign debt of manufacturing companies has an effect on increasing the capital structure of the company and increasing interest costs. This condition worsens the solvency and profitability of the company, in the case of foreign debt decisions intended to increase profitability. The impact of capital structure (foreign debt) on the performance of manufacturing companies in the food and beverage sector in Indonesia can only be explained by using the exchange rate as a moderating variable. This is the novelty of this research.

2. THEORETICAL REVIEW AND HYPOTHESIS

A. Signal theory and pecking order

Signal theory explains the importance of reducing information asymmetry by providing or seeking information as a signal about company performance so that information recipients have a perception of company performance (8). This theory emphasizes on the existence of asymmetry information between the company and external parties. The company has more information about its performance and prospects than outsiders. Lack of outside information causes creditors and investors to protect themselves by assigning less value to the company. The way companies reduce information asymmetry is by submitting financial reports to outside parties. Company performance can be analyzed by analyzing financial ratios based on financial reports, such as liquidity ratios, activity, solvency, profitability. High profitability information such as ROE shows that the company's prospects are good, so that investors will respond positively to these signals and the firm's value will increase (9).

The pecking order theory explains that companies prefer to use internal funding rather than external, riskless debt than risky debt and the last one uses common stock (10). The premise is that there is no certain optimal target debt to equity ratio. Companies that are profitable generally require little external financing, on the other hand, companies that are less profitable will tend to use larger debt because internal

funds are insufficient and debt is the preferred external source. The hierarchy of sources of financing according to this theory is internal in the form of retained earnings, and external, namely debt and shares.

B. Variable

Profitability

Profitability is the company's ability to generate profits. Profit is obtained from income less expenses. To make a profit it is necessary to use resources. Profitability can be related to sales, total assets, and own capital. Profitability in relation to investment consists of return on assets (ROA) and return on equity (ROE) (11). Modified DuPont formula, linking total asset turnover (TATO), net profit margin (NPM), Financial Leverage Multilier (FLM) to determine the amount of ROE. Thus $ROE = NPM \times TATO \times FLM$ (12). In this article profitability is measured using ROE, which is net income divided by common stock equity. The higher the ROE, the greater the profit obtained by shareholders and vice versa.

Activity

Company activity is measured by how effectively the company utilizes total assets or components of assets to generate sales, production, purchases that contribute to profitability. Total TATO shows the effectiveness level of the use of the company's overall



assets in generating sales volume during a certain period. TATO indicates the efficiency of a company in using its assets to generate sales (12). Increased sales have the potential to increase profitability. Based on the modified DuPont formula, the higher the TATO, the higher the ROE.

Solvency

Solvency measures the company's ability to fulfill both short-term and long-term obligations. In this article, the solvency ratio is an indicator of the research variable, namely the debt to equity ratio (DER). This ratio is calculated from total debt divided by equity (13). The higher this ratio the greater the company uses debt and the greater the interest expense which can reduce the taxes paid by the company. DER is related to FLM in modified DuPont formula. If DER is total debt/total equity, then FLM is total assets/total equity. The more debt the company has, the higher the DER and FLM and the higher the ROE.

Company size

Determination of the size of the company can be determined based on total sales, total assets, average level of sales (14). Large companies have advantages over small companies. These advantages are: Large companies have better resources (financial, technological, human resources) or can achieve economies of scale that make them more competitive in international markets (15). With these various advantages, company size can determine cost efficiency and market share.

Exchange rate

In business activities, the US \$ is seen as a strong currency in the world, so its use is required for many business transactions, including foreign loans. There are 3 (three) main factors that influence exchange rate movements (16), namely: fundamentals are related to economic indicators, technical factors are related to conditions of demand and supply of foreign exchange, and market sentiment is more caused by rumors or incidental political news. Changes in exchange rates can change the amount of costs and revenues, thus affecting profits. The exchange rate referred to in this article is IDR / US.

C. Correlation between variables

Effect of TATO on ROE

A large TATTOO shows that the company's performance can be stated to be good. Higher TATO means more efficient use of all assets in generating sales. The efficient use of all assets will result in higher expected profitability. This statement is supported by several research results, such as Yameen and Pervez (16)

Therefore:

Ha1: The activity ratio has an influence on the profitability of the food and beverage sub-sector manufacturing companies for the period 2006-2017.

Effect of DER on ROE

The increasing DER shows that company loans that can be used for company expansion and / or working capital are getting bigger. This can increase sales and company profitability. The greater the DER, the higher the FLM, so that it has an effect on increasing ROE. The statement is in line with the results of research conducted by Yameen and Pervez (16) proving that the capital structure as measured by DER has a positive effect on profitability (ROA)

oefficient of DER(0.109019) indicates that for every one unit change in DER, There is a 0.109 unit change in ROA. It can be observed that Regression coefficient of DER is statistically significant at 5% level of significance (Si

Therefore:

Ha2: DER has an influence on the ROE of the food and beverage sub-sector manufacturing companies for the period 2016-2017.

The effect of company size on profitability

Company size is shown from several things, such as organizational structure, number of employees, company assets, and number of shares outstanding. The bigger the company, the company's ability to expand and develop its business also tends to increase. This is because the company has greater resources which can increase the company's profit. Large companies not only produce and sell goods and services more efficiently but can also produce large quantities or new goods more efficiently (17). It shows that company size has a positive effect on company profitability. This statement is in line with the results of several studies conducted by (18) (19).

**Therefore:**

Ha3: The ratio of company size has an influence on the profitability of the food and beverage sub-sector manufacturing companies for the period 2006 - 2017.

The effect of DER on ROE, with the exchange rate as the mediating variable

The depreciating exchange rate causes companies to buy raw materials, repay loans, including paying higher interest expenses. The increase in raw material prices will erode the company's profits if the company continues to sell its products at the same price. If the product price is increased, there is a tendency for people's purchasing power to decrease and it will also reduce company profits. The company's debt in foreign currency will increase if there is a weakening in the value of the rupiah. A decrease in consumer purchasing power or an increase in the cost of raw materials or an increase in interest costs due to the exchange rate will reduce company profits.

Exchange rate fluctuations have a negative and significant effect on the profitability of industrial companies (20). Globalization causes an increasingly limitless flow of goods. Increasing the need for investment funds in a country will be easier to obtain with loans from abroad. The sharp depreciation of the borrowing country's currency during an economic crisis causes the amount of debt to increase rapidly (21). The increase in the amount of debt due to this depreciation causes a decrease in the company's profitability. This impact will be greater if companies borrow funds from abroad and import raw materials but market their products domestically.

Based on this description:

Ha4: The exchange rate is able to moderate the effect of DER on the ROE of the food and beverage sub-sector manufacturing companies for the period 2006 - 2017.

3. RESEARCH METHODOLOGY

This study is an empirical study regarding how much the effectiveness of the activity ratio (TATO), solvency (DER) and company size (size) and the IDR to US \$ exchange rate as a moderating variable on profitability (ROE) in food and beverage sub-sector manufacturing companies on the Stock Exchange Indonesia (BEI) with an observation period of 6 years (2012-2017). The data used in this study are secondary data. The data is in the form of financial reports published by manufacturing companies in the food and beverage sub-sector during 2012-2017 which are obtained from the official website of the Indonesia Stock Exchange www.idx.co.id. The sample was selected based on the purposive sampling method. The number of manufacturing companies in the food and beverage sub-sector in the observation year was 16, but the data were complete from 2012 to 2017 as many as 12 companies. The code of the twelve companies that were sampled were: AISA, CEKA, DLTA, ICBP, INDF, MLBI, MYOR, PSDN, ROTI, SKLT, STTP and ULTJ.

The operationalization of variables is shown in Table 2 below:

Table 2. Variable Operationalization Concept

Variables	Dimensi	Definition	Formula	Scale
Profitability	ROE	Comparison of total income to total equity	Total Income/ Total equity	Ratio
Activity	TATO	Comparison of net sales to total assets	Net Sales/ Total Assets	Ratio
Solvency	DER	Comparison of total debt to total equity	Total debt/ Total Equity	Ratio
Company/Firm Size	Size	The size of the company is indicated by the size of the company's total assets on an annual basis	Ln(total assets)	Ratio
Exchange rate	Exchange rate	Comparison of the value of money between IDR and US \$	Ln (Selling Rate + Buying Rate)/2	Ratio

Testing using multiple regression test with a model before moderation, namely:

$$ROE = \alpha + \beta_1 TATO + \beta_2 DER + \beta_3 Size + e$$

And after moderation, namely:

$$ROE = \alpha + \beta_1 TATO + \beta_2 DER + \beta_3 Size + \beta_4 (DER * KURSUANG) + e$$

**Information:**ROE = Profitability α = constantTATO = Activity Ratio $\beta_1, \beta_2, \beta_3$ = CoefficientDER = Solvency e = error

SIZE = Company/Firm Size

4. RESULT & CONCLUSION

Descriptive statistical analysis conducted in this study used data from 12 manufacturing companies in the food and beverage sub-sector with a period of 6 years, from 2012 to 2017 or 72 observational data which can be seen in Table 3.

Table 3. Descriptive Statistical Analysis Result

	ROE	TATO	DER	SIZE
Mean	0,231399	1,273741	0,963737	14,99423
Median	0,158671	1,202835	1,011909	14,65099
Maximum	1,435333	3,057323	3,028644	18,33547
Minimum	-0,248705	0,546345	0,171404	12,42820
Std. Dev.	0,314255	0,547535	0,522605	1,517010
Skewness	2,657447	1,313557	0,993990	0,650496
Kurtosis	9,795179	4,783805	5,502121	2,614433
Jarque-Bera	223,2676	30,25105	30,63803	5,523720
Probability	0,000000	0,000000	0,000000	0,063174
Sum	16,66070	91,70937	69,38909	1079,584
Sum Sq. Dev.	7,011672	21,28545	19,39122	163,3937
Observations	72	72	72	72

Based on the data above, it is explained that:

- Profitability, which is proxied by ROE, has a maximum and minimum value of 1.435333 and -0.248705, respectively. The average value of the company size variable is 0.231399 and the standard deviation is 0.314255.
- Activities proxied by TATO have maximum and minimum values of 3.057323 and 0.546345, respectively. The average value of the activity variable is 1.273741 and the standard deviation is 0.547535.
- The solvency proxied by DER has a maximum and minimum value of 3.028644 and 0.171404, respectively. The average value of the solvency variable is 0.963737 and the standard deviation is 0.522605.
- Company or Firm size has a maximum and minimum value of 18.33547 and 12.42820, respectively. The average value of the firm size variable is 14.99423 and the standard deviation is 1.517010.

The independent variables in this study are the activity ratio (TATO), solvency (DER) and company/Firm size which are the predictors, while the dependent variable is profitability (ROE) and the moderating variable is the IDR exchange rate to US \$. After passing the classical assumption test, a model test is carried out and based on the result of the Lagrangian multiplier test, it shows that the Breusch Pagan cross-section probability value is 0.00, which means that the random effect method is better than the common effect method. The results of hypothesis testing can be seen in Table 4.

Table 4. Result of Multiple Regression Analysis



Variables	No Moderation Variables		With Moderated Variables	
	Coefficient	Probability	Coefficient	Probability
Constant	0,467939	0,4492	-1,374706	0,2043
TATO	0,104214	0,0435	0,162853	0,0033
DER	0,078252	0,0664	3,451936	0,0056
SIZE	-0,029658	0,4480	0,088662	0,2045
ER*DER			-0,358638	0,0065
Probability (F-Statistic)	0,048461		0,000000	
R-Squared	0,108736		0,925380	
Adjusted R-Squared	0,069416		0,905392	

Based on the result of data processing regarding the effect of the activity ratio (TATO), solvency (DER) and company/Firm size on profitability (ROE) with the exchange rate as a moderating variable carried out on 12 food and beverage sub-sector manufacturing companies listed on the Indonesia Stock Exchange. 2012-2017 period, the result of the analysis show the following:

1. The activity ratio (TATO) has a positive effect on profitability (ROE) in manufacturing companies in the food and beverage sub-sector listed on the Indonesia Stock Exchange.
2. The solvency ratio (DER) has no effect on profitability (ROE) in manufacturing companies in the food and beverage sub-sector listed on the Indonesia Stock Exchange.
3. Company size (size) has no effect on profitability (ROE) in manufacturing companies in the food and beverage sub-sector listed on the Indonesia Stock Exchange.
4. The exchange rate is able to strengthen the solvency ratio (DER) to profitability (ROE) in manufacturing companies in the food and beverage sub-sector listed on the Indonesia Stock Exchange.

Based on the result of the tests conducted, the activity variable has an effect on profitability. It is indicated by the profitability value of $0.0435 < 0.05$, which means that it is significant with a constant value of 0.104214. The bigger the TATO, the company can generate bigger profits. The result of this study is consistent with the research (21) which stated that activity has a positive effect on profitability.

Effect of Solvency on Profitability

Solvency ratio variable has no effect on profitability. It is indicated by the profitability value of $0.07 > 0.05$ with a constant of 0.08 which means it is not significant. The DER ratio of the company does not affect the company's profitability because the profits earned must be used again to pay debts, thereby reducing the value of the company's profits. The result of this study is in line with research (21). After adding the independent variable of exchange rate, the DER variable becomes significant so that it affects profitability. It is due to imports of large companies combined with the exchange rate so that it has an impact on profitability.

The Influence of Company Size on Profitability

Company size is measured based on the number of assets owned by the company. Firm size has no effect on profitability. It is indicated by the profitability value of $0.45 > 0.05$ with a constant of -0.03 which means it is not significant. The large size of the company does not guarantee that the company will generate increased profits. It is because large companies also have large expense components such as employee salaries, production costs, maintenance and so on. The result of this study is in line with the research (21)(22) which stated that company size has no effect on profitability.

Effect of Solvency on Profitability with Exchange Rate as a moderating variable

Based on the result of the tests conducted, the solvency variable which is moderated by the exchange rate can strengthen the relationship of the solvency variable to profitability. It is indicated by the profitability value of $0.07 > 0.05$ with a constant of 0.08 where the insignificant solvency variable before moderation turns into a profitability value of $0.01 < 0.05$ with a constant of 3.45 after moderation. Most of the raw materials for food & beverage industry companies come from foreign imports. With raw materials obtained from abroad, producers can produce products that can meet the target to be achieved. With imports, the industry can receive more raw materials so that they can be used for company operations. The result of this study is in line with research (23) (24).



6. CONCLUSION

Based on the data analysis, DER has no effect on ROE. However, when including the IDR exchange rate against US \$, it turns out that the exchange rate is able to mediate the positive effect of DER on ROE. Exchange rates can affect profitability, through revenue and costs. The IDR exchange rate against US \$ depreciated during the research data. Exchange rates can affect profitability, through import, export, and loan activities. The depreciation of IDR will increase export competitiveness, even though there is an increase in import costs and loan installments including interest expenses. As long as the additional foreign exchange income from the company's exports is still greater than the additional burden on the import exchange rate and loan installments, the exchange rate is able to mediate the positive effect of DER on ROE.

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THE PLACE OF IBN SINA'S TEACHING IN THE PHILOSOPHY OF CENTRAL ASIA OF THE X-XI CENTURIES AND ITS HISTORICAL, PHILOSOPHICAL ROOTS

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ANNOTATION

As a result of the misinterpretation of religious teachings in the world, especially the lack of rational understanding of the foundations of Islam, both in the Middle Ages and today there is a state of separation of religiosity and secularism, philosophy and religion. In such a situation, a philosophical interpretation of the teachings of Islam, a rational explanation of the subject of theology will help to understand these issues on a scientific basis. Philosophical works occupy a separate place in the scientific heritage of Abu Ali ibn Sina. In the formation of his philosophical views, the teachings of Aristotle and Farabi had a great influence. However, Ibn Sina is widely recognized throughout the world in philosophy as a unique thinker who created a kind of school, along with the above-mentioned philosophers. The legacy of Ibn Sina's philosophy, based on Islamic teachings, influenced the philosophical thinking of not only Islamic, but also Jewish and Christian theologians, and it became necessary to study the religious and philosophical views of scientists, as well as a rational understanding of existing religious problems in society.

KEYWORDS: *Metaphysics, theory of two truths, necessary being, possible being, emanation, pantheism, original mind, common mind, substance, accident, naturalistic philosophy,*

МЕСТО УЧЕНИЯ ИБН СИНЫ В ФИЛОСОФИИ ЦЕНТРАЛЬНОЙ АЗИИ X-XI ВЕКОВ И ЕГО ИСТОРИЧЕСКИЕ, ФИЛОСОФСКИЕ КОРНИ

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Аннотация: В результате неправильного толкования религиозных учений в мире, особенно отсутствия рационального осмысления основ ислама, как в средние века, так и сегодня наблюдается состояние разделения религиозности и секуляризма, философии и религии. В такой ситуации философское толкование учения ислама, рациональное объяснение предмета теологии поможет разобраться в этих вопросах на научной основе. В научном наследии Абу Али ибн Сины философские произведения занимают отдельное место. В формировании его философских взглядов большое влияние оказали учения Аристотеля и Фаробий. Однако Ибн Сино во всем мире широко признан в философии как неповторимый мыслитель, создавший своеобразную школу, наряду с вышеперечисленными



философами. Наследие философии Ибн Сины, основанной на исламских учениях, повлияло на философское мышление не только исламских, но также иудейских и христианских богословов, и возникла необходимость изучить религиозные и философские взгляды ученых, а также рациональное понимание существующих религиозных проблем в обществе.

Ключевые слова: *Метафизика, теория двух истин, Необходимо сущее, возможно сущее, эманация, пантеизм, первоначальный разум, общий разум, субстанция, акциденция, натуралистическая философия,*

В свое время Абу Наср аль-Фараби, основываясь на фразе «Религия и философия - два пути к истине», сформировал умеренный подход к религии в объяснении религиозных истин с помощью философских законов. Гносеологические принципы Абу Али ибн Сины в отношении теологии, его рациональное толкование религии сыграли важную роль в поиске решения существующей проблемы. Следовательно, логическое толкование религиозных истин, использование рациональных принципов при освещении предмета теологии помогает правильно понять вопросы религии и философии.

В мире существует множество исследований о гармонии религии и философии, в которых философские учения мыслителей Центральной Азии изучаются как важная часть духовного наследия региона. Изучение истории логико-гносеологических идей в Центральной Азии позволяет правильно понять не только культуру и философию прошлого, но и мировоззренческие процессы настоящего. Хотя теологическое наследие Ибн Сины изучалось рядом ученых из западных стран, России, Турции, Ирана и Таджикистана, его религиозно-рациональные взгляды не подвергались систематическому анализу. Исследования в основном были сосредоточены на взглядах Ибн Сины на нафс, душу и вечности материи. Однако интерпретация ученым исламских источников, особенно сур Корана, ускользнула от внимания большинства исследователей. В результате в некоторых исследованиях можно проследить попытки изобразить ученого как материалиста, истолковать его как последователя греческой философии. Поэтому изучение тафсиров Ибн Сины имеет большое значение для рационального раскрытия гармонии религиозности и секуляризма, а также принципов умеренного ислама.

В изучении гносеологии философии Центральной Азии важное значение имеют исследования таких ученых СНГ, как: М.Асимов, Н.Баратов, М.Болтаев, А.Джахид, Ю.Жумабоев, М.Диноршоев, А.Закуев, А.Косимжонов, С.Сатибекова, Е.Фролова, М.Хайруллаев, М.Степанянц, А.Сагадеев, Г.Шаймухамбетова, А.Шарипов.[1:4]

Когда говорится о гносеологии философии Центральной Азии X-XI веков, то можно привести в пример философию таких великих мыслителей, как Ибн Сино, Беруний.[3:10] Нельзя отрицать, что советская философская школа пыталась изобразить этих гениев как материалистических и религиозных критиков. В результате одностороннего подхода, среди великих восточных философов, восточная черта философии знания Ибн Сины, божественность в ней и уникальное рациональное ядро, которое привело к пониманию и соединению материального мира, также оказались на обочине. Учения восточных перипатетиков, особенно гносеологические взгляды Ибн Сины, который был его воплощением, привлекли внимание правящей элиты того времени с точки зрения их важности. В период халифа Маъмуна строительство “Байт ул Хикма” и изучение в нем греческого философского наследия осуществлялось при содействии государства, которое стало покровителем перипатетизма.

Изучая в исследовании корни национальной философии, проблемы, связанные с познанием в восточной метафизике в философии Ибн Сины, систематически изучались с помощью дискурса аналитических подходов, доступных во всем мире, с целью формирования подхода, основанного на исторических источниках.[2:96]

В изучении философии Центральной Азии, в частности мусульманской философии, заключения делались под влиянием идеи европацентризма западных исследователей. Греческая философия,



оказавшая большое влияние на арабское рациональное мышление, сама образовалась из свода мировоззрений нескольких цивилизаций. Нельзя отрицать, что греки интересовались мышлением иранских народов, учением Зороастризма, мировоззрениями Вед и буддизма.

Позднее Э. Ренан разработал эту концепцию: только мутакаллимы, то есть первоначальные арабские мыслители, были полностью против греческой философии и считали, что греческая философия войдет в ислам только после того, как «персидский дух» Аббасидов победил «арабский». Однако, если тех, кто имеет дело со словом, называют мутакаллимами, Абу Ханифа, Мотуриди, Абул Хафс Насафи были турками или персами. Отождествлять мутакаллимов с арабами нереально.

А.Сагадеев отмечает, что в средневековой Европе все больше католических ученых-неотомистов интересовались философией. В качестве примеров можно привести взгляды Э.Джилсона, Л.Гард, Дж. Вербеке, М.Асин-Паласос, Р.Арналдес и А.Корбен на философию Центральной Азии

Анализ европацентристского отношения к истории философии Центральной Азии само собой упирается на “Авесто”. “Авесто” исследовали такие древнегреческие философы, как: Солон, Сократ, Фалес, Аристотель, Платон, Гераклит, Демокрит, А. Перон, Х.Бартоломе, М.Бойс, И.Стеблин-Коменский, Ж.Келенс, Ж.Дюшен-Гиен, Х.Хумбах, И.Гёте, А.Данте, В.Хеннинг. Поэтому на формирование их философских воззрений оказало влияние “Авесто”.

Ученый-исследователь из США Фредерик Старр период IX-XII веков Центральной Азии называл “золотым веком”: мыслители золотого века Центральной Азии для достижения научной истины использовали не одну, а несколько методов: это дедукция, логическая аргументация, интуиция, эксперимент и наблюдение. Ф.Старр также подчеркнул, что Ибн Сино в сфере метафизики исследовал рациональную основу религии.

Анализируя философию Ибн Сины на основе исторической ретроспективности, необходимо подчеркнуть, что существовали различные подходы и комментарии к его творчеству. Фредерик Старр, высоко оценивая мышления Востока, глубоко изучил все события и подробности.[11:110] В его методологии ведущим является “западное исследование”. Его некоторые высказывания о Беруний и его книге “Осор ул-бакия” – спорные. Оказывается, что Беруний больше интересовало определение срока года. По мнению Беруний, как будто, существовали ошибки в учете мусульманского летосчисления, поэтому он высоко оценивал учет до секунды у древних египтян.

В 1980 году под редакцией академиков Е.Примакова, М.Асимова, Э.Юсупова, Г.Ашурова, доктора философских наук В.Евграфова, кандидата философских наук Е.Фролова к 1000-летию со дня рождения Ибн Сины была издана книга “Ибн Сина”. В ней были изложены перевод и комментарии к произведениям ученого “Ишорот ват-танбехот”, “Рисалату-рух”.

К 1000-летию со дня рождения Абу Райхана Беруний, в 1973 году, со стороны Академии наук Узбекистана была издана книга, в которой было сказано, что на взгляды Беруний о сущности оказал влияние Ибн Сина.

По предположению У.Каримова, до нас дошли 242 произведения ученого. Из них 80 относятся к философии, сфере метафизики и учению суфизма, 40 – медицине, 19 – логике, 26 – к психологии, 23 – природоведению, 7 – астрономии, 1 – математике, 2 – ал-химии, 9 – этике, 4 – литературе, 8 – переписке с учеными того времени по различным научным проблемам.

Известный ученый-востоковед А.Ирисов, опираясь на некоторые источники, приводит сведения о том, что философские труды ученого насчитывались от 68 до 198.

Крупным произведением Ибн Сины, вошедшим в 18 томник “аш-Шифо”, является “ал-Илохиёт” (“Метафизика”). Произведение состоит из десяти статей и шестидесяти одной главы. Основой для этого труда Ибн Сины стал труд Аристотеля “Метафизика” из четырнадцати статей, расположенных по алфавиту.

Не смотря на множество исследователей, изучающих научное наследие Ибн Сины, и сегодня существуют спорные источники, которые принадлежат перу ученого и ждут своих исследователей.



Одним из таких трудов является “ал-Хикма-ал-машрикийя” (“Восточная философия”). Об этом произведении упоминал и сам Ибн Сина. Историк среднего века Ибн ал-Кифтий писал, что Ибн Сино написал произведение в одном томе “Шарк фалсафаси” (“Философия Востока”).

Теологические учения Ибн Сины описаны в его книгах «Аш-Шифа», «Ал-ишарат ват-танбехат», «Ан-Наджат», «Донишنامه», «Ал-мабда вал маод», «Рисалаи мантикия», «Хикмати машрикия» и «Китаб хидая.»

Ибн Сина также написал книги на темы тафсира (комментария к Корну) и акиды (догматика ислама). Эти работы представляют собой брошюры, написанные в форме вопросов и ответов, которые интересуют многих во времена ученого. Некоторые из рукописей этих произведений хранятся в рукописном фонде Академии наук Республики Узбекистан. Например: «Рисолат мерожия» («Трактат о вознесении пророка Мухаммада»), «Рисала фи анна ло махофата лилмавт» («Трактат об опасности смерти»), «Асрор ас-салат» («Тайны молитвы»), «Тафсир суврат кул хуваллаху ахад». Мыслитель также написал комментарии к Сурат аль-Фалак и Сурат ан-Нас.

Общий объем книги «Тафсир сурат аль-Ихлас валь-Фалак» Ибн Сины составляет 110 страниц.

Область тафсира - одна из самых ранних исламских наук. Трактаты ученого в этой области относятся к категории «тафсир бир-рай» (ментальный тафсир). Слово “рай” означает веру, иджитхад и аналогию в исламской терминологии.

К философским взглядам теолога Абу Хамида аль-Газали, особенно его книге «Тахафут аль-фаласифа» («Опровержение философов») Ибн Рушд написал книгу опровержения «Тахафут ат-тахафут» («Опровержение опровержения»). В этой книге Ибн Рушд критикует взгляды Газали, в том числе некоторые иррационалистические идеи в области научных знаний. Следует рассматривать источники для изучения теологических учений Ибн Сины как первичные, теоретические и методологические.

Работы по рациональному изучению религиозных истин в теологии Ибн Сины можно увидеть в диссертациях, написанных в странах СНГ. Например: диссертация О. Махмудова «Роль школы Толедо в изучении научного наследия центральноазиатских ученых в Европе (XII-XIII века)», докторская диссертация Р.Г.Садыкова на тему «Человек и мир в философии Ибн Сины», диссертация Ё.Б.Ниязова на соискание ученой степени кандидата философских наук на тему «Философия Ибн Сины в эпоху современных арабских исследователей», диссертация М.Г.Рахимова на соискание ученой степени доктора философских наук на тему « Антропология Абу Али ибн Сины», диссертация С.А. Султанова на соискание ученой степени кандидата философских наук на тему «Ибн Сина в философских традициях Франции».

Исходя из вышеприведенного исследования, можно сделать следующее заключение:

1. Подход мировых исследователей к изучению гносеологии философии Центральной Азии X-XI веков отличается друг от друга. Хотя западные востоковеды и теологи глубоко изучили наследие Ибн Сины, они не смогли отказаться от подхода «европейского приоритета». Западные ученые хотели превратить таких мыслителей, как Ибн Сина, в критиков своей собственной культуры. В исследовании мусульманских ученых прослеживается тенденция сравнивать мышление Ибн Сины с традициями исламского учения. В связи с этим вклад мусульманских исследователей в обогащение так называемой «исламской философии» значителен. Называли таких ученых, как Ибн Сина и Фараби, «основателями исламской философии».

2. Хотя источники теологических взглядов Ибн Сины широко изучаются, некоторые из источников, написанных ученым, в частности его комментарии к Корану, были изучены только турецкими, индийскими и иранскими учеными. Теология Ибн Сины также отражено в источниках, написанных аль-Газали и Ибн Рушдом.

Учеными мира были проведены многочисленные научные работы, в которых изучались такие взгляды, как эманация, Ваджиб аль-Вуджуд, ал-мабда и маад в теологии Ибн Сины. Исследования состоит из монографий, диссертаций, брошюр и научных сборников, созданных на Западе и в



мусульманских странах, бывших странах СНГ, в частности в Узбекистане.

Источники для изучения теологических учений Ибн Сины можно рассматривать как первичную, теоретическую и методологическую основу.

3. Ибн Сина продолжил взгляды Фароби на социально-философские проблемы и поднял философское течение на систематический и новый уровень, обогатив его новыми естественнонаучными идеями. Метафизика в интерпретации Ибн Сины о существовании в самом широком смысле как доктрина, есть четыре типа изучения в неразрывной связи с конкретными науками и метафизикой.

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TEACHING MODAL VERBS THROUGH DISCUSSING AUTHENTIC VIDEO MATERIALS

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ANNOTATION

This article is dedicated teaching modal verbs through discussing authentic video materials and focus on the fulfillment of the homework tasks. Particular attention is paid to the improvement of our class organization for helping our students to achieve a communicative competence.

KEY WORDS: *communicative competence, authentic, improvement, class organization, video materials*

Аннотация: Данная статья посвящена обучению модальным глаголам через обсуждение аутентичных видеоматериалов и акцентирует внимание на выполнении домашних заданий. Особое внимание уделяется улучшению организации нашего класса, чтобы помочь нашим студентам достичь коммуникативной компетенции.

Ключевые слова: коммуникативная компетентность, аутентичность, совершенствование, организация занятия, видео материалы.

Annotatsiya: Ushbu maqola haqiqiy video materiallarni muhokama qilish orqali modal fe'llarni o'rgatish va uy vazifasini bajarishga qaratilgan. Talabalarimizning kommunikativ kompetentsiyaga erishishiga yordam berish uchun sinfimizni tashkil etishni takomillashtirishga alohida e'tibor qaratilmoqda.

Kalit so'zlar: kommunikativ kompetentsiya, autentik, takomillashtirish, sinfni tashkil etish, video materiallar

The point of this article devotes the understanding of the CLT approach the author and the reflections on English dialect educating encounter which investigates the CLT approach. [1] The work gives opportunities for the author to integrate her current knowledge and beliefs of teaching the language and learning with modern research, practice, and theory. Basically, the work explores new ways of communicating via language, language teaching, language assessment, lesson design, classroom observation, and feedback – key areas in the professional lives of language teachers. [2] Each homework task is meant to give information the author understands of new knowledge, sources, and skills to their own teaching ways.

When we conduct the lessons with the same level students and if their attitudes toward each others are very friendly and helpful it is not so challenging for the teacher. [3] The group which I want to involve in my research paper has the qualities which were mentioned above. Even though they weren't good at speaking I always used to take parts in all tasks and activities. [4] They didn't feel shy and fear to speak likewise other students mostly face to such problems. The subject which I conducted with them was "Integrated skills" and the topic was "Describing house". My students at university who are studying for their bachelor's degree are usually with different academic backgrounds and mixed ability students in terms of language skills. In order to satisfy the needs of modern language learners we teachers have to be very inquisitive, resourceful and well aware of modern trends in language teaching. [5] As it is known for many years Grammar translation method dominated in our ELT context which means teaching focuses were mainly linguistic awareness and competence of learners through teacher centered pedagogy. Being far away from criticism of traditional methods of language teaching I realized the urgent need for transferring to modern ways of teaching according to the



educational context and its specifications. [6] I have chosen a subject which I teach at university called “Communicative vocabulary” as a target to analyze during my project work tasks. I teach this university course to second year students and have gained so far certain achievements and as well as faced some challenges. While participating this teachers’ professional development course I started to realize the reasons and influential factors which my achievements and challenges rooted from. [7] The positive sides of my activity as a language teacher have been that I could create a “safe zone” for my learners to communicate and promoted their interaction throughout the procedure while the negatives were related to preparing my learners for successful communication in the target language when in the real situation. [8] I used to focus on teaching planned amount of vocabulary with the help of examples definitions even in context, however, I realized now, that competences shouldn’t be or cannot be developed in isolation or by segregated way, vice versa language is also social event which should be taught in relation with real world situations and conditions. As a target lesson for my project work I have chosen one class when I taught students job related vocabulary where my learners were exposed to work on poster presentation on job interviewing specifications. [9] As I mentioned above during the lesson I made a great effort to make the process as communicative and student centered as possible where I had some challenges to teach appropriate tips which can be useful in Uzbek cultural context and interlink into my objectives pragmatic and sociolinguistic competences. [10] However, now we are aware of the importance of teaching grammar in an integrated way with multi focuses. The explanation of the phrase Linguistic or grammatical competence – is the ability to be able to apply grammatical, syntactical, lexical, semantic and stylistic rules to oral and written utterances. Linguistic competence is important since it explains how utterances and sentences are structured – structural conceptualization of language. However, these rules are not enough to accomplish a communicative goal since non-linguistic factors play a role in constructing social meanings. [11]

There have been many approaches for the teaching of English in Uzbekistan. Integration hasn’t been in the target in teaching languages during foreign language lessons. For example, we studied such subjects like Analytical reading, home reading, grammar, phonetics and others during our university study. [12] At these lessons we used almost in all cases grammar translation methods. We learned new words, retold meaning of the story or translated newspaper articles from English into Uzbek or vice versa. In phonetic and grammar lessons we learned only grammar rules. [13]

The target lesson of mine could be enriched best with focusing on the vocabulary investigating activities by exposing learners to work on the words and phrases as parts of speech and learning their functions from the perspective of syntax such as what specific words they are learning are nouns, verbs, adjectives, adverbs. [14] Another linguistic input could be through identifying synonyms, antonyms and homonyms of the chosen words and phrases for the lesson. According to the poster presentations that students worked on teaching modal verbs or positive and negative imperative sentences can be applied to highlight the linguistic focus of the lesson. Investigating vocabulary from the point of linguistic awareness has had a priority for a long time, now realizing the urgent need for integrating linguistic awareness into communication competences which is the achievement of ELT system of our community.[15]

Post-method is specified as the development of a unique set of classroom practices by teachers themselves, tailored to their own identities, beliefs and teaching styles and, most importantly, designed to suit the specific contexts in which they teach. While methods involve the presence of theorizers constructing knowledge-oriented theories, post-method involves practitioners doing, eventually, the same thing: constructing their own classroom-oriented teaching theories on principled grounds. The obvious conclusion could be then that offering trainee teachers a set of infallible techniques and successful all-purpose- all-contexts procedures or „teaching-formula for all will be of little or no help for them

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THE CONCEPT OF "TRUTH" (ARTA) IN THE AVEST

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ANNOTATION

This article attempts to identify some common features of the genetic origins of the Rig Veda and Avesta. A comparative analysis is carried out on the example of the 32nd chapter of the Yasna (the fifth song of Ahunavad Gata), the emanation of Arta Ahura Mazda as the highest norm and inexhaustible ideal in the Zoroastrian community.

KEY WORDS: *Rig Veda, Avesta, zoroastrianism, avestology, Yasna, Ahunavad Gats, Rita, Arta.*

ПОНЯТИЕ «ИСТИНА» (АРТА) В АВЕСТЕ

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Аннотация

В настоящей статье сделана попытка выявить некоторые общие черты генетических истоков Ригведы и Авесты. Проведён сопоставительный анализ на примере 32-й главы Ясны (пятая песнь Ахунавад Гаты) эманация Арта Ахура Мазды как высшая норма и неиссякаемый идеал в зороастрийской общине.

Ключевые слова: *Ригведа, Авеста, зороастризм, авестология, Ясна, Ахунавад Гаты, Рита, Арта.*

На первых порах европейской авестологии большинство ученых считало Авесту источником, соответствующим с историческими реалиями I тысячелетия до н.э., хотя в датировке тех или иных фактов не было единогласия. Так, например, расходились мнения Ж. Дармстетера и Ш. д'Арле в вопросах исторических соотношений фактологии Авесты с реальными событиями, изложенными в греческих и других источниках. Во многих случаях, исходя из априорных установок, авторы намеренно нивелировали грани между историчностью и авторскими интерпретациями. То есть, происходило нечто такое, которое якобы должно было быть воспринятым как сама истина от Авесты. На фактах Авесты часто строились целые гипотезы о социальных отношениях, экономике, духовной жизни общества зороастрийцев¹. Авеста- священная книга зороастризма вот уже много столетий остается до конца не понятым источником истории народов Центральной Азии и Среднего Востока.

¹ Лелеков Л.А. Авеста в современной науке. – М., 1992. – С.175.



Что касается некоторых авторов английской школы авестологов и ученых - зороастрийцев из персидской традиции, то у них наблюдается тяготение к толкованию Авесты как отражение достоверной истории.

Вопросами сопоставления различных аспектов Ригведы и Авесты занимались такие ученые, как М.Хауг², К.Гельднер, Х.Ольденберг³, Х.Гюнтер, А.Кейт, Э.Бенвенист, Х.Хумбах, Б.Шлерат, Х.Бейли, М.Моле⁴, Ж.Дюмезиль⁵ Р.Рот и др. Кроме того созданы сотни трудов по сравнительной лингвистике и литературе и мифологии на материалах этих двух источников.

В традициях Ригведы и Авесты понятие Арта («Истина») одинаково представлено как единство физического и морального. По Авесте Арта высшая норма и неиссякаемый идеал, в торжестве которого нет сомнения в будущем. То есть, Авеста Арту ориентирует на будущее. В настоящем же каждый праведный своим добрым помыслом, словом и делом должен помочь торжеству Арты. В Ригведе Рита (параллель авестийской Арты) вспоминаемый образ некоего утраченного в прошлом доброго начала. Ригведа (1.105, 4-6-строки) гласит: «Где ты, Рита былых времён?»⁶. Такое положение можно объяснить тем, что в Авесте понятие Арта получило кристаллизацию и охватило всю благую суть Ахуры Мазда, первопричину благих начал всего сущего.

В 32-главе Ясны (пятая песнь Ахунавад Гаты) сохранились отголоски времен до зороастрийских представлений о почитании даэвов, которые были отвергнуты Заратуштрой как воплощение всех злых начал. Так, 32-песнь гласит: «Йима, сын Вивахванта, ради своего удовольствия и, якобы, ради блага людей унизил своего (Истинного) Владыки. Тем самым он тоже стал знаменитым грешником». Эти слова, по Л.А.Лелекову принадлежат даэвам, которые хотят включиться в ряд зороастрийских божеств. Хотя бы на правах вестников Мазды⁹. Однако «Ахура Мазда, вместе с Благой мыслью, по присущей ему Власти и в хорошей дружбе с ... лучезарной Истиной, промолвил, что избирает благое Святое Здравомыслие праведных». «Пусть оно будет нашим!» - восклицает он. В данном контексте Благая Мысль, присущая Ахуре Мазда, Власть, лучезарная Истина, Святое Здравомыслие, эти абстракции являются различными функциональными проявлениями самого Ахуры Мазда. В Ригведе такого обобщенного воплощения какого-либо божества нет. Что касается отсутствия в данной строфе Спенты Армаити, одной из эманаций Ахуры Мазда можно объяснить сдвигом её функции в Младшей Авесте до уровня обожествления священной Земли.

Исследователи в этом видят древнейшую мифологическую универсалию о союзе Неба и Земли, но уже на новом уровне, чем в Ведах. К примеру, в Атхарваведе (12.1) мифологическая картина более ранняя, чем в Авесте. По мотиву Атхарваведы Даэвы разгромили так называемых асуров как соперников и установили свое универсальное владычество над всем миром. При этом Земля признала над собой владычество Индры, одного из ведических теологических авторитетов. Из всего сказанного можно сделать вывод о том, что авестийская обработка древнейшего мифа о связи

² Haug M. Essays on the sacred Language, writings and region of the Parsis. – Amsterdam, 1971. – P.229-243.

³ Oldenberg H. Die Religion des Veda. – Stuttgart-Berlin, 1917. – S. 24-31.

⁴ Mole M. Le problème zoroastrien et la tradition mazdeenne. – P., 1963. – 597 p.

⁵ Dumezil G. Vahagn. –RHR., 117,1938. – P. 152-170.

⁶ Ригведа.1.105. 1- 4.



Земли с Небом, как о факторе созидательном, уже связано с более высоко организованным обществом, нежели чем общество Ригведы. При этом, следует констатировать, что осужденные в Ригведе асуры, мелкие божки, получили совершенно иное, абсолютно положительное толкование в зороастризме. При Заратуштре ахуры не какие-то мелкие божки, а являются эпитетом наивысшего почета и славы единого бога Мазды.

В сравнении с вышеизложенными фактами авестийский пантеон с некоторыми повторяющимися элементами между Яштами, имеет четкую границу в функциях божеств. Во-первых, Ахура Мазда, во многом схожий с Варуной в Ригведе, является единым владыкой, создавшим весь благой мир. Высшую ступень после Ахура Мазда с конкретными функциями занимают бессмертные святые - его эманации. Затем божества (язаты), воспеваемые в - в гимнах в их честь Яштах. Следующую ступень иерархии занимают фраваша-ангелы, покровители душ всего живого и неживого и т.д. Как видно из сказанного авестийский пантеон находится на более высоком уровне по отношению к пантеону Ригведы. И так, зороастризм вплотную подошёл к идее единого божества в лице Ахуры Мазда, отводя ему роль созидания всех божественных добрых начал.

Напротив, коллективного общинного сознания в Ригведе, Авеста провозглашает идеи централизованного государства. В авестийском Туране такое государство возглавляется Африасиабом (авестийское имя Фрахрасйан) а в Иране во главе государства стояли Кианитов с титулом Кави: Кави Усан (Кейкавус) и другие. Внуку Кейкавуса, сыну Сйаваршана (Сиявуша) Хаосраве приписывается создание империи. При этом титулом Хаосравы выступало слово «Хшатра». Заратуштра в Гатах (проповедческих трибунных экспромт-песнях) слово Хшаѳра использовал для передачи значения безраздельной божественной власти Ахуры Мазда⁷. В качестве проявления данной функции Ахуры Мазда выступает его эманация Хшаѳра Варйа как идея справедливого государственного правления. Реальность идеи государственности и её воплощение в Авесте стояло намного выше уровня родоплеменных отношений. Божества Яштов, а тем более Ахура Мазда повелевали не общиной, а социумом, универсумом, тогда как боги Ригведы далеки от такого совершенства. Они, боги Ригведы, занимаются угоном чужого скота (Агни), выступают как деревенские старосты-ганапати (Ригведа). Вступать человека в родство с божествами Ригведы считалось возможным, тогда как Авеста ставит бога (Ахуры Мазда) и божеств властными над человеком и его миром. И так, сравнительный анализ Ригведы и Авесты позволяет найти ответы на ряд вопросов не только индианистики в целом, но и авестологии, в частности.

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⁷ Исхаков М. М. Из истории узбекской государственности // Таълим муаммолари (на узбекском языке) 2006. – № 1. – С.18-19.



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SCIENTIFIC WORKS ON STUDYING THE HISTORY AND SOURCES OF ISLAM IN UZBEKISTAN

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ANNOTATION

This article is devoted to the study of modern approaches of the branch of historical sciences and provides for the study of trends and schools (madhhabs), religious teachings, the history and source studies of Islam. As well as methods and methodology for the study of the history and source studies, historiography of Islam, codicology and hermeneutics of Muslim sources, hagiographic and genealogical literature of Islam, philological aspects of sources on Islam, the study of the scientific heritage of scholars of the Islamic world, including Transoxiana, their place and role in the development of world civilization.

KEYWORDS. *Islam, history, dissertation, Nasafi, Maturidi, work, source studies, Maverannahr.*

НАУЧНЫЕ РАБОТЫ ПО ИЗУЧЕНИЮ ИСТОРИИ И ИСТОЧНИКОВЕДЕНИЯ ИСЛАМА В УЗБЕКИСТАНЕ

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Аннотация. Данная статья посвящена изучению современных подходов отрасли исторических наук и предусматривает изучение течений и школ (мазхабов), религиозных учений, историю и источниковедение ислама. А также методы и методология исследования истории и источниковедения, историографии ислама, кодикология и герменевтика мусульманских источников, агиографическая и генеалогическая литература ислама, филологические аспекты источников по исламу, изучение научного наследия ученых исламского мира, в том числе Мавераннахра, их место и роль в развитии мировой цивилизации.

Ключевые слова. Ислам, история, диссертация, Насафи, Матуриди, произведение, источниковедение, Мавераннахр.

Специальность «История и источниковедение ислама» входит в состав отрасли исторических наук и предусматривает изучение течений и школ (мазхабов), религиозных учений, историю и источниковедение ислама, суфизма, культуры исламского периода на основе современных научных методологий и методов. В область исследований этой специальности входят такие вопросы, как исследование отношений государства с религиями, влияние процессов глобализации на религиозные традиции, проблемы фанатизма, экстремизма, фундаментализма и религиозного модернизма. А также методы и методология исследования истории и



источниковедения, историографии ислама, кодикология и герменевтика мусульманских источников (Коранистика, экзегетика и хадисоведение), исламское правоведение (фикх), теология (калам, акида), история ислама, история течений и школ (мазхаб), исламская философия, учение суфизма, агиографическая и генеалогическая литература ислама, филологические аспекты источников по исламу, изучение научного наследия ученых исламского мира, в том числе Мавераннахра, их место и роль в развитии мировой цивилизации.

По этой специальности в годы независимости Республики Узбекистан защищены больше сорока диссертации на соискании степени доктора и кандидата исторических наук. Из них диссертация Алимовой М.Ф. на тему «Вклад Имама ад-Дарими в развитие илм ал-хадис» (2009) посвящена изучению жизни и творчества самаркандского мухаддиса Абдуллаха ибн Абдурахмана ад-Дарими, жившего в IX веке, а также исследованию его единственного, дошедшего до нашего времени произведения «Сунан». А Насруллаев Н.Х. в своей работе (2012) изучил научное наследие и историческую роль одного из крупнейших факихов Мавераннахра XIII-XIV вв. Лутфуллаха Насафи, внесшего значительный вклад в развитие ханафитского толка ислама. Насафи считается крупным отечественным учёным, осуществившим тематическую систематизацию в области практического права (фуруъ ал-фикх), являющегося одной из отраслей исламского правоведения, что нашло свое отражение в его сочинении «Фикхи Кайдани».

Диссертация Шакировой З.Н. на тему: «Историко-сравнительный анализ принципов миротворчества в раннем исламе» (2012) является первым комплексным исследованием принципов миротворчества в раннем исламе. В современном мире на фоне изменения расклада сил в геополитическом контексте, расширения политических, экономических и межгосударственных связей, особое значение приобретает проблема глубокого знания истории ислама, так как неправильная интерпретация коранических сур становится фактором развития исламофобии. Это в свою очередь определяет актуальность, а также научную и практическую значимость настоящего исследования. В научной работе на основе источников по истории ислама изучены специфические особенности социально-политической и духовно-религиозной обстановки в Мекке и Медине, проанализированы положения документа «ас-Сахифа» - первого соглашения между представителями разных наций и религий, составленного пророком Мухаммадом, объективно изучены цели и задачи действий военных отрядов, отправленных за пределы города Медина.

Матибаева Р.Б. в своей работе (2009) исследовала жизнь и творчество хорезмского учёного Абу-л-Муайяда ал-Хоразми, жившего в XII веке, а также изучила его труда «Манакиб Аби Ханифа» как источника по ханафизму. В работе (2011) Атаева М.Р. впервые предпринята попытка комплексного исследования научного наследия великого представителя школы фикха в Мавераннахре Маджидуддина ал-Уструшани и определено его место в развитии науки мирового фикха; была создана база информации об ученых, которые жили в этой области, а их имена и произведения введены в научное обращение; установлено место факихов в историко-культурных процессах после завоевания монголов; разработан, опубликован и введен в научный оборот научно-критический текст произведений ученого, такие как «Джами' ахкам ас-сиғар» и «ал-Ас'ила ва-л-аджиба».

Диссертация (2011) Останакулова И. на соискание ученой степени доктора исторических наук посвящена исследованию восточных агиографических источников на основе произведения «Тазкирату-л-авлия» (Воспоминание о святых), написанного крупным узбекским ученым XVIII века Мухаммадом Сиддик Рушди, а также выявлению их значения в истории и источниковедении ислама. В исследовании на основе нововыявленных источников проанализированы общественно-политические и культурные процессы в Туркестане в XVIII веке, проведен сравнительный анализ агиографических источников, таких как «Тазкирату-л-авлия» Фаридуддина Аттар, «Нафахату-л-унс» Абдурахмана Джами, «Насайиму-л-мухаббат» Алишера Навои, «Рашахату айни-л-хаят» Али Сафи, «Музакири ахбаб» Хасанходжа Нисари, «Хизанату-л-



асфия» Гулям Сарвара Лохури, а также показан большой вклад Рушди в развитие агиографического тазкираписания.

Изучение наследий великих мыслителей способствуют углублению наших знаний по истории ислама, истории науки и культуры Узбекистана и тем самым имеют большое значение в восстановлении национальных ценностей. Труды мыслителей Центральной Азии не ограничиваются отражением общих правил, касающихся учения исламской религии, они возвеличивают такие общечеловеческие ценности как любовь к Родине, доброту, великодушие, уважение к старшим, милосердие, безвозмездную помощь бедным, трудолюбие, честность и др. На сегодняшний день результаты диссертаций и теоретические обобщения используются для воспитания у молодежи чувства гуманности, просветительства, миротворчества, а также в области исламоведения, в исследованиях культурной и духовной жизни Мавераннахр и при написании учебников и учебно-методических пособий для высших учебных заведений.

Цель исследования Дж.Садикова на тему «Анализ религий и верований в толковании Абу Мансура Матуриди «Таъвилат ахли-с-сунна» (2022) выявить научную и практическую значимость сведений о различных религиях и верованиях, упомянутых в толковании Абу Мансура Матуриди «Таъвилат ахли-с-сунна». В исследовании выявлено, что Имам аль-Матуриди в своей книге «Таъвилат ахли-с-сунна» классифицировал, что атеисты его времени придерживались такого же подхода к отрицанию любой религии, но исходя из своего стиля и взглядов, они классифицировали их по следующим трем формам: отрицания концепции Бога, веря, что вселенная вечна и предполагая, что существующие процессы происходят естественным образом; обоснованно, что ученый доказал, что некоторые рациональные группы мулхидов те, кто утверждает, что Бога и Последнего дня не существует) на самом деле не полностью отрицают загробную жизнь на основании их представления о том, что «наказание и награда в загробной жизни будут даны душе, а не человеческому телу»; доказано, что Матуриди написал свой толкование «Таъвилат ахли-с-сунна» до «Китаб ат-таухид» на основании, что в «Таъвилат ахли-с-сунна» содержал пять различных гипотез о религии сабаев – поклонения ангелам или небесным телам, верования между зороастрийцами и христианами или между зороастрийцами и евреями или поверье, характерное для зиндика, однако позже он усовершенствовал эту точку зрения и ясно дал понять в «Китаб ат-таухид», что это верования были монотеистической религией, основанной на монашестве; уточнено, что в своем толковании к этому аяту суры «аль-Бакара» «В религии нет принуждения» ученый утверждает, что не только нельзя навязывать религию, но и необходимо совершать молитв по велению сердца, чтобы не уподобиться лицемерам даже после принятия религии.

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FACTORS CONTRIBUTING TO THE EMERGENCE OF RELIGIOUS EXTREMISM IN MALAYSIA

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ANNOTATION

The article analyzes the factors contributing to the growth of religious extremism in Malaysia on the basis of a qualitative and quantitative method using data from social surveys collected in KL, expert interviews and secondary literature. It identifies external and internal factors that contribute to the spread of extremist understanding of religion, including the influence of colonial rule, foreign invasions, politicization of religion and globalization. The study determines that extremism destroys public well-being and national security; Thus, any extremist ideas and behaviors must be eradicated.

KEYWORDS: *Religious extremism, Islam in Malaysia, national security, social harmony, foreign interference.*

ФАКТОРЫ, СПОСОБСТВУЮЩИЕ ВОЗНИКНОВЕНИЮ РЕЛИГИОЗНОГО ЭКСТРЕМИЗМА В МАЛАЙЗИИ

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Аннотация. В статье, на основе качественно-количественного метода с использованием данных социальных опросов, собранных в KL, экспертных интервью и вторичной литературы анализируются факторы, способствующие росту религиозного экстремизма в Малайзии. В нем определены внешние и внутренние факторы, которые способствуют распространению экстремистского понимания религии, включая влияние колониального правления, иностранные вторжения, политизации религии и глобализацию. В ходе исследования определяется, что экстремизм разрушает общественное благополучие и национальную безопасность; таким образом, любые экстремистские идеи и поведения должны быть искоренены.

Ключевые слова: Религиозный экстремизм, ислам в Малайзии, национальная безопасность, социальная гармония, иностранное вмешательство.

Эта статья основана на тематическом исследовании факторов религиозного экстремизма в Малайзии. Малайзия была выбрана в качестве примера для данного исследования, потому что эта страна



известна своим образцовым умеренным подходом к другим религиозным группам. В Малайзии мультикультурное общество, и ислам является его официальной государственной религией. Более 60 % его населения считаются мусульманами. Практика умеренности и уважения к последователям разных религий всегда делала Малайзию образцовой страной с мусульманским большинством. По сравнению со своими соседями Малайзия — умеренная и безопасная страна. Тем не менее, в последние годы появилось несколько случаев экстремального и радикального поведения, затрагивающих религиозные настроения малайзийцев. Однако нельзя сбрасывать со счетов и то, что малайзийцы имели прямое отношение к экстремистским группировкам и экстремистские действия.

Бывший премьер-министр Малайзии Махатхир Мохамад говорил, что «к сожалению, экстремизм будет распространяться. Я вижу, что в будущем ситуация ухудшится». Таким образом, эта статья направлена на изучение факторов, влияющих на рост религиозного экстремизма в Малайзии. При анализе этих факторов в статье рассматриваются факторы «толкания» и «притягивания», чтобы понять, почему малайзийские мусульмане уязвимы для крайнего религиозного понимания. Что касается Организации Объединенных Наций по вопросам образования, науки и культуры (UNESCO), то «выталкивающими факторами» являются: маргинализация, неравенство, дискриминация, преследование или их восприятие; ограниченный доступ к качественному и актуальному образованию; отказ в правах и гражданских свободах; и другие экологические, исторические и социально-экономические претензии.

Между тем, «факторы притяжения»: поддерживает привлекательность насильственного экстремизма, например, существование хорошо организованных воинствующих экстремистских групп с убедительными речами и эффективными программами, которые предоставляют услуги, доходы и рабочие места в обмен на членство. Группы также могут привлекать новых членов, давая выход обидам и обещая приключения и свободу. Кроме того, эти группы, предлагают духовный комфорт, «место, где можно принадлежать» и поддерживающую социальную сеть.

Судя по объяснениям, «факторы выталкивания» вытекают из негативного опыта человека в контексте политических, социальных и культурных аспектов. Эти элементы собственного опыта, который действует как «толкатель» для принятия идеологии и быть более экстремальными. И наоборот, «факторы притяжения» — это «положительный» опыт человека. «Положительный», он подразумевает эффективность группы и привлекательна с точки зрения идеологии. «Фактор притяжения» действует как аттрактор, который сближает людей, чтобы в итоге принять крайнюю идеологию.

Считается, что период колониализма в Малайзии способствовал увеличению разрыва между расами в стране, что спровоцировало рост религиозного экстремизма. Поток, показанный на диаграмме ниже, проясняет роль колониализма в эскалации религиозного экстремизма.

Период колониализма стал свидетелем широкого использования расовой осведомленности среди малайских и немалайских граждан, что увеличило расовый разрыв. Этот глубоко укоренившийся расизм среди людей возник из-за британского вмешательства в культурные группы, основанные на расовом сознании. Миншэн Ли заявил, что национализм рационализировал антиколониалистские, антиимпериалистические и национально-освободительные идеи во всем мире. В связи с этим в период британской колонизации среди малайцев усилились антиколониалистские настроения, которые



впоследствии переросли в пропаганду этнонационализма среди населения. Ли считал, что национализм повлиял на мышление людей и дал людям идеологию, которая сформировала их поведение, индивидуальную и гражданскую лояльность. Малайский национализм отличался от национализма других стран, тем что он был скорее исключительным, поскольку ограничивался определенной этнической группой.

По словам специалистов, среди малайцев можно наблюдать особый интерес к журналистике. Они были заинтересованы в расовой осведомленности и сочувствии расовым политическим партиям, таким как Объединенная малайская национальная организация (ОМНО). Такая политическая партия, как UMNO, была известна использованием крылатых фраз, таких как “Да здравствуют малайцы”. Отсюда они медленно развивали расовое сознание среди людей через расовые сочинения. Ранняя фаза национализма в Малайе в основном вращалась вокруг представления о малайцах как о «землевладельцах» и других расовых чувствах. Тем не менее, с малайской точки зрения, можно было понять, что они не были счастливы и, следовательно, им нужно было чувствовать себя лучше, особенно учитывая приток иммигрантов в результате британской иммиграционной политики, которая сделала иммигрантское население равным населению малайцев и аборигенов. Только в 1931 г. численность иммигрантов выросла до 50,8%, а в 1947 г. сократилась до 50,2%. Hirschman заявил, что китайцы и индийцы в последнее время не жили в Малайе; на самом деле между тремя расами было не так много конфликтов. Тем не менее, только после периода колониализма произошло расовое разделение. Это можно понимать как неготовность этих трех рас к моментальному формированию плюралистического сообщества разных вер, культур и традиций. Кроме того, тот факт, что они мало знали о культурном происхождении друг друга, еще больше усиливал напряженность в отношениях между расами. Во многом это было связано с британской реализацией политики «разделяй и властвуй», которая разделяла расы на их соответствующие области работы. Малайцы в основном работали в сельском хозяйстве, китайцы - в горнодобывающей промышленности, а индийцы - на плантациях. Это разделение труда в итоге еще больше разделило людей. Это правда, что приток китайцев и индийцев создал возможность для плюралистического сообщества; тем не менее, политика «разделяй и властвуй» и экономическое разделение привели к межобщинному расколу и структурному насилию среди людей разных рас в Малайзии.

Кроме того, также считается, что эта политика посеяла семена взаимного недоверия и опасений между тремя расами. Некоторые трагедии из-за этнических столкновений включали расовые беспорядки в сентябре 1954 года в Сингапуре и 13 мая 1969 года в Куала-Лумпуре между малайцами и китайцами. Говоря о К.Мози, период после обретения независимости был глубоко затронут сильным представлением об этническом национализме, который еще больше разделил людей. Однако позже был отмечен переход, при котором чувства необходимости спасения расы медленно смещались в сторону представления о защите главным образом культуры и религии.

Постепенно религия начала использоваться для возбуждения эмоций малайцев, что в итоге привело к возникновению напряженности. Например, перед сентябрьским расовым бунтом распространялись листовки с призывами к джихаду против китайцев и резне всех встречаемых китайцев. Расовые беспорядки и столкновения в 1964 и 1969 годах, устроенные малайцами и китайцами, свидетельствовали о



неуправляемом коммунализме и религиозном экстремизме. Можно было заметить, что беспорядки были не только свидетелями проникновения недоверия к чувствам разных рас; религия также использовалась для разжигания гнева и ненависти между расами. На самом деле, до сегодняшнего дня все еще чувствовалось взаимное недоверие. Опрос, проведенный Центром “Centre for A Better Tomorrow” (Cenbet) в 2015 году, показал, что подавляющее число респондентов (59,1%) были в среднем или выборочно расистами. Ангус разъясняет, что расизм является одним из реагентов, которые могут вызвать радикализм и насильственный экстремизм. В случае Малайзии, как видно из Доклада о расовой дискриминации Малайзии за 2017 год, рост религиозного экстремизма происходит из-за представления о защите религии, идеи, которая привела к дискриминационным действиям, препятствующим правам другой этнической группы. В исследовании под названием «Нормативные убеждения о противодействии насильственному экстремизму: исследование малазийской молодежи», опубликованном Star Online, говорится, что расизм – это одно из отношений, которое может привести к более экстремальному поведению, поскольку многие верят в идею культурного превосходства над другими. Можно заметить, что националистическое движение в Малайзии стало свидетелем косвенного сдвига между религией и расой. В итоге это привело к росту религиозного консерватизма, который часто служит платформой для экстремизма, насилия и конфликтов.

Можно отметить, что рассмотренные выше факторы роста религиозного экстремизма в Малайзии представляют угрозу национальной безопасности. Многие люди, принявшие крайнюю идеологию, имеют склонность к консерватизму, жесткости, исключительности и радикализму. Таким образом, религиозное образование с упором на концепцию мирного сосуществования и сплоченности, социального уважения и умеренности должно быть введено в малайзийское сообщество.

Внешние факторы, такие как геополитические причины, действительно играют огромную роль в прорастании экстремизма. В документе содержится призыв к международному сообществу прекратить вмешательство в дела других стран. Это важно, особенно для пострадавших стран, где вмешательство может привести к отсталости и дальнейшему усилению экстремизма и радикализма. Доказано, что вмешательство в дела других стран порождает более радикальные религиозные идеологии и группы, такие как ИГИЛ.

Мусульмане должны двигаться к более мирной политике и мерам вместо того, чтобы сделать выбор в пользу вооруженной борьбы. Каждая религия призывает верующих к мирному и уважительному социальному сосуществованию людей разного происхождения, верований и рас. Таким образом, клевета на людей как на экстремистов или террористов из-за их религиозного происхождения или из-за правонарушений других их собратьев может вызвать негативную реакцию. Необходимо принять строгие меры предосторожности в отношении распространения идеологии религиозного экстремизма, поскольку такая проблема, как экстремизм, тесно связана с терроризмом.

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THE INTERPRETATION OF THE PHENOMENON OF METAPHOR AS A LINGUISTIC-CULTURAL PHENOMENON

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ABSTRACT

The article considers the issues of linguistic and cultural description of metaphorical models. A typology of linguistic and cultural differences of metaphors is presented, and a conclusion is made about the national specificity of metaphorical modeling processes.

KEYWORDS. Linguistic culture, national worldview, conceptual metaphor, metaphorical model, conceptualization, discourse.

МЕТАФОРА ХОДИСАНИНГ ЛИНГВОМАДАНИЙ ФЕНОМЕН СИФАТИДАГИ ТАЛҚИНИ

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Аннотация. Мақолада метафорик моделларни лингвомаданий тавсифлаш масалалари кўриб чиқилади. Метафораларнинг лингвомаданий фарқлари типологияси тақдим этилиб, метафорик моделлаштириш жараёнларининг миллий ўзига хослиги ҳақида хулоса чиқарилади.

Калит сўзлар. Лингвомаданият, миллий дунё манзараси, концептуал метафора, метафорик модел, концептуаллашув, дискурс.

Замонавий антропоцентрик парадигма тил, идрок, маданият, алоқа, нутқнинг ўзига хос хусусиятлари ва маълум бир даврдаги жамият ҳолати ўртасидаги турли хил муносабатларни ҳисобга олган ҳолда метафорани ўрганишни ўз ичига олади. Метафоранинг ўзига хослигига аниқ ишонч “учта маконнинг когнитив, маданий ва лингвистик функционал бирлиги сифатида” ҳаракат қилиши мумкинлигига асосланиб шаклланди [10, 46], бу асосан лингвомаданиятшуносликнинг ушбу ҳодисага алоҳида эътиборни аниқлади.

Тил ҳақидаги фанда анъанавий равишда учта илмий парадигмани ажратиш кўрсатиш мумкин: қиёсий-тарихий – XIX асрда олиб борилган тадқиқотлар, тизимли-структур, унинг асосичиси сифатида Фердинанд де Соссюрни келтириш мумкин, ҳамда антропоцентрик – XX асрда вужудга келган бўлиб унинг доирасида асосий эътибор о тадқиқот объектидан тадқиқот субъектига кўчади, тилнинг ташқи экстериор кўринишларидан, ички – интериор кўринишига қаратилади. Бошқача қилиб айтидиган бўлсак, тилдаги инсон ва инсондаги тил таҳлил қилинади.



Тил миллат маданиятининг, фалсафаси ва психологиясининг кўзгуси, аксар ҳолларда миллат тарихий ва руҳининг ягона манбаси сифатида қадим замонлардан бўён маданиятшунослар ва тилшунослар томонидан чуқур тадқиқ қилиб келинмоқда. XIX асрнинг 30-40 йилларида пайдо бўлган Сэпир-Уорф гипотезаси ҳам айнан тил ва маданиятнинг чамбарчаслиги ва бирлиги ғоясига асосланган. Бироқ тилнинг актив ва конструктив хусусиятлари ва унинг миллий маданиятнинг, психологиянинг, ижоднинг шаклланишига кўрсатиши мумкин бўлган таъсирини ҳатто XVIII аср охири ва XIX аср бошларида И.Г.Гердер, В.фон Гумбольдт ишларида батафсил ёритилганлигини кўришимиз мумкин. Уларнинг ғоялари кўплаб мамлакатлар, хусусан Ўзбекистонлик тадқиқотчилар ишларида ҳам ўз аксини топган.

Антропоцентрик парадигма махсулотларидан бири бўлиб лингвомаданиятшунослик хизмат қилади. Мазкур фаннинг назариясини яратган олимлар сифатида В.А.Маслова, В.В.Воробьев, В.В.Красних, В.Н.Телия ва бошқаларни келтириш мумкин.

В.А.Маслованинг фикрича, лингвомаданиятшунослик фанлараро характерга эга бўлиб, “тилшунослик ва лингвомаданиятшуносликнинг кесишмасида пайдо бўлган лингвистик йўналиш ҳисобланиб, тилда ўз аксини топиб унда турғунлашган миллат маданиятини ўрганади” ёки бошқача қилиб айтганда “маданий антропология, этнолингвистика, тилшунослик ва маданиятшуносликда ўтказилган тадқиқотлар натижаларини ўзида мужассам қилувчи интегратив билимлар соҳасидир” [7, 30].

В.В.Красних лингвомаданиятшуносликни қуйидагича талқин қилади, “тил ва дискурста намоён бўлиб, ўз аксини топиб унда баён қилинган фан бўлиб, бевосита миллий дунё манзарасини, лисоний онгни, ментал ҳамда лисоний хусусиятларни ўрганади” [6, 12].

В.Н.Телия эса бир оз бошқача фикрлайди, унинг фикрича лингвомаданиятшунослик этнолингвистиканинг бир қисми бўлиб, “тил ва маданиятнинг синхрон тарздаги ўзаро муносабатлари корреспонденциясини” ўрганади [13, 217-218].

Е.И.Зиновьева ва Е.Е.Юрковларнинг фикрига кўра лингвомаданиятшунослик “филологик соҳа бўлиб, у ёки бу тил соҳибларининг дунё ҳақидаги билимларини турли кўринишларини турли даражадаги лисоний бирликлар, нутқий фаолият, нутқий хулқ-атвор, дискурс орқали ўрганади” [4, 13].

В.В.Воробьевнинг фикрига кўра лингвокумаданиятшуносликни нг асосий тадқиқот объекти сифатида “тил ва маданиятнинг ўзаро алоқаси ва ўзаро муносабатлари, уларнинг ўтиш жараёнлари” хизмат қилади, предмети сифатида эса – “лисоний мулоқот тизимида акс этадиган жамият ҳаётининг миллий кўринишлари”, “дунёнинг лисоний манзарасини барча ташкил қилувчиси” хизмат қилади [3].

Хозирги вақтга келиб лингвомаданиятшуносликда шаклланган баъзи йўналишларни келтириб ўтамиз. Бизнингча уларнинг батафсил шаклини В.А.Маслова ўз тадқиқотларида келтирган [7, 21-24].

Тадқиқотчи қуйидаги йўналишларни ажратиб кўрсатади:

1. Маданий жихатдан ёрқин даврга нисбатан алоҳида олинган ижтимоий гуруҳ лингвомаданияти, яъни маълум лингвомаданий вазиятни таҳлил қилиш.
2. Диахрониклингвомаданият, яъни, диахроник аспектда лингвомаданий характердаги ўзгаришларни ўрганиш.
3. Қиёсий лингвомаданият, бир-бири билан ўзаро боғлиқ бўлган миллатлардаги турли лингвомаданий жихатларни таҳлил қилади.
4. Чоғиштира лингвомаданият, тил ва маданиятни тил доирасида қиёслаб ўрганади. В.В.Воробьевнинг фикрича, бу йўналиш истиқболли йўналишлардан биридир [3].
5. Лексикографик лингвомаданият, лингвомамлакатшунослик билан бир қаторда шаклланиб, фаннинг назарий аспекти ҳисобланади ҳамда фанга доир бўлган турли маълумотномалар ва луғатлар сифатида шакллантирилади.

Лингвомаданият тилнинг маданий идрок муҳитини, лисоний онгни, дунё образини, миллий дунё манзараси тушунчаси билан боғлиқ бўлган турли аспектларга эга муаммоларни ўрганади. Шу тариқа,



лингвомаданиятшунослик – илмий фан бўлиб, унинг тадқиқот предмети тилдаги маданият фактларининг репрезентацияси бўлиб, лингвомаданият деб аталувчи тушунчани шакллантиради.

Хозирги вақтга келиб лингвомаданиятшуносликнинг тадқиқот объекти сифатида лисоний/дискурсив фаолиятини айтишимиз мумкин. Бу каби хулосага Гумбольдт издошларининг фикрлари олиб келади, яъни, унга асосан тил маданий-дискурсив ҳаётимизнинг барча муҳим ҳисобланган жабхаларида қўлланилади: идрокда ва борлиқни англашда. “Тил, тадқиқ қилинаётган концепцияга асосан, дунё концептуализациясининг илк универсал шакли бўлиб, у ўзида дунё ҳақидаги стихияли билимларни, инсон ҳаётидаги ижтимоий муҳим ходисаларни ва тарихий хотирани муҳжасам қилади ва ифодалайди” [10, 30].

Гумбольдт ғояларини ўз изланишларида тадқиқ қилган Н.И.Толстойнинг фикрича тил ва маданият ўртасидаги муносабатлар бир бутун ва унинг бир қисми ўртасидаги муносабатлар сифатида талқин қилиниши мумкин. Тил маданиятнинг бир қуроли ёки компоненти сифатида қабул қилиниши мумкин, айниқса, адабий ёки фольклор тили ҳақида гап кетганда. Шу билан бир вақтнинг ўзида умуман олганда тил маданиятга нисбатан автоном ходисадир. Уни маданиятдан алоҳида ажратиб олган ҳолда тадқиқ қилиш мумкин (бу билан соф, тизимли-структуралӣ тилшунослик шуғулланади) ёки тилнинг маданиятбилан тенг ҳуқуқли феномен сифатида қиёслаш мумкин.

Бу каби икки объектнинг алоҳида ва қиёсий таҳили маданиятга нисбатан тилшуносликда пайдо бўлган ва турғунлашган қатор атамаларни қўллашга имкон яратадиган ва маданиятни қиёслаб ўрганиш, умуман олганда, муайян миллий маданият ва миллий тил доирасида ўзига хос тизим изоморфизмини аниқлашга ёрдам беради. Худди адабий тил ва диалектларни фарқлаган каби, уларнинг оддий сўзлашув тили, баъзи ҳолларда арго турларини ажратилишидек Н.И.Толстой ҳар бир миллий маданиятда маданиятнинг тўрт турини фарқлайди: (а) зиёли қатлам маданияти, (б) оддий халқ маданияти, (и) ўрта қатлам маданияти, яъни, “учинчи маданият” ёки жамиятнинг қуйи қатламида қўлланиладиган ҳамда (г) анъанавий-касбий маданият тури (асаларичилар маданияти, чўпонлар маданияти, кулолчилар маданияти, савдо-қосибчилик маданияти ва х.к.) [14]. Юқорида санаб ўтилган лисоний ва маданият қатламларининг кетма-кетлигини бир оз ўзгартирган ҳолда олим қуйидаги икки параллел қаторни шакллантиради:

адабий тил – *элитар маданият*, яъни *юқори табақали маданият*

оддий сўзлашув тили – *“учинчи маданият”*

лаҳжа, шева – *халқ маданияти*

арго – *анъанавий - касбий маданият*

Замонавий гуманитар тадқиқотларда когнитивистик принципларнинг барқарорлашиши маданиятшуносликда янги саҳифаларни очиш билан бир қаторда янги муаммолар ечимини ҳам юзага келтиради, албатта бу масалалар ўз навбатида фанларaro кесимда хал қилиниши керак. Шу билан бир қаторда, биз нафақат фалсафа, психология, мантиқ, когнитология, тилшунослик каби фанларнинг интеграциясини назарда тутамиз, балки, фанлар ичидаги кичик йўналишларнинг ҳам ўзарo алоқаларини тадқиқига ишора қиламиз. Тилшуносликда табиий ва шу боис самарали ўзарo муносабатлар лингвомаданиятшуносликда, психоллингвистикада, прагматлингвистика ва когнитив лингвистикада кузатилади.

Шу тариқа, юқорида айтиб ўтилганларга хулоса ясаган ҳолда қуйидаги фикрни билдириш мумкин, лингвомаданият – нисбатан янги филологик фан бўлиб, миллий-маданий жамиятдаги лисоний шахснинг маданий тажрибаси мажмуини ўрганади ва тил ривожланишининг муайян қонуниятларини аниқлайди ва масаланинг баъли назарий ва методик жиҳатларини ёритиб беради [3].

Лингвомаданиятнинг илмий йўналишлари тил ва маданият фактларини уларнинг ўзарo таъсири ва ўзарo боғлиқлигида тавсифлашга, барча даражадаги лингвистик бирликларнинг универсал ва миллий-ўзига хос хусусиятларини белгилашга, нутқ фаолияти, нутққа қаратилган.

Маданият - бу халқнинг тарихий хотираси, тил эса “ўзининг кумулятив функцияси туфайли уни сақлаб қолади ва нафақат ўтмишдан ҳозирги кунгача, балки ҳозирги кундан келажакка қадар авлодлар мулоқотини



таъминлайди” [13, 228]. Тилни миллатнинг маданий коди, миллий маданиятнинг қўриқчиси сифатида қабул қилиш, маданий кадриятларни авлоддан-авлодга етказиш лингвомаданиятнинг етакчи мақсадига айланади.

Лингвомаданият ривожланишининг ҳозирги босқичида унинг тадқиқот соҳаси максимал даражада кенгаймоқда, тилда маданиятнинг ҳар қандай намоён бўлиши синхронияда ҳам, диахронияда ҳам ўрганиш объекти сифатида тан олинган. Маданий объектларнинг тилдаги репрезентацияси усуллари ва воситалари, маълум бир халқ менталитетининг тилдаги репрезентацияси хусусиятлари, маданиятнинг қиймат-семантик категорияларининг лисоний бирликлари семантикаси батафсил ўрганилмоқда [1]. Шу билан бирга, тилшунослар лингвистик ва маданий жиҳатдан дунёнинг манзарасини ҳам, уни ташкил этувчи бирликларни ҳам - тушунчаларни, шунингдек уларни ифодаловчи индивидуал лингвистик воситаларни, биринчи навбатда фразеологик бирликлар, паремиялар, этнонимлар, стереотиплар, рамзлар, метафораларни кўриб чиқади.

Метафора - бу миллий ва маданий меросни тилда акс эттиришнинг ўзига хос шакли бўлиб, лингвомаданиятшуносликда метафоризация жараёни қонуниятларини тавсифлаш алоҳида тадқиқни талаб қилади (А. А. Новоселова, В. А. Маслова, Е. Стоянова, В. Н. Телиа, Е.Р. Хамитова, Е. Е. Юрков ва бошқалар.).

Тадқиқотчилар бир овоздан “метафоризациянинг лингвомаданий векторини излаш миллий-маданий дунёқарашнинг чуқур асосларини ўрганишга олиб келади, бу дунёнинг миллий лисоний манзарасининг кўплаб хусусиятларини белгилайди” деган ғояни илгари сурадилар [16, 4].

Метафораларнинг миллий маданий кадриятларга мувофиқлиги масаласи Ж. Лакофф ва М. Жонсоннинг тадқиқотларида кўтарилган. Тадқиқотчилар “ҳақиқатан ҳам мавжуд бўлган кадриятлар метафорик тизимга мос келадиган маданиятда чуқур илдиз отган” деган фикрдалар. Шу билан бирга, маданий кадриятлар бир-бирдан ажратилган ҳолда мавжуд бўла олмайди, балки бизнинг ҳаётимизда мавжуд бўлган метафорик тушунчалар билан биргаликда изчил тизимни шакллантириши керак [8, 405].

Шунга ўхшаш фикрлар етук тилшунослари томонидан қайта-қайта берилган (Ю. Д. Апресян, А. Н. Баранов, Е. В. Будаев, В. Г. Гак, Е. С. Кубрякова, В. Н. Телиа, Б. А. Успенский, А. Р. Чудинов ва бошқалар.). Хусусан, В. Н. Телиа (Телиа 1993; Маслова 2001; Хао 2004; Хамитова 2008; Юрков 2012 ва бошқалар) томонидан тақлиф этилган маданий маъно тушунчаси лингвомаданиятшуносликда кенг тарқалган. Тилшунослар миллий-маданий маъно метафора ёки фразеологик бирликнинг ассоциатив-мажозий асосини талқин қилиш натижаси эканлигини, уларни тил ва маданий ҳамжамиятга хос стандартлар, стереотиплар, мифологемалар билан ўзаро боғлаш орқали ҳосил бўлишини ишончли тарзда намоён этидилар (масалан, турли халқларда гўзаллик, донолик, жасорат, қўрқоқлик меъёрларга эга бўлиб турли хил ҳайвонлар ва қушлар образлари орқали ифодаланади).

Шу тариқа метафора миллий ва маданий ҳамжамиятнинг ассоциациялари, стереотиплари ва стандартларини авлоддан-авлодга сақлаш ва узатишнинг муҳим воситасидир. Шунга қўра, метафора инсон томонидан ижтимоийлашув ва она тилини ўзлаштириш жараёнида олинган, шунинг учун лингвомаданиятнинг барча вакиллари учун маълум ва тушунарли бўлган умумэътироф этилган ўхшашликлар тизимига асосланади.

Метафоранинг лингвомаданий хусусиятлари билан боғлиқ асосий масалалардан бири универсал метафорик моделлар масаласидир. Когнитив механизм ва дунёни концепциялаш усули сифатида метафора универсаллик билан ажралиб туради, бу барчага маълум нарсаларнинг инсон идрокига тушунарли бўлган тасвирлар ва белгилар билан мутаносиблигида намоён бўлади ва айнан шу универсаллик муваффақиятли маданиятлараро мулоқотнинг ўзига хос кафолати ҳисобланади.

Шунга қарамай, турли тилларда универсал моделлар билан бир қаторда ўзига хос моделлар ҳам мавжуд, чунки ҳар бир халқ ҳаётидаги когнитив жараёнларнинг умумийлиги билан кундалик ҳаёт, тарих, маданият, дин, ландшафт, иқлим ва бошқаларнинг ўзига хос шароитлари ва хусусиятлари мавжуд, фақат улар ўзига хос бўлиб миллий хусусиятларга эгадир.

Метафорик кўчим қандайдир мавҳум муҳитда эмас, балки маълум бир даврда ва маълум бир ижтимоий-маданий вазиятда туғилади, шунинг учун пайдо бўлган метафора ушбу вазиятнинг шартлари ва эҳтиёжларига



тўлиқ жавоб беради ва уни ассоциатив ва оғзаки даражада акс эттиради. Метафориканинг миллий хусусиятлари бир қатор жиҳатларда намоён бўлади.

1. Фақат индивидуал лисоний маданиятларга хос бўлган уникал метафорик моделлар мавжуд. Бундай моделларга мисоллар асосан хорижий тадқиқотчиларнинг асарларида, масалан, Ж. Вей, Ж. Лакофф ва М. Жонсон, З. Ковечеш, Б. Люис, Л. В. Пейн ва бошқаларнинг асарларида мавжуд.

“НИЗО БУ УРУШ” метафорасини тасвирлаб, метафораларнинг маданий шартлилиги ҳақида баҳслашиб, Ж. Лакофф ва М. Жонсон низони жангга эмас, балки, масалан, рақсга ўхшатадиган жамиятни тасаввур қилиш мумкинлигини таъкидладилар. Шунга кўра, бундай маданият вакиллари низони бутунлай бошқача қабул қилишади, унда бошқача йўл тутишади ва бу ҳақда бошқача гапиришади [8].

Лингвوماданий ўзига хос хусусиятларга эга бўлган метафораларнинг қизиқарли мисоллари Е. В. Будаев ва А. Р. Чудиновнинг тадқиқот ишларида мавжуд. Масалан, сиёсий метафораларни таҳлил қилиб, муаллифлар Араб мамлакатларидаги ҳокимият ҳеч қачон қуёш тасвири билан боғлиқ бўлмаганлигини таъкидлашади, чунки жазирама қуёш Шарқ аҳолиси учун зарарли. Мусулмон раҳбари ўз фуқароларига шафқатсиз қуёшдан қутқарувчи, қутқарувчи соя сифатида кўринади ва шу билан бирга ўзи ҳам “Худонинг ер юзидаги сояси”. Аксинча, Ғарб мамлакатларининг жуда салқин иқлимини инобатга олган ҳолда ХУКМДОР-ҚУЁШ метафораси жуда анъанавий (масаан француз кироли Людовик XIV - Қуёш кироли Луи XIV деб аташган) [2].

Педагогик дискурсни таҳлил қилганда, бу муаллифлар Хитой лингвوماданияти учун муҳим бўлган “ЎҚИТУВЧИ-ВИРТУОЗ” метафорик моделига эътибор беришади, унга кўра талабалар уста ўқитувчига тақлид қилишади, лекин ундан тайёр маълумот ёки аниқ кўрсатмалар олишни кутишмайди. Муаллиф концептосфераси икки поэтик (хаёлий) дунёдан иборат мураккаб тизимдир. Шу билан бирга, бирламчи поэтик дунёга метаконцептни (умумий ғоя) ўз ичига олади, кейинчалик у муаллифнинг когнитив фикрлаш жараёнида концептга (аниқ ғояга) айланади, унга ёзувчининг ёзилажак асари асосланади [17, 42].

Европа ва Ғарб анъаналарида бу модель собит эмас, орқали ўқитувчи ўз фарзандларига ғамхўрлик қилаётган ота-она, ёш куртаклар ўстирувчи боғбон, билим учун жангга олиб борадиган қўмондон сифатида намоён бўладива айнан шу метафорик моделлар устунлик қилади. Бундай метафоралар ўқитувчининг ўқув жараёнидаги фаол ролини ифодалайди, талаба эса биринчи навбатда билимларни ўзлаштирадиган мустақил билим субъекти эмас, балки таъсир объекти сифатида намоён бўлади [2].

2. Муайян тил маданияти доирасида универсал метафорик моделларни вербаллашуви ҳолатлари қайд этилган. Масалан, Ж.Лакофф ва М. Жонсоннинг тадқиқотларида таъкидлашча, барча маданиятлар устуворликларни “юқоридан пастга” йўналиш шкаласи бўйича тақсимламайди, марказга нисбатан мувозанат ёки жойлашув тушунчалари муҳимроқ рол ўйнайдиган маданиятлар мавжуд. Бу вазият ушбу олимларга асосий йўналиш ўлчовлари барча маданиятлар учун умумийдир деган хулосага келишга имкон беради, аммо аниқ тушунчалар учун қабул қилинган йўналиш турлари, йўналиш тамойилларининг роли, уларнинг устуворлиги нуқтаи назаридан “бир маданиятдан иккинчи маданиятга фарқ қилади” [8, 407].

Сиёсий дискурсни таҳлил қилишга бағишланган кўплаб тадқиқотларда сиёсий соҳани намоёниш этишда ошпазлик метафорасининг роли кўриб чиқилади, шунга кўра биз ушбу метафорик моделнинг универсал табиати ҳақида гапиришимиз мумкин (қаранг. СИЁСИЙ ОШХОНА турғун бирикмаси). Шу билан бирга, аксарият лингвوماданиятларда бу метафорик модел миллий-маданий ўзига хосликка эга.

3. Метафорик моделларнинг ўзига хос хусусияти бир хил тил маданиятида унинг мавжудлигининг турли босқичларида ҳам учрайди. Масалан, артефактлар метафораси ўзбек лингвوماданияти ривожланишининг бутун даври давомида кўзга ташланиши мумкин

Бирок, қадимги Ўрта Осиё халқларида руҳни мусиқа асбоби (тор, най) билан таққослашга асосланган ҳозирда кенг тарқалган метафоралар мавжуд эмас эди (дил торлари, кўнгил найлари ва б.), бу ўрта аср маданиятининг мусиқий соҳага салбий муносабати билан боғлиқ бўлиб, унда улар жинлар тамойилининг намоён бўлишини кўришган.



XIX асрдан кейингина Россия, Европа маърифатпарварлик ғояларининг тарқалиши ва муסיқа санъатида бўлган муносабатнинг ўзгариши туфайли ўзбек лингвомаданиятида бундай метафораларнинг пайдо бўлиши ва фаол ишлатилиши мавжуд.

Метафорик моделларнинг инвентаризацияси ва тузилишидаги бундай ўзгаришлар жамият ҳаётидаги ўзгаришлар билан ҳам, хорижий маданий таъсир билан ҳам боғлиқ бўлиқдир. Шунга кўра, метафорани ўрганиш лингвомаданий онгда содир бўлаётган ўзгаришларни тилда намоён қилишнинг ягона ва жуда самарали усулларида биридан.

Метафорикани кейинги лингвомаданий нуктаи назардан ўрганиш метафорик моделларнинг универсал ва миллий ўзига хос хусусиятларини аниқроқ ажратиш имконини беради.

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THE IMPACT OF "BABUR-NAME" ON THE DEVELOPMENT OF WORLD LITERATURE

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ANNOTATSIYA

The article is devoted to the phenomenon of "Babur-name". The characteristic features of the poem and its influence on world literature are highlighted. This direction is also supplemented by the fact that in the poem one can find the premises of modern literary genres.

KEYWORDS: memoirs, historical events, autobiography, life and life of contemporaries, travelogue.

ВЛИЯНИЕ «БАБУР-НАМЕ» НА РАЗВИТИЕ МИРОВОЙ ЛИТЕРАТУРЫ

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Аннотация

Статья посвящена феномену «Бабур-наме». Выделяются характерные особенности поэмы и влияние на мировую литературу. Данное направление дополняется также тем, что в поэме можно найти предпосылки современных литературных жанров.

Ключевые слова: мемуары, исторические события, автобиография, быт и жизнь современников, травелог.

Zahiriddin Muhammad Babur is one of the greatest poets, thinkers and scientists of the East, a prominent statesman, a descendant of Amir Temur and the founder of the Mughal Empire. His work rightfully occupies an important place in the development of national Uzbek literature. Babur had outstanding abilities. He left a rich creative literary and scientific legacy. Babur is the author of both original ghazals and rubaiyat, and a treatise on Muslim jurisprudence "Mubayin"[1]. However, the pinnacle of the work of a talented poet and writer was his historical work - an invaluable literary and a historical monument written in Uzbek - "Babur-name".

The poem "Babur-Name" is a truly unique historical monument, which has collected both personal observations and refined thoughts of a person who is well acquainted with the intricacies of oriental literature. This autobiographical book has collected historical facts about the life and way of life of peoples, about the economic condition, about the nature and geographical features of Central Asia, Afghanistan and India.

"Babur-Name" is Babur's personal notes, which he painstakingly kept throughout his life and combined them into one work containing not only the events of his biography for twenty-five years, but also the features of nature, animals, plants, information about architectural, cultural, geographical features of the countries visited by the author.



This book contains a lot of detailed, vivid portraits of Babur's contemporaries: poets, artists, musicians, rulers. The accuracy and authenticity of events allows the reader to plunge headlong into the story told by the author.

The work "Babur-Name" is not only one of the first examples of memoirs in world literature, but also a unique historical monument that allows you to fully imagine the life of the peoples of Central Asia and Uzbekistan in particular in the 15th-16th centuries.

One of the most famous English historians Edward Holden

spoke of Babur's work not as a personal diary of a military man, but as a collection of personal memoirs presented in an elegant form. And he compares the author himself with Julius Caesar, characterizing Babur as a public figure, a writer, a commander, a man of high noble qualities, with a charming character, as an educated, noble person, not devoid of observation and objectivity.

"Babur-Name", or as it is called "Babur's Notes", has been published in more than 30 languages of the world, and in more than 70 museums located around the world, you can find various kinds of artifacts, one way or another characterizing the period of Babur's life and his descendants. Scientific research of this great work is carried out not only by scientists of Uzbekistan, but also by foreign specialists. Having studied their works, one can emphasize the high personal qualities of Babur, one can recognize him as a connoisseur of literature, a connoisseur of science, a patron of the creative intelligentsia, a major commander, an outstanding ruler, as well as a generous patron of the arts.

In his work, Babur gives a detailed description of major

cities of Asia, Iran, Afghanistan, India, which is an invaluable material, as it describes in detail the geographical location of cities such as Ferghana, Samarkand, Kashgar, Osh, Margilan, Herat, Delhi, as well as their trade and economic roles at that time. This allows modern researchers to track the growth and development of these cities over time.

"Babur-name" is a document based on personal experience and observations of the surrounding world, and is studied in all centers for the study of the history of the East in the world, including: Turkey, Italy, Czech Republic, France, England, USA, Afghanistan. Louis Bazan, a French orientalist, wrote of Babur's work that "autobiography is an extremely rare genre in Islamic literature." [2] More than 500 years have passed since the writing of the work "Babur-Name", but it remains accessible, understandable, easy to read these days. Experts are sure that the author's secret was clarity of thought and simplicity in presenting the text on paper.

Babur paid special attention to spelling and style. In a letter addressed to Humayun, he pointed out to the interlocutor a rather complicated writing style and grammatical errors. "Your handwriting, however, can be read if you work hard, but it is very unclear, and no one has yet seen the muamm (mystery) in prose. Your spelling is not bad, but not very correct either: you write "iltifat" through "ta", and "ku-lanj" through "ya". Your handwriting, although with difficulty, is still readable, but the meaning cannot be fully understood because of obscure words. You are too lazy to write out the letters, probably thinking: "I will write more elegantly!" and that's why it's dark. From now on, write more simply, in a clear and clean style: and you will have less work for the one who reads," such a text was contained in his letter. [3] He himself tried to express his thoughts in simple language, avoiding frills in writing style.

Babur's work inspired the writing of novels by such authors as F.A. Salier, G. Lamb, Aibek, B. Baikabulov, X. Davran, P. Kadyrov and many others. I would like to note the novel by the American historian, writer Harold Lamb "Babur - Tiger. The Great Conqueror of the East", in which he described the life of the founder of the Mughal Dynasty, and outlined the main events of the era of his reign. The work combines interpreted historical facts from Babur's autobiography.

Orientalists I. N. Berezin, V. Grigoriev, N. Pantusov translated parts of Babur-name into Russian and studied the memoirs themselves.

Interest in the immortal creation of Babur is not weakening at the present time. Various international conferences are held, at which numerous works on history, philology, and law are published every year.



Babur and his work "Babur-name" played a significant role in the development of not only the genre of memoirs, but also of the entire world literature as a whole. "Babur-name" is a unique fusion of several genres: memoirs, travel notes, and the so-called travelogue.

Travelogue is a genre that describes travel in different forms art. Both Western and Russian researchers cannot find a common interpretation of this term. After analyzing their works, one can come to the conclusion that "travelogues can connect all types of narrative and discourses: geographical, political, historical, linguistic and ethnological.... Travelogue can also be associated with two other genres: writing, epistolary novel and intimate diary. .."[8]. This definition most of all proves the versatility of "Babur-name".

The works of Babur, written in the Uzbek language, received a worthy recognition in the works of scientists of the world. Babur's literary feat "Babur-name" is undoubtedly a great work, and an invaluable historical source of useful information that will help more than one generation of researchers.

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A STUDY ON CUSTOMER INSIGHT TOWARDS UPI, WITH SPECIAL REFERENCE TO THOOTHUKUDI DISTRICT

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ABSTRACT

Unified Payments Interface is a digital payment system that allows people to instantly transfer money from one bank account to another in India. UPI has become more and more popular due to its many benefits, including its free, fast, secure, and easy. The Reserve Bank of India (RBI) has introduced new rules regarding fees applicable to transactions made through the Unified Payments Interface (UPI) system. As per the new rules, UPI transactions above Rs. 2,000 made through a Prepaid Payment Instrument (PPI) will incur a PPI merchant fee. NPCI said the interchange fee will not be applicable on P2P or peer-to-peer transactions and P2PM or peer-to-peer-merchant transactions between a bank account and a PPI wallet. Essentially, this charge will only apply to digital wallet transactions made via merchant QR codes. This means that all payments made using UPI such as Paytm, Phonepe, Google Pay to friends, family or to a merchant's bank account will not be affected by this interchange fee. This study reveals the customer insight towards UPI payment with the help of using the chi square test among Thoothukudi city

KEY WORDS: UPI, Electronic Payment

INTRODUCTION

According to the NPCI, "Unified Payments Interface (UPI) is a system that powers multiple bank accounts into a single mobile application, merging several banking features, seamless fund routing & merchant payments into one hood. UPI's overall importance comes from the intense desire and effort made by the RBI and the government to create a cost effective, simple and safe digital payment system that will be used for the large population of the country. The RBI along with the NPCI has made commendable efforts to spread digital payments culture. According to the RBI, a digital payment platform should be simple, safe and efficient while carrying out payments. Various criteria about an ideal payment system were brought out by the RBI in its vision for a future payment system dreaming a digital transaction economy. From this angle, a remarkable feature of the UPI is that it satisfies several criteria put forwarded by RBI's payment system vision of safe, efficient, interoperable, authorized, accessible, inclusive and compliant with international standards.

We all are used to payment apps like PhonePe, Google Pay, Paytm, etc these apps have become a crucial part of our lives. The transaction on these apps takes place by UPI- The Unified Payment Interface is a single-interface payment system, developed by the National Payment Corporation of India (NPCI). UPI: Unified Payment Interface is a smartphone application that allows users to transfer money between bank account. It is a platform where customers can link bank accounts held by different banks into a single UPI application and use their registered cell phone number to easily trade between them around the clock. The UPI Platform is a UPI system that operates from multiple banks accounts in a single mobile application from participating banks, combining multiple banking features such as seamless fund routing and merchant payments under one roof. The National Payments Corporation of India (NPCI) developed a single-window mobile payment system (Mobile Payments). There is no need to enter bank details and other sensitive information every time a customer initiates a transaction. UPI has introduced new features such as In-App payments, cross-screen QR codes, the addition of web-based payments, and the extension of the range of services to online payments using UnionPay-powered e-wallets.

REVIEW OF LITERATURE

1. Dr.V. Sornaganesh and Dr. M. Chelladurai (2016) in his article revealed about the situation at the time of demonetization. The researcher made an attempt to study about the demonetization impact and financial technology company. Digital payment is the largest bet in the mobile internet space from the technology point of view ^[1].

2. G. Sudha and Dr.V. Sornaganesh (2019) article is revealed that after demonetization changes in buying behaviour are clearly explained. After demonetization the main impact is reduce the paper money and increase the digital cash. Most of the customers used digital cash after the demonetization, used through the mobile applications, Internet Banking, etc., for paying their bills ^[2].



3. G. Sudha and M. Thangajesu Sathish (2020) article is revealed that after demonetization retailers will adopt the digital payment methods. The researcher analysed to find out the payment methods between the pre and post period of demonetization. Most of the retailers used their payments through using various applications ^[3].

4. M. Thangajesu Sathish, R. Sermakani, and G. Sudha (2020) this study is revealed that the traditional system of cash transaction cannot completely be replaced by card or e-payment system. People can adopt and use their mobile wallets for the payment transaction, fund transfer, purchasing groceries and paying bills etc ^[4].

5. G. Sudha and V. Sornaganesh, M Thangajesu Sathish, AV. Chellama (2020), article is revealed that the Reserve Bank of India last year said it aimed to increase digital transactions to about 15% of gross domestic product by 2021, from nearly 10% at the time. The government has asked banks to encourage their customers to use digital payment methods as a precautionary measure against the Coronavirus outbreak ^[5]

STATEMENT OF THE PROBLEM

It is imperative in the current period that digital payment is one important area where all the customers should be aware. The reasons are enormous like digital India and mechanization of e-documentation. Nowadays the physical payment mode becomes critical due to various reasons like time and safety. This enabled e-payment methods like internet banking and this again made simpler with android mobile phones. Keeping this concept, the research work. Framed based on the consumer behavior towards UPI (unified payments interface).

OBJECTIVES OF THE STUDY

- 1) The study is to know the consumer awareness, consumer perception and consumer satisfaction towards UPI
- 2) To study about factors that effects the consumer perception towards UPI
- 3) To find out the level of awareness of UPI and its adoption by people of different age groups and income levels.

HYPOTHESIS

There is no significant relationship between consumer perception towards UPI transaction

METHODOLOGY

The present study adopts an analytical and descriptive research design. By adopting a convenience sampling method. Data was collected by using two main methods., primary data and secondary data. The tools used for analysis Chi-Square test.

LIMITATION OF THE STUDY

1. The information given by the respondents might be biased because some of them might not be interested in providing correct information.
2. Respondents tried to escape some statements. This was one of the most important limitations faced, as it was difficult to analyse and come at a right conclusion.
3. Due to time and cost factor, only limited respondents were surveyed

ANALYSIS AND DISCUSSIONS

TABLE NO: 1 DEMOGRAPHIC PROFILE

Age	Frequency	Percent
Below 20years	32	40
21 - 30years	34	42.5
31 - 40years	6	7.5
40years and above	8	10
Gender	Frequency	Percent
Male	47	58.8
Female	33	41.3
Educational Qualification	Frequency	Percent
School Level	2	2.5
Degree/Diploma	58	72.5
Post graduates	7	8.8
Professional	1	1.3
Others	12	15
Occupational status	Frequency	Percent
Home maker	7	8.8
Govt. Employee	12	15



Private Employee	36	45
Business	14	17.5
Others	11	13.8
Monthly Income	Frequency	Percent
Up to 15000	57	71.3
15000 - 30000	15	18.8
30000 - 45000	3	3.8
Above 45000	5	6.3
Total	80	100.0

(Source: Primary data)

From the table, it is clear that out of 80 respondents, 40 % of the respondents are between the age group below 20, 42.5 % are between the age group 21-30, 7.5 % are between the age 31-40 and the rest 10% above 40. Hence, the majority of the respondents are between the age group of 21-30. 58.8% are male and 41.3% are female. Hence, the majority of the respondents are Male. 72.5% of the above respondents are Degree/Diploma holders, 8.8 % of them are postgraduate level, 1.3 % are professionals, 2 % are school level and the rest 15 % are Others. Hence, the majority of the education qualifications of the respondents Degree/Diploma holders. 17.5 % of the respondents are doing business, 15 % are government employees, 8.8 % are home makers, 45 % are private employees and the rest 13.8 % are others. Hence, the majority of the occupational status wise respondent's Private employees. 71.3 % of the above respondent's monthly income is less than Rs.15000, 18.8 % respondent's monthly income is between Rs.15000-30000, 3.8 % respondent's monthly income is between Rs.30000-45000, and rest 6.3 % respondents is above Rs. 40000. So, the majority of the respondent's monthly income is less than Rs.15000.

TABLE NO: II USING THIS UPI

How long are you using this UPI	Frequency	Percent
Below 1 year	18	22.5
1 – 2 years	11	13.8
Above 2 years	51	63.7
Total	80	100

(Source: Primary data)

From the table, it is clear that out of 80 respondents, 22.5 % of the respondents started using UPI for below 1 year, 13.8% of the respondents started using UPI for 1 – 2 year and 63.7% of the respondents started using UPI for more than 2 years. Hence, the majority of the respondent's duration of using UPI More than 2 years.

TABLE NO: III MOBILE APPLICATION

Mobile Application do you use UPI	Frequency	Percent
Google Pay	57	71.3
Phonepe	10	12.5
Paytm	5	6.3
Others	8	10
Total	80	100

(Source: Primary data)

From the table, it is clear that out of 80 respondents, 12.5% of the above respondents uses phonepe, 71.3% uses google pay and rest 6.3% of the respondents use Paytm. It is clear that most of the respondents use google pay.

TABLE NO: IV PROBLEM FACED WHILE USING UPI

Problem faced While using UPI	Frequency	Percent
Safety and Security	12	15
Authentication	5	6.3
Network Problem	44	55
Pending for Verification	12	15
Others	7	8.8
Total	80	100

(Source: Primary data)

From the Table, it is clear that out of 80 respondents, 15 % of the respondent's safety and security as a problem while using UPI, 6.3 % of the respondent's authentication problem while using UPI, 55% face network problem, 15% of respondents face pending for verification problem and 8.8% as others.

**TABLE NO: V CHI - SQUARE TEST**

Particular	Chi-Square	df	Asymp. Sig.
Manual banking & online banking	30.775 ^a	2	.000
Secured transactions	54.100 ^b	3	.000
Time saving through UPI payment mode	65.700 ^b	3	.000
Convenience in usage	40.900 ^b	3	.000
Price of using digital payment mode (service charges etc.)	40.750 ^c	4	.000
Helps in decision making	73.625 ^c	4	.000
Facilitates Transfer & Payments from Any point	55.100 ^b	3	.000
Growth of UPI mobile payment	53.750 ^c	4	.000
Comparatively easy than the traditional methods	77.250 ^c	4	.000
Payment in delay in UPI Apps	27.300 ^b	3	.000
Cashless payment options give you more discounts / cashback Rewards	54.125 ^c	4	.000
Check transaction status	54.000 ^c	4	.000
Raise Dispute / Raise query	64.125 ^c	4	.000

(Source: Primary data)

This table reveals the relationship between Consumer perception towards UPI. Manual banking & online banking, secured transactions, Time saving through UPI payment mode, Price of using digital payment mode (service charges etc.), Helps in decision making, Facilitates Transfer & Payments from Any point, Growth of UPI mobile payment, comparatively easy than the traditional methods, Payment in delay in UPI Apps, Cashless payment options give you more discounts / cashback Rewards, Check transaction status, Raise Dispute / Raise query are less than the table value. As a result, null Hypothesis is rejected. So, Alternative Hypothesis is accepted. It concludes that there is a significant difference of Consumer perception towards UPI.

CONCLUSION

Making payment is all about convenience, security, and speed. India's payment system evolved from the barter system to cash to card to digital payment mode. The security is the biggest concern among the consumers and can be considered as a key factor for the adoption of the UPI payments. India is a cash dominant society, even though there is a rapid increase in the using digital payment modes, there is still a lack of awareness among people concerning security, data privacy, etc. which is leading to them believing that making payments as card or cash is much better than using UPI application. Unified Payment Interface is considered as the biggest competitor for UPI payments. The customer is the king and they are looking for a seamless and convenient way of payments through internet and UPI is the best option for the customers for machining transactions.

In this study made an attempt to understand the perception of the customers towards unified payment services and traditional services and how far impacted the UPI services in customer satisfaction. From this study it is clear that customer has a positive attitude towards unified payment interface services and there is relationship between education of the respondents and usage of UPI services. Educated person are more inclined to use the UPI services. The growth of users of Smartphone and internet penetration in such area also facilitated the adoption of UPI services. Some of the problems faced by customers while using UPI services are also identified from this study. Government should conduct more awareness programs for online and banking customers regarding various services offered by NPIC.

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CONCEPT OF CLOUD KITCHEN- A NEW TREND IN INDIAN RESTAURANT INDUSTRY

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ABSTRACT

The recent pandemic of COVID-19 taught us relation between physical and economic well being. According to McKinsey Global Institute, 2020 report poor health of the people cost the economy nearly 15% of GDP. The pandemic brought change in perspective and outlook of employers and employees throughout the world. 2020 taught how meaningful business relation can be run through virtual mode also. Business revenues significantly went down; many were on the verge of closure. Covid 19 was disruptive in nature in all fields of economic activity. The new normal world demanded adaptability and flexibility. Economists forecasted that the combination of accessible new technologies, home confinement and creative thinking may give ways to new business avenues. The new normal paved the way for many new business opportunities in different filed. Cloud kitchen is one such new concept in virtual hotel and restaurant industry. This article provides an insight on concept of satellite or virtual kitchen in India. Cloud kitchen is an innovative concept in food industry. India being food loving country, such innovative concept with creativity is bound to be successful. This article is study on issues and challenges faced by new business venture.

KEYWORDS -cloud kitchen, COVID 19, new normal, food industry.

INTRODUCTION

Around the world, all types of business were inflicted by the corona virus. All the business leaders were finding their way to the normal. Mckinsy described five qualities critical to the next normal-resolve, resilience, return, reimagining and reform. The global socio-economic and health crisis created new normal. The strategies of business changed. There is limited literature available globally on restaurant industry. During the pandemic and in the midst of cloud technology, cloud kitchen gained the popularity. They are the latest trend in the food service industry or restaurant business in India .the online food delivery market is combination of grocery delivery and food delivery. At international level, China and US are the leading countries followed by UK, south Korea and Japan, according to Statistia Global Consumer Survey.

OBJECTIVE

the main aim of this article is to study the concept of cloud kitchen in India. The article also discuss various issues and challenges faced in the industry

METHODOLOGY

Secondary data is used for the study. The information provided in this article is collected from websites, articles, research papers and journals.

LIMITATIONS

there is limited literature available on restaurant industry with special reference to concept of digital kitchen or cloud kitchen. Sill it's in evolutionary stage

RESTAURANT AND FOOD SERVICE INDUSTRY IN INDIA- A STRUCTURAL CHANGE

Indian food service industry witnessed loss of 20 lakh jobs during pandemic. Top premium restaurants also started online delivery system to continue its operations during pandemic. In 2019, there were nearly 5000 cloud kitchens in India. According to an analysis by Redsser it is expected that industry would become nearly \$2billion. As per the Food Service and restaurant Business Report 2022-



23 by Francorp and restaurant in India, the industry had nearly employment of 7.3 million in 2021 and is expected to reach 10 million by 2025. It is expected that Indian online food delivery market to increase by 27.8% during 2023-28.

Rapid digitisation and growing trend of online food delivery services among consumer in major cities are propelling the growth of market in India. In India, Bangalore is the largest regional market followed by Delhi-NCR, Mumbai and Hyderabad. According to expert Market Research Insights, in India the industry is assumed to achieve remarkable heights due to high disposable income in hands of young population who have better sense for food preference and cuisines

CONCEPT OF CLOUD KITCHEN AND ITS FUNCTIONS IN INDIA

Any restaurant kitchen which though doesn't provide dine-in facility, still accepts online incoming orders are called as cloud Kitchens. They are called by different terms like dark kitchens, ghost kitchens, virtual restaurants and satellite kitchen. As point of sales software, they accept orders online. Accepting online food orders and timely delivery is the critical way to click the business in market on sustainable basis. It depends on tracking the various orders and its detailed reporting. They operate through online website or food delivery platform (online).

In India, there are many online delivery partners like Swiggy, Zomato, Foodpanda, Domino's, Bundl technologies, Fresh Menu, Jubilant Foodworks Ltd, Plaza restaurants Pvt Ltd, Rebel Foods, Curefoods India Pvt Ltd who charge 18-30 percent per order for delivery. Industry services are dominated by the two giant players-Swiggy and Zomato. Big food companies like Domino's Pizza, KFC, Pizza Hut, McDonald's retained their online delivery services with themselves. To continue hassle-free business, licenses are very critical like FSSAI license, GST registration, fire license, Municipal health tad licenses etc

TYPES OF IN CLOUD KITCHEN INDIA

- Standalone cloud kitchen- They are independent single brand-single cuisine with wider delivery services. They involve low investment.
- Multi brand cloud kitchen- They operate under single company, single kitchen but various cuisines as per customer needs. They are known as Shared cloud kitchen or Commissary kitchen model. They also involve low investment. the best example is rebel Foods(faasos)
- Outsourced cloud kitchen- The restaurant outsources every process before delivery of food.
- Aggregator kitchen-many brand cook together in single vast kitchen example Zomato or Swiggy
- co-working cloud kitchen
- Ghost kitchen- they offer takeaway or drive-through option .

ISSUES RELATED TO CLOUD KITCHEN IN INDIA

In India, following things must be kept in mind while operating cloud kitchen

1. Location of the kitchen though like physical kitchen does not have many issues related to it, but it's related with proper sanitation and water supply at low rentals on one side and on the other side customer demography
2. Technology to accept orders- online delivery partners like Posist mobile phone, stationery items etc
3. License to start up restaurant-FSSAI license, GST registration, fire licenses
4. Kitchen equipment like electronic items, chimneys storing shelves, deep refrigerators, burners
5. Staff of the cloud kitchen is minimum like chefs, helpers and housekeeper.
6. Point of sale-tracking of orders and detailed reporting of the activities of the restaurant

Cloud kitchen -A model

1. Key partners-delivery partners, payment processors, packaging partners, enabling partners.
2. Key activities-technical operations management, latest IT infrastructure,query handling, customer relation building
3. Customer profile-all age segments of customer
4. Cost structure-operating, technical and marketing costs
5. Source of revenue-delivery fees and subscriptions
6. Value propositions-types of cloud kitchen, food delivery process
7. Key resources-human resources, financial resources and technical inputs



TOP 10 CLOUD KITCHENS IN INDIA

- Faasos- its one of the most popular and biggest brands of cloud kitchens in India. It was established in 2011 by Jaydeep Burman and Kallol Banerjee. It is still operational in 15 states of India numbering nearly 320
- Box8- it was established in 2012 by Anshul Gupta and Amit Raj. It is based in Delhi but is spreading to other parts of the country.
- kitchens@- it was established in 2018 by Kizhakkayil with headquarters in Bangalore. Recently, it got merged with Delhi based kitchen centres. It has 350 kitchens across 12 hubs.
- Behrouz biryani- it was established in 2015. It was started by Jaydeep Burman. It is known for its biryani cuisine like Dum Ghost Biryani and Murg Tikka Biryani
- Sweet truth- it was established in 2015 by Jaydeep Burman. This company is result of parent company Rebel Food's partnership with Wunderman Thompson South Asia to sell desserts and sweets. It is known for deserts, international confectionery, cakes, pastries, brownies, sweets and chocolates.
- Zomato- it was established in 2010 as Foodiebay. It has nearly 6500 restaurants as its partners in major cities in country.
- Swiggy- it was established in 2014 by Nandan Reddy and Sriharsha Majety. It has nearly partnership with more than 15,000 restaurants in India.
- Travelkhana- it was established in 2012 by Pushpinder Singh. It becomes popular among railway travel passengers.
- Oven story- it was established in 2015 by Jaydeep Burman. It makes and delivers varieties of pizzas to its customers.
- Biryani by kilo- it was established in 2015 by Kaushik Roy and Vishal Jindal. It delivers authentic biryani, kebabs and wide varieties of delicacies in earthen bowl. It is available in 22 cities. They excel in Lucknowi and Hyderabadi biryani
- Your truly butter chicken- it is established in Delhi catering to customers need of kebab, mughlai, beverages. It was nominated as the Best North Indian delivery for the times food and Night awards 20223.
- Oven story pizza- it is famous for pizza and fast food cuisines. Within three years of its launch it has more than 160 outlets in India.
- Firangi bake- it delivers Mexican and Italian food items. Its parent company is Rebel Foods. It has repertoire of global dishes with bold flavors like red sauce pastas to lasagna to classic mac n cheese.
- Warm oven – it was established in 2019 in Bangalore. It serves customers needs of Hyderabad, Delhi, Pune, Mangalore, Chennai.
- Rolls and bowls- it was established in 2019 by Archit Bhandula. It has headoffice in Indore and 75 outlets in the country. It is most demanded kitchen franchise business in India. It targets urban customers. It is known for home style veg and spicy rolls. It serves bowls of rice with curries in typical Indian meal.
- Rolling plate
- Urban singh

PROS AND CONS OF CLOUD KITCHENS

Pros

- **Less investment**
- **Streamlined online process**
- Less operating costs
- Experimental in nature-run and manage multiple brands easily
- Wider markets-increased brand reach
- Menu flexibility
- Improved efficiency
- Ease In expansion-shared kitchen for many businesses and easy start to business
- Competitive pricing

Cons

- Lack of direct interaction with customer
- Low profit margins
- High competitive market
- Too much dependency on technology



- Online visible pre-requisite
- Customer data masking

Challenges faced by Cloud Kitchens in India

- Improper structure of operations-there is lack of Standard Operating Procedures. In virtual kitchen, all operations are decentralized. Thus it's challenging to streamline all operations. The businesses which use Delivery Management system to automatic management reap the maximum benefit.
- Technical cost-delivery network, logistics support, order tracking, customer applications maintenance requires huge expenses. Due to lack of standardization during the food preparation, it sometimes leads to poor inventory management and excessive wastages. Shipox caters to all such needs. A Point of Sale system can be implemented.
- Poor financial management-there's is probability of fraud or malpractice by the cash management people besides chances of loss due to wrong orders, delayed orders or customer dissatisfaction. Preparing multiple cuisines falls only on the chef who might not be the perfect to prepare varieties
- Loopholes in delivery process- it is difficult to manage and monitor services of delivery personnel. Automated deliveries are important for customer satisfaction.
- Lack of customer interaction- due to lack of direct contact with customers, bad reputation take place due to their complaints and dissatisfaction
- Inadequate working conditions- hygiene conditions are neglected or overlooked in virtual kitchens, but invariably reflected in poor quality of food to extent of legal notices.
- Customer feedback-customer's reviews help businesses website and feedback help to improve problems of business.
- Low profit margin-since delivery is the only revenue channel, costs are escalating on salary and infrastructure. Majority of the cloud kitchens due to competition have less profit margins.
- Poor inventory management

CONCLUSION

There is paradigm shift in restaurant industry. A market niche is created. Even though the industry faces certain limitations of late delivery, dependence on internet technology, etc, Cloud Kitchen have become need of the hour. Restaurants are also aware of this intense competition to survive in the market. Cloud kitchens have become viable options in terms of costs, time, ease and customer benefit. They can rise in short time period

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A STUDY ON IMPACT ON STREET VENDORS DUE TO THE ENTRY OF SUPERMARKETS WITH REFERENCE TO COIMBATORE CITY

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ABSTRACT

Street vendors are people who sell products on the street without a building. The rapid growth of supermarkets affects street vendors in level of livelihood. This study deals with the impact of supermarkets on street vendors. The main objective is to know the problems faced by street vendors because of supermarkets. This study is being done because of the huge growth of supermarkets in the country. The growth of supermarkets affects the sales of street vendors at the level of their consumption. This study confronts that the relationship between street vendors and supermarkets varies depending on the different level of customers. Traditional markets are operated by local officials. Research tools were used to find the relationship between the characteristics of street vendors. It is proposed to run the business in an improved infrastructure. It is suggested to Street vendors develop their technical knowledge. Location is one of the main deciding factors for customers when making a purchase. The study shows that too long working hours of salespeople, poor safety and security conditions in their workplaces, together with conflict with the ultimate growth of local supermarkets.

KEYPOINTS

- ❖ STREET VENDOR means a person engaged in vending of articles, goods, wares, food items or merchandise of everyday use or offering services to the general public, in a street, lane, sidewalk, footpath, pavement, public park or any other public place or private area, from a temporary built up structure or by moving from place to place and includes hawker, peddler, squatter and all other synonymous terms which may be local or region specific; and the words street vending with their grammatical variations and cognate expressions, shall be construed accordingly;
- ❖ LOCAL AUTHORITY means a Municipal Corporation or a Municipal Council or a Nagar Panchayat.
- ❖ SUPERMARKET In the words of M.M. ZIMMERMAN, A super market is a departmentalised retail establishment having four basic departments viz. self-service grocery, meat produce, dairy products plus other household departments, doing a maximum business. It may be entirely owner-operated or have some of the departments leased out on a concession basis.

I. INTRODUCTION

A street vendor is a person who sells food or other goods on the street, either from a stall or van, or with their wares spread out on the pavement. Street Vendors is a person who offers goods for sale to the general public without having a permanently built building from which to sell. They usually operate near public places like railway stations, cinemas, bus stands, temples, etc. They deal in various goods like towels, handkerchiefs, daily necessities, mirrors, etc. They deal in cheap general purpose goods. The Street Vendors (Protection of Livelihoods and Regulation of Street Vending) Act, 2014 was enacted to regulate street vendors in public spaces and protect their rights. A supermarket is a self-service store offering a wide range of food, drink and household products, organized into sections. This type of store is larger and has a wider selection than earlier grocery stores, but it is smaller and more limited in its assortment than a hypermarket or big box market. A supermarket typically has areas for fresh meat, fresh produce, dairy, deli, baked goods, etc. Shelf space is also reserved for a variety of non-food items such as kitchenware, household cleaners, pharmacy and pet supplies. Some supermarkets also sell other household products that are regularly consumed, such as alcohol (where permitted), medicine and clothing, and some sell a much wider range of non-food products: DVDs, sports equipment, board games and seasonal goods (e.g. Christmas wrapping paper in December). Street vendors can offer a viable livelihood, but earnings are low and risks are high for many vendors, especially those selling fresh fruit and vegetables and dairy products. Supermarket affects the life of street vendors as they develop in Urban. In the city of Urban, street vendors suddenly intervene. Supermarkets with good facilities that make their product last for maximum days and attract customers which adversely affects Street Vendor's ability to sell their products.



STATEMENT OF THE PROBLEM

Supermarkets have been in the main urban center for the past three decades. However, at the beginning of the liberalization of the retail sector in 1998, foreign supermarket operators began to enter the country, creating fierce competition with local operators. Some quarters argue that traditional markets are the real victims of intense competition, losing customers to the cheap, high-quality products and more convenient shopping environment that supermarkets provide. Therefore, there are calls to limit the construction of supermarkets, especially in locations near traditional markets.

This study investigates the truth behind these claims by measuring the impact of supermarkets on traditional market traders. Primarily quantitative research methods were used and qualitative research was conducted to uncover the stories behind the quantitative findings.

Unlike supermarkets, most traditional markets are owned and operated by the local government, usually under the Market Management Authority. However, a relatively small proportion of traditional markets are developed through cooperation between local government and private companies, usually under a build-operate-transfer (BOT) system. Private companies then pay a set contribution to the local government.

OBJECTIVES

- ❖ To know the problems faced by Street Vendors due to supermarkets
- ❖ To know the problems due to demographic situations.
- ❖ To overcome the problem and increase sales.

RESEARCH DESIGN

Research design is the arrangement of conditions for data collection and analysis in a way that aims to combine relevance to the research purpose with the economy in the process. Research design is the conceptual framework within which research is conducted. It presents a plan for measuring data collection and analysis. A research proposal includes both an outline of what the researcher will do in writing the hypothesis and its operational implications for the final data analysis. The research design is the framework for the study and is used to guide data collection and analysis. It is a strategy that specifies what approach will be used to collect and analyse data. It also includes a time and cost budget as most studies are conducted within this dual cost budget as most studies are conducted within the constraints of these moves.

TOOLS USED

- Simple percentage
- Chi-square
- ANOVA
- Ranking

LIMITATIONS OF STUDY

Given the overall decline in the performance of retailers in traditional markets, this section specifically examines the contribution of supermarkets to the decline. Traders also say that the impact of supermarkets is not as significant as that caused by the internal problems in their markets. Additionally, they admit that there is a slight difference in the types of shoppers coming to traditional and modern markets, with mobile vendors and small shops still preferring to shop at traditional markets.

There are several factors that could explain why one traditional market may be affected while others are not. The first is the distance between the traditional market and the supermarket, where traditional markets that are relatively close to supermarkets are more severely affected. The second, more important factor is the types of buyers in traditional markets. Traditional markets, whose main customers are middle-class households, feel the most profound impact of supermarkets.

II.THEORETICAL FRAMEWORK

STREET VENDORS

A street vendor is someone who sells food, goods, and merchandise on the street or in an outdoor market rather than in a traditional store. A street vendor's "shop" is either a small outdoor space that can be locked and shut down at the end of the night or a cart that can be moved from place to place and taken home at the end of the day.

WHAT DO STREET VENDORS SELL

- Vegetables
- Fruit



- Cold Drinks
- Flowers

STREET VENDORS IN INDIA

According to the Ministry of Housing and Urban Poverty Alleviation, there are 10 million street vendors in India, with Mumbai 250,000, Delhi 450,000, Kolkata more than 150,000 and Ahmedabad 100,000. Most of them are immigrants or laid-off workers who work 10 – 12 hours a day and remain poor. In India, street vending accounts for 14% of total (non-agricultural) urban informal employment. Although the prevailing licensing paradigm in Indian bureaucracy ended for most retail in the 1990s, it continues in this trade. The disproportionate license cap in most cities, such as Mumbai, which has a cap of 14,000 licenses, means that more vendors are illegally hawking their wares, which apart from harassment, heavy fines and sudden evictions also makes them vulnerable to a culture of bribery and extortion under the local police and municipal authorities. In Calcutta, this profession was a cognizable and non-combatable offence.

Over the years, street vendors organized themselves into unions and associations, and a number of non-governmental organizations began working for them.

There are an estimated 50-60 thousand street vendors in India, with the largest concentration in the cities of Delhi, Mumbai, Kolkata and Ahmedabad. Most of them are migrants who usually work an average of 10-12 hours a day.

CUSTOMER SATISFACTION TOWARDS STREET VENDING

Consumer satisfaction with the services offered by retailers is largely a function of perceptions and expectations of the services provided. If the consumer expects a certain level of service and the service provided by the street food vendor does not meet the consumer's expectations, the service will be perceived as good.

SUPERMARKETS

A supermarket is a self-service store offering a wide range of food, drinks and household goods, organized into sections. This type of store is larger and has a wider selection than earlier grocery stores, but is smaller and more limited in assortment than a hypermarket or big-box market.

A supermarket typically has areas for fresh meat, fresh produce, dairy, deli, baked goods, etc. Shelf space is also reserved for canned goods and packaged goods, and for various non-food items such as kitchenware, household cleaners, pharmaceuticals, and home stock animals. Some supermarkets also sell other household products that are regularly consumed, such as alcohol (where permitted), medicine and clothing, and some sell a much wider range of non-food products: DVDs, sports equipment, board games and seasonal goods (e.g. Christmas wrapping paper in December).

A larger full-service supermarket attached to a department store is sometimes known as a hypermarket. Other services may include banking, coffee shops, childcare centres/nurseries, insurance (and other financial services), mobile phone services, photo processing, video rental, pharmacies and gas stations. If the restaurant in the supermarket is large enough, the establishment may be called a "grocery", a mixture of "grocery" and "restaurant".

Supermarkets are usually chain stores supplied by the distribution centers of their parent companies, increasing opportunities for economies of scale. Supermarkets typically offer products at relatively low prices by using their purchasing power to purchase goods from manufacturers at lower prices than smaller stores can.

WHAT DOES SUPERMARKETS SELL

- Bakery (packaged and sometimes a service bakery and/or onsite bakery)
- Beverages (non-alcoholic packaged, sometimes also alcoholic if laws permit)
- Non-food & Pharmacy
- Personal care e.g., cosmetics, soap, shampoo
- Produce (fresh fruits and vegetables)
- Floral (flowers and plants)
- Deli (sliced meats, cheeses, etc.)
- Prepared Foods (packaged and frozen foods)
- Dairy (milk products and eggs)

THE TOP 10 SUPERMARKETS IN INDIA ARE THE FOLLOWING

1. Big Bazaar
2. D Mart
3. Star Bazar
4. Hyper city



5. Reliance Fresh
6. Spar
7. Spencer's Retail
8. More Retail
9. Food world
10. Reliance SMART

CUSTOMER SATISFACTION TOWARDS SUPERMARKETS

Customer satisfaction is the primary factor in successful operations. A supermarket's sales can grow when they satisfy their customers with goods or services with the best policy that suits the customers' demands. It can therefore be said that customer satisfaction is followed by repeat visits or repeat purchases. Managing a store is never easy. Anything can happen, loss is inevitable. Knowing the difficulties of running a store is one way to help you have appropriate management and also solve problems in a timely manner.

III. ANALYSES AND INTERPRETATION

CHI-SQUARE ANALYSES

RELATIONSHIP BETWEEN THE INCOME AND DURATION OF CUSTOMER VISIT

CHI-SQUARE			
	Value	df	Asymptotic Significance(2-sided)
Pearson Chi-Square	37.154 ^a	9	<.001
Likelihood Ratio	31.644	9	<.001
N of Valid Cases	167		
a. 9 cells (56.3%) have expected count less than 5. The minimum expected count is .04.			

INTERPRETATION

H01: There is no significant relationship between income and duration of customer visit.

Ha1: There is significant relationship between income and duration of customer visit

From the above table it is inferred that, there is significant relationship between the income of the respondents and duration of customer visit. Hence, it is an alternative hypothesis.

ONE-WAY ANOVA

One- way ANOVA ("analysis of variance") compares the mean of two or more independent groups in order to determine whether there is statistical evidence that the associate population means are significantly different. One-way ANOVA is a parametric test. This test is also known as "One-Factor ANOVA".

AGE OF THE RESPONDENTS AND MODE OF VENDING

ANOVA					
Age	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.28	1	.028	.049	.825
Within Groups	93.326	165	.566		
Total	93.353	166			

INTERPRETATION

H01: There is no significant mean relationship between age of the respondents and mode of vending

Ha1: There is significant mean relationship between age of the respondents and mode of vending

The analysis reveals that, there is no significant mean relationship between age of the respondents and mode of vending as significant value (0.825) is more than the level of significance (0.05).

SUGGESTIONS

Street vendors can improve their sales by improving infrastructure and product variety. Upgrading technology is a must every hour. Street vendors must be constantly on the lookout for competitive marketing techniques being used. The availability of different types of products helps street vendors to retain regular customers and attract new ones. Location is one of the main deciding factors for customers when making a purchase. Street vendors to place their shops in the main places of public movement. Regular updating



of customer requirements is important for street vendors. This can help them create a suitable loyalty towards frequent shoppers. This creates a lasting relationship with customers.

CONCLUSION

The in-depth analysis of the impacts of the street vendors due to the entry of supermarkets in Coimbatore City has led to the unambiguous conclusion that street vending activity in Coimbatore, likewise in other cities of India, is unsecured and challenging. The study shows that the excessively long working hours of the vendors, poor safety and security conditions at their workplaces, together with the conflict with the ultimate growth of local supermarkets. They thus need to be imparted certain proper place of vending. They need to be focused more on attractive products. They have to be technically improvised to meet the digitalised economy.

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A STUDY ON PROBLEMS AND PROSPECTS OF BRANDING AND NON-BRANDING PRODUCTS

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ABSTRACT

Although brands can signal reputation and serve as proxies for trust, consumer preferences for attributes may differ for branded and non-branded products. The authors of this paper test this hypothesis using data from a particular experiment conducted with Italian jeans' consumers. The results indicate that consumers appear uncertain when there is an absence of a brand; non-brand-oriented consumers ascribe greater importance to the attributes of a product, with emphasis on those that relate to the product model (fit, comfort, design). Price is important for both types of consumers. Factor and cluster analyses permit identification of elements for the positioning strategies of brand and non-branded products. For marketing managers, it is important to know the consumer's perception of the product's characteristics and, accordingly, adopt specific communication and positioning strategies.

KEYWORDS: branding and non branding, Customer preference.

INTRODUCTION

A brand is a product with unique character, for instance in design or image. It is consistent and well recognized. Some retailers use "own-label" brands, where they use their name of the product rather than the manufacturers like Tesco's "Finest" range of meals and foodstuffs. These tend to be cheaper than the normal brands, but will give the retailer more profit than selling a normal brand. The **logo** on a product is an important part of the product. A logo is a symbol or picture that represents the business. It is important because it is easy to recognise, establishes brand loyalty and can create a favourable image.

STATEMENT OF PROBLEM

Liberalisation, Globalisation has made retail industry competitive. The number of brands both domestic and foreign has tremendously increased worsening the already competitive market structures. There has made imperative for the companies to build and maintain brand image an almost important activity. People are moving from unbranded to more branded items. This study aims to define the effect of branding and non-branding products marketing.

OBJECTIVE

1. To know the socio-economic factors of the respondents
2. To study the branding and non- branding of products
3. To analysis the perception of customer towards branding and non- branding products
4. To analyse the factors influencing the purchase behaviour .
5. To find out the problems and prospects of branding and non- branding products

RESEARCH METHODOLOGY

Methodology is a plan of action for a research project and explains in detail how data to be collected and analyzed and presented so that they will provide meaningful information.

This section is to give enough background on the technical aspects of the study to allow the reader to appraise the quality of the information obtained.

Research Design

The descriptive research is used to identify the satisfaction and expectation of consumer and its impact brand preferences

Area of study

Coimbatore city alone is selected to conduct this survey to lack of time and cost involved in collecting the information from various areas.



Sampling procedure

The Convenience sampling method was adopted for the study with a sample size of 125 respondents from the employees. In this a designated number of sample units is selected deliberately depending upon the objectives so that only the important items representing the true characteristics of the population are included in the sample.

METHOD OF DATA COLLECTION

Data was collected through both primary and secondary data sources.

PRIMARY DATA

A Primary data is a data, which is collected for the first time for particular information and data was collected using questionnaire (Google form).

SECONDARY DATA

A secondary data is a data, which is the information is collected from already existing data and the secondary data was collected from various reviews.

TOOLS USED FOR ANALYSING THE DATA

Study has the objective of ascertaining the “A Study on problems and prospects of branding and non branding products” for analysing the primary data the following statistical tools was used.

- Simple Percentage Analysis
- Chi-Square test
- Weighted average ranking method

REVIEW OF LITERATURE

Mahalaxmi Krishnan, V S Pande and Mayuresh Mule (2022) with the objective of ascertaining the determinants for consumer preference for branded and unbranded products, conducted a survey. Findings of the study revealed that quality of the products is the prime motivator for branded products, easy availability and price are the reasons for choosing unbranded products. Respondents stated that branded products fulfil their expectations.

Santovito (2022) with an objective to find out consumer preferences for attributes of branded and non-branded products conducted a study with structured questionnaire. The results indicated that the attributes that affect the consumer while choosing the brand are comfort, fit, fabric quality, brand, price, colour, type of wash/treatment, versatility of use, trim, design/model, originality of the model and how fashionable the model is. Further, consumers appear uncertain when there is an absence of a brand; non-brand-oriented consumers ascribe greater importance to the attributes of a product, with emphasis on those that relate to the product model (fit, comfort, design). Price is important for both the types of customers.

Agarwal and Ankit Mehrotra (2022) with an objective of determining customer perception regarding branded and unbranded clothes conducted a survey with 353 respondents from Northern part of India. The findings highlighted that out of the various parameters taken into consideration, cut and fit of the clothes is considered to be the most important by customers while choosing clothes. Findings of regression analysis indicated that variety was found to have the maximum impact on customer's choice of branded or unbranded clothes. The only difference in the perception of Indian customers regarding various attributes of branded and unbranded clothes is that branded products are treated as status symbol.

Ahmed Siddiqui (2021) with the purpose to explore the women's perceptions towards branded clothing in Pakistan conducted a survey of 200 women from posh localities of Pakistan through personal interview. The findings of the study by using Exploratory factor analysis revealed that women consider four major factors i.e. Status, Traditions, Quality and Values while purchasing the branded clothing.

Md. Mazedul Islam and (2020) wanted to investigate the customer's perception in buying decisions toward Bangladeshi local apparel products. The study was conducted among 200 respondents including ten local apparel brands. The study revealed that customer desires the products quality, comfort, price, functional and aesthetic look, offer & discount and many others key buying factors suitable for them when visiting a brand showroom.

HISTORY OF BRANDING AND NON BRANDING PRODUCTS

A **brand** is a name, term, design, or other feature that distinguishes one seller's product from those of others. Brands are used in business, marketing, and advertising. Initially, livestock branding was adopted to differentiate one person's cattle from another's



by means of a distinctive symbol burned into the animal's skin with a hot branding iron. A modern example of a brand is *Pepsi* which belongs to PepsiCo Inc.

In accounting, a brand defined as an intangible asset is often the most valuable asset on a corporation's balance sheet. Brand owners manage their brands carefully to create shareholder value, and brand valuation is an important management technique that ascribes a money value to a brand, and allows marketing investment to be managed (e.g.: prioritized across a portfolio of brands) to maximize shareholder value. Although only acquired brands appear on a company's balance sheet, the notion of putting a value on a brand forces marketing leaders to be focused on long term stewardship of the brand and managing for value.

The word "brand" is often used as a metonym referring to the company that is strongly identified with a brand.

Marque or make are often used to denote a brand of motor vehicle, which may be distinguished from a car model. A *concept brand* is a brand that is associated with an abstract concept, like breast cancer awareness or environmentalism, rather than a specific product, service, or business. A *commodity brand* is a brand associated with a commodity

ADVANTAGES OF BRANDING

- Provides unique to the products
- Improves goodwill and customer loyalty
- Creates barrier for the competitors to enter the market
- Increases profitability
- Makes easy to launch new products

DISADVANTAGES OF BRANDING

- Requires huge investment
- It creates brand monopoly
- It lacks flexibility
- Customer have to pay premium price for branded products
- It discourages new companies

DATA ANALYSIS

CRITERIA	OPTIONS	NO OF RESPONDENTS	PERCENTAGE
Age	Below 20 years	29	23
	21-30 years	63	50
	31-40 years	14	11
	Above 40 years	19	15
Gender	Male	72	58
	Female	53	42
Marital Status	Married	101	81
	Unmarried	24	19
EducationalQualification	School level	37	29
	Degree/Diploma	42	34
	PG	26	21
	Professional	20	16
Occupational status	Student	33	26
	House wife	19	15
	Employed	49	39
	Business	24	19
Monthly Income	Up to 10,000	21	17
	Rs.10,000-Rs.20,000	35	28
	Rs.20,000-Rs.30,000	37	30
	Rs.30,000-Rs.40,000	20	16
	Rs 40,000 & above	12	10
No.of.family members	Up to 2	11	09
	2 to 4	30	24
	4 to 6	36	29
	Above 6	48	38
Preference towards retail stores	Local stores	09	07
	Super markets	29	23



	Convenience stores	50	40
	Hyper markets	37	30
Advertisement influenced	High	15	12
	Medium	45	36
	Low	34	27
	Not at all	31	25
Stored ambience affect branding	Strongly agree	39	31
	Agree	52	42
	Neutral	10	08
	Disagree	17	14
	Strongly disagree	07	06
Peers appreciation	Excellent	36	29
	Good	47	38
	Neutral	12	10
	Poor	14	11
	Very poor	16	13
Reason for purchasing in preferred store	Discount	04	03
	Variety	20	16
	Service	29	23
	Proximity	45	36
	Ambience	27	22
Are you a royal customer	Yes always. I stick to the same product	47	38
	Never. I keep experimenting with new products	21	17
	Only for quality products.where it is a commodity. I choose the leastpriced product	57	46
What help to build a good brand	Quality	21	21
	Communication strategies	29	23
	Competitive pricing	14	11
	Good value added service	17	14
	Free trails and discounts	25	20
	Others	14	11
Company leads to prefeere for such product	Sometimes	67	54
	Always	49	39
	Never	09	07
Endorsed by favorite celebrity	Yes	95	76
	No	30	24
Company sponsorship helps to build a stronger brand	Yes	96	77
	No	29	23
Do you trust in companies products	Yes	49	39
	No	36	29
	Cant say	40	32
Good word of mouth publicity	Yes	66	53
	No	50	40
	Don't know	09	07
Aport from the direct benefit of the product. What else do you look for ?	Image of the product	78	62
	Identification with other users of the brand	47	38
Proportion of branded and unbranded product in	20:80	56	45
	50:50	43	34



your house ?	60:40	14	11
	Other	12	10
Do you experiment with different brand	Yes	63	51
	No	62	49
The price of companies brand	Is as per your expectation	33	26
	Is more than your expectation	31	25
	Is less than your expectation	23	18
	Can't say	38	30
Sources of companies brand information	Family members	10	08
	Peers	20	16
	TV ads	24	19
	Point of sales	20	16
	Website	42	34
	Others	09	07
Satisfaction with current branded products	Highly satisfied	40	32
	Satisfied	31	25
	Neutral	16	13
	Dissatisfied	19	15
	Highly dissatisfied	19	15
Branded products are better then unbranded prioducts	Yes	67	54
	No	58	46

RANKING FACTORS BASED ON THE BRANDED PRODUCTS

SO.NO	PARAMETER	SCORE	RANK
1	Price	2.53	VII
2	Quality	3.04	IV
3	Variety	3.40	II
4	Service	2.84	V
5	Offers	3.51	I
6	Originality	3.36	III
7	Ambience	2.57	VI

FINDINGS**PERCENTAGE ANALYSIS**

- 50 percentage of the respondents are coming between 21-30 years
- 58 percentage of the respondents are male
- 81 percentage of the respondents are married
- 34 percentage of the respondents have completed Degree/Diploma
- 39 percentage of the respondents are employed
- 30 percentage of the respondents have income between Rs.20, 001 – Rs.30,000
- 38 percentage of the respondents have above 6 members in the family
- 40 percentage of the respondents are prefer the daily groceries purchase in their convenience store
- 36 percentage of the respondents opinion is medium about role of advertisements influenced to buy the products
- 42 percentage of the respondents agree about store ambience and merchandising affect perception towards branded products
- 38 percentage of the respondents rated good about peer appreciation about preferred brand
- 36 percentage of the respondents said that proximity is the reason for making purchase in preferred store
- 46 percentage of the respondents said they only bought quality products and they choose the least priced product
- 23 percentage of the respondents said communication strategies is to help brand image
- 54 percentage of the respondents opinion is sometimes they prefer for association of product with a particular group of company
- 76 percentage of the respondents have believe in products that are endorsed by their favourite celebrities



- 77 percentage of the respondents said that company sponsorship is help them build astronger brand
- 39 percentage of the respondents said they have trust about company products
- 54 percentage of the respondents opinion is sometimes they prefer for association of product with a particular group of company
- 76 percentage of the respondents have believe in products that are endorsed by their favourite celebrities
- 77 percentage of the respondents said that company sponsorship is help them build astronger brand
- 39 percentage of the respondents said they have trust about company products
- 53 percentage of the respondents said company products are get goods word of mouth publicity
- 62 percentage of the respondents said they look image of the product
- 45 percentage of the respondents said 20:80 proportion of branded to unbranded products in their house
- 51 percentage of the respondents said that they have experimented with different brands
- 30 percentage of the respondents said that they can't say about price of brand
- 34 percentage of the respondents said that they know the brand information from website
- 32 percentage of the respondents are highly satisfied with current branded products
- 54 percentage of the respondents said branded products are better than unbranded products

CHI SQUARE TEST

- There is significant difference between Age of the respondents and Satisfaction with current branded products

WEIGHTED AVERAGE WITH RANKING

- Customers most important reason for preference of branded products variety is the first rank with weighted average 3.57, originality ranks second with weighted average 3.51
- Customers most important reason for preference of non-branded products offers is the first rank with weighted average 3.51, variety ranks second with weighted average 3.40

CONCLUSION

Convenient shop hours and the offer & discounts are the two factors that contribute more to prefer a particular brand in market. The hyper market need to give more attention to these factors in order to attract and retain their customers. Only one third of the respondents know the brand information from website. The hypermarket could concentrate on giving more ads to attract to their customers. The hyper market concentrate on annual maintenance period of branded items can change over from branded to non branded items.

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IN-VITRO EVALUATION OF DIFFERENT MARKETING BRANDS OF PARACETAMOL TABLETS USING QUALITY CONTROL TESTS

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ABSTRACT

Paracetamol is an active ingredient in the antipyretic and pain relievers class. Various brands of certain formulations are available on the market. The primary goal of the study was to compare 500 mg paracetamol tablet brands in vitro. In vitro evaluation guarantees quality, bioavailability and optimal therapeutic activity.

The active metabolite of phenacetin, paracetamol, is widely used for headaches and pains and is one of the main ingredients in many cold and flu remedies.

In the study, 500mg of paracetamol were selected from 5 different manufacturer's standard tablets. The study was purely experimental and used in vitro testing (IP) and other official literature to evaluate the in vitro quality of paracetamol tablets using various analytical methods and procedures. In the post-evaluation phase, the following post-evaluation parameters were observed: Weight variation, Friability, Hardness, Content uniformity Within the prescribed limit

KEYWORDS: Paracetamol, Comparative, Quality control parameters, Evaluation

INTRODUCTION

Paracetamol or acetaminophen is active metabolites of Phenacetin. It is a widely used over-the-counter analgesic and antipyretic. Chemically, it is 4-hydroxy acetanilide (acetaminophen). Paracetamol is approved for reducing fever in people of all ages. It is frequently used to treat headaches and other mild aches and pains, and it is a key component of many over-the-counter cold and flu medications.

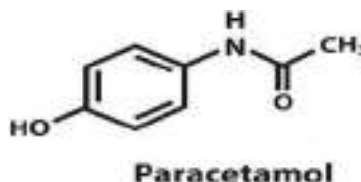


FIG 1

This drug which has well-established metabolic and pharmacokinetic (pKa) profiles is a universally accepted analgesic and antipyretic drug. It is poorly aqueous soluble and its frequency of administration is high due to low bioavailability.

Paracetamol is used for the relief of pains associated with many parts of the body. It has analgesic properties comparable to those of aspirin, while its anti-inflammatory effects are weaker. It is better tolerated than aspirin in patients in whom excessive gastric acid secretion or prolongation of bleeding time may be a concern. Available without a prescription, it has in recent years increasingly become a common household drug.



MATERIALS AND METHODS

TABLE 1 : LIST OF INSTRUMENTS USED

Evaluation methods	Instruments
Weight variation test	Analytical balance
Friability test	Roche friabilator
Disintegration test	Disintegration apparatus
Dissolution test	Dissolution tester (USP) <i>Electrolab tdt-08l</i>
Content uniformity test	UV-visible spectroscopy <i>Jasco v-530</i>

To perform the study paracetamol tablets of five different manufacturers were purchased from the drug store. Both the tablet brands of paracetamol were labeled to contain 500 mg of paracetamol per tablet. The shelf life of the given tablets were from 2-4 years from the date of manufacturing.

Sample to be Identified

The tablet was named as Brand1, Brand2, Brand3, Brand4, Brand5 for paracetamol tablets of different manufacturer. And then the tablet was taken for evaluation.

Procedure of Evaluation

Different analytical methods and tests methods are necessary for pharmaceutical formulation.

For the evaluation there are official and non official tests

- Non official tests:
 - a) Friability
 - b) Hardness
 - c) Thickness
- Official tests:
 - a) Weight variation
 - b) Dissolution
 - c) Content uniformity
 - d) Disintegration

1. Weight Variation:

20 tablets was taken and weighed individually there average was been note down. For all brands percent variation was been calculated.

2. Hardness:

10 tablets were taken and they were placed individually in Monsanto hardness tester. The load required to break the tablet was noted down.

3. Friability

Roche Friabilator was been used. Now rotate the drum at 25 rpm per min or 100 rpm for 4 mins. And then calculate the weight of tablets and take its % using following formula.

$$\% \text{ Friability} = \frac{W_1 - W_2}{W_1} \times 100$$

4. Tablet Disintegration

It was performed in disintegration ip apparatus. 6 tablets were placed in the apparatus containing simulated gastric fluid (0.1N HCl) and temperature was maintained to 37°C. now note down the time taken by tablets to disintegrate.

5. Dissolution

For the test, IP type 1 paddle apparatus was used. Phosphate buffer solution of pH 5.8 (900ml) is measured and transferred into the dissolution flask and the temperature was maintained at $37 \pm 0.5^\circ\text{C}$.

The paddle was rotated at 50 rpm and after an interval of 5min, 5ml was withdrawn and replaced with the phosphate buffer. And this was continued for 1hrs. All samples are filtered using Wattman filter paper. The absorbance at 249 nm is measured in UV-spectrometer using the phosphate buffer solution as a blank.

6. Content uniformity



Weigh and powdered 20 tablets accurately a quantity of powder equivalent to 0.15 grams of paracetamol and 50 ml of 0.1M NaOH, diluted with 100 ml of water Shaked for 15 minutes add sufficient water to produce 200 ml mixed and filtered and diluted 10 ml of filtrate to 100 ml with water. To 10 ml of resulting solution add 10 ml of 0.1 M NaOH dilute to 100 ml with water And measure the absorbance of the resulting solution at about 257 nm. Calculate the contents by taking A (1%, 1cm) as 715 at the maximum 257 nm.

RESULTS AND DISCUSSION

1. Weight variation

The weight variation test of taken paracetamol tablets of all the brands have passed the test and within the specified given limits as per IP that is, with not more than $\pm 5\%$ deviation for tablets above 250 mg.

2. Hardness

In the study, it was found that all the brands of paracetamol tablets have passed the test and is within the limit specified in IP, that is 5-8 kg/cm²

3. Friability

% friability should be up to 0.5 to 1% for all standard compressed tablets & the results were found to be in a specified limit.

4. Disintegration test

The Disintegration time for all the brands of paracetamol tablets must be within 5 mins. The overall disintegration time of all brands of paracetamol is in the range from 1-4 mins.

5. Dissolution

At different time intervals, drug release at 10 min was from 17.9 to 63.07 % and at 18 mins 85.7 to 100.78 % and the values for the Same is shown in the table no 2.

6. Content uniformity

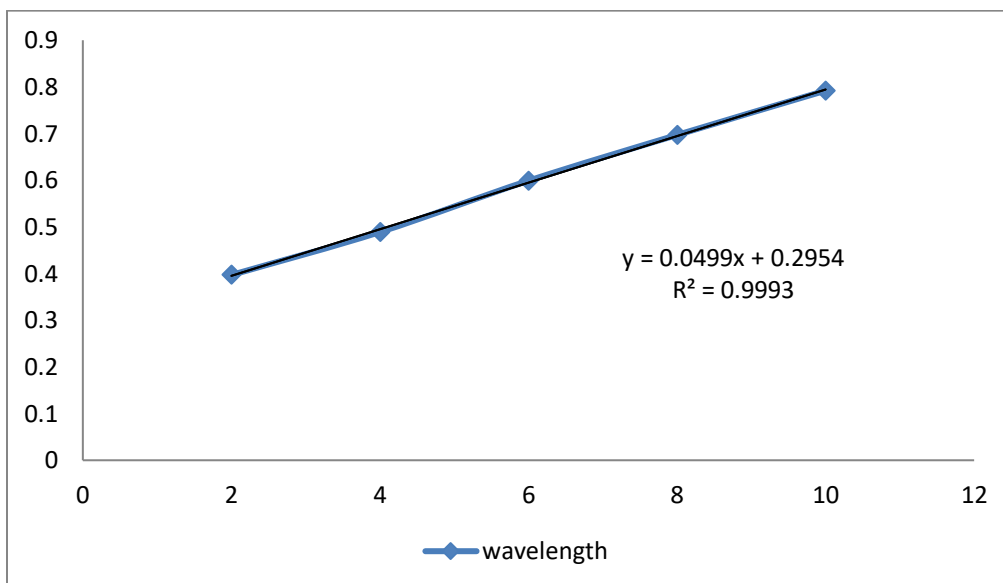
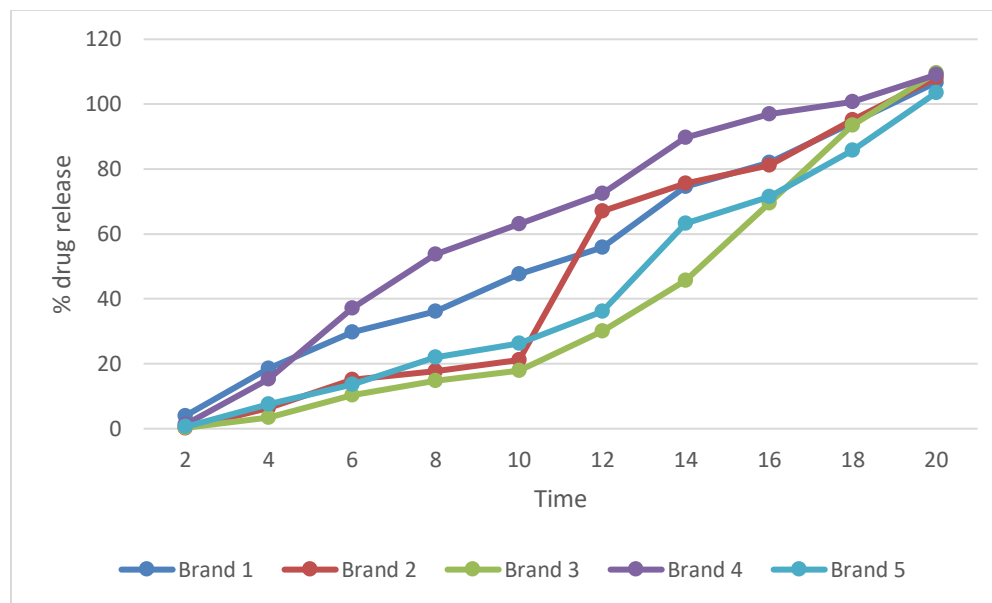
All the tablet brands of paracetamol contained the paracetamol with in $100 \pm 5\%$ of the labelled claim. The IP specifications for assay are that the paracetamol contents should not be less than 95 % and not more then 105.

TABLE 2: EVALUATION OF DIFFERENT QUALITY CONTROL PARAMETERS

Sample	Weight variation (mg)	Hardness (kg/cm ²)	Friability (%)	Disintegration Time (sec/min)	% Drug Content Release	Concentration (%)
1	673.2	4.09	0.447	3	106.69	99.16
2	601.8	4	0.664	3	108.1	98.5
3	569.1	4.98	0.150	4	109.64	98.88
4	597.7	4.03	0.795	2	109.03	98.42
5	640.5	4.99	0.799	1	103.47	98.56

TABLE 3 : CALIBRATION CURVE DATA OF PARACETAMOL

Concentration (µg/ml)	Absorbance
2	0.397
4	0.489
6	0.999
8	0.697
10	0.792

**FIGURE 2: STANDARD CALIBRATION CURVE OF PARACETAMOL****FIGURE 3: Dissolution Profile of Various Brands**

CONCLUSION

This study was conducted to evaluate five different brands of Paracetamol Tablet available in market.

As a result of this study, we have concluded that all the Five brands of Paracetamol Tablet meet all the standard quality parameter for getting its desired therapeutic response. Therapeutic response of any formulation depends on its quality parameters. Various quality control parameters for tablet like weight variation, friability, disintegration time, assay, hardness, thickness and dissolution test were conducted in this work. All the drug disintegrated within a time limit of less than 15 minutes. However, despite the variation, most drugs are within the official limit. At end of this project, we noted that all quality parameters are interconnected with each other and can be alter by disturbing any of them.

So concluding, all marketed PCM tablets of 500mg were under specified IP limits.



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IMPERATIVES OF VOCATIONAL EDUCATION AND SUSTAINABLE DEVELOPMENT IN NIGERIA

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ABSTRACT

*Sustainable development is only possible if there is a critical mass of skilled people as there is increased capital returns when the level of education goes higher and this will push the nation out of the middle income into high economy. Vocational Education (VE) play a pivotal role in the provision of skilled workforce needed for the country's economic transformation. The investigation embraced the adopted for this study is a descriptive survey design. The study was carried out among adolescent making used of 120 students. Three hypothesis formulated, tested and used. The data were analyzed using inferential statistics of Pearson Product Movement correlation (PPMC) and Regression Analysis was used to test the null hypotheses, significance will be taken at 0.05 level. The study found out that there was a positive significant relationship between technical knowledge and sustainable development in Ibadan Oyo State ($r = .446^{**}$, $N = 120$, $p < .05$) among Adolescent in also result shows that there was a positive significant relationship between and vocational skills on sustainable development in Ibadan Oyo State ($r = .484^{**}$, $N = 120$, $p < .05$) among Adolescent in Ibadan Oyo State and significant joint and relative of technical knowledge and vocational skills on sustainable development in Ibadan Oyo State. The study concluded that Lifelong learning is a self-motivated and voluntary pursuit of knowledge for professional or Vocational Education, it takes place throughout life and in many situations. Therefore, it recommended that There should be adequate emphasis on practical aspect of vocational education to enable the recipients acquire skills and reduce the over dependence on government paid jobs, Education and training should be made responsive to the changing needs of the globalized economy and there should be a widened access to education and training as this will reduce social and economic inequality.*

KEYWORDS: *Imperatives, Vocational Education, Sustainable Development*

INTRODUCTION

With the rapid development of the third industrial revolution and knowledge economy in the 21st century, creativity has become an indispensable ability of high-quality human resources (Jauk et al. 2015). One of the most influential international student assessment programs, the Program for International Student Assessment Program (PISA) organized by the OECD, planned to add a new domain, which is a test of creative thinking in 2022, to call on the importance of the cultivation of students' innovative literacy (OECD 2019).

Unemployment and political instability in Nigeria is currently a national concern. Youths and graduates from various institutions looking for employment opportunity increase day by day. Nigeria's educational practices were tailored towards acquisition of the so-called —white collar job after graduation. These so called jobs are no longer there and have not also led us anywhere in the development of our nation. It is important to note that vocational education can be a means to an end. It can be a tool for securing employment and sustainable development in Nigeria. Vocational education is designed to offer training to improve individual's general proficiency especially in relation to their present or future occupation. This training will lead to self-reliance and sustainable development. The present preoccupation with university education in Nigeria reduces socio-economic opportunities of those who are more oriented towards work than academics. Not everyone needs a university education; if everyone becomes a university graduate, who will employ them? One of the goals of vocational education as stated in the National Policy on Education (2004) is to give training and impart the necessary skills to individuals who shall be self-reliant. If this goal is adequately achieved, it would lead to a sustainable technological development.



In pre-colonial Nigeria, learning of the youth was through traditional apprenticeship. Here the apprentice watched the masters and slowly developed abilities to execute practical aspects needed tasks. Later, with the coming of the missionaries, some formal learning was introduced and the Africans were taught basic literacy subjects like masonry, carpentry and agriculture so as to provide cheap labour and not make them self reliant. The European schools on the other hand, were to prepare graduates for white-collar jobs while the Asians education was meant to prepare learners for accounting and book keeping. After independence, the new government wanted to put in place a strong economic base but technical knowhow was not enough since the expatriates were leaving the country. For a country to reach the middle economy cadre, knowledge and social skills are the key engines of social development and economic growth. Education and training should be seen as a lifelong endeavor where one remains relevant and marketable as this will lead him/her to learn quickly and be innovative and in the end lead to lifelong employability. These can only be realized if the quality of training is emphasized and the trainers are willing to adapt the technological advances. All these have been entrenched in Nigeria's Vision 2020, which proposes Technology and Innovation as the main drivers of the economy. Vocational education (VE), has been used by several developed countries as an instrument of development. However, in Africa, VE has not been given the focus it deserves and its significance has not been fully embraced. Studies show that, in Africa funding towards VE is not satisfactorily done, VE training centres have been neglected or overtaken by institutions concentrating on purely academic education. In addition, people tend to view VE in a negative way, as education and training meant for those who have failed in the society. This perception has been aggravated by the lower academic requirements stipulated for admission into VE programmes. Nigeria's Vision 2020 is a national development plan anchored on the newly redefined development concept of 'Sustainable Development' by the three pillars: the economic, social and political on a foundation that aims at transforming Nigeria into a newly industrialized frontier, "middle-income country providing a highly quality life to all citizens by the year 2020" (Kerre, 2010). What is needed therefore, is a workforce with the necessary technological competencies and the capacity to provide for their wants and needs for a quality lifestyle and this can only be achieved through VE institutions which are well equipped (Kerre, 2010). Therefore, this study aimed to focus on the imperatives of vocational education and sustainable development in Nigeria.

LITERATURE REVIEW

Vocational Education

Education in general is an exercise that engages everyone. An individual either goes through liberal, general or vocational education (Osuala, 2004). Vocational education is defined as any form of education whose primary purpose is to prepare persons for employment in recognized occupations (Okoro, 1993). Some authors always refer to the twin concepts — Vocational-technical education in reference to education of skills or skill acquisition.

The Nigerian National Policy on Education (2004) defines technical and vocational education as a comprehensive term referring to those aspects of the educational process involving in addition to general education, the study of technologies and related science and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupation in various sectors of economic and social life.

Immaculate (2005) opined that vocational and technical education are leaving experience meant to be impacted to an individual systematically in order to get him/her adequately equipped for a good employment in a recognized occupation. Ojimba (2012) posited that vocational education encompasses fields of study such as agricultural education, fine and applied arts education, business education and vocational trades in soap making, hair dressing, computer training etc. Based on the above definitions, vocational education is defined in this work as an educational training, which has been designed systematically to enable an individual acquire the basic knowledge, skills, abilities, and understanding needed for one's efficient performance in his/her chosen occupational carrier for self-reliance. Education is recognized as the bedrock of any meaningful development while vocational education in particular is the cornerstone for any sustainable technological development programme.

Sustainable Development

Sustainable Development (SD) has become a ubiquitous development paradigm the catchphrase for international aid agencies, the jargon of development planners, the theme of conferences and academic papers, as well as the slogan of development and environmental activists (Ukaga, Maser, & Reichenbach, 2011). The concept seems to have attracted the broad-based attention that other development concept lack(ed), and appears poised to remain the pervasive development paradigm for a long time (Scopelliti et al., 2018; Shepherd et al., 2016). However, notwithstanding its pervasiveness and popularity, murmurs of disenchantment about the concept are rife as people continue to ask questions about its meaning or definition and what it entails as well as implies for development theory and practice, without clear answers forthcoming (Montaldo, 2013; Shahzadal & Hassan, 2019). SD therefore stands the risk of becoming a cliché like appropriate technology a fashionable and rhetoric phrase to which everyone pays homage but nobody seems to define with precision and exactitude (Mensah & Enu-Kwesi, 2018).



In the attempt to move beyond the sustainability rhetoric and pursue a more meaningful agenda for sustainable development, a clear definition of this concept and explanation of its key dimensions are needed (Gray, 2010; Mensah & Enu-Kwesi, 2018). This need, according to Gray (2010), as cited in Giovannoni and Fabietti (2014), has been advocated by both academics and practitioners in order to promote sustainable development. While it cannot be disputed that literature on SD abounds, issues regarding the concept's definition, history, pillars, principles and the implications of these for human development, remain unclear to many people. Thus, the profusion of literature notwithstanding, further clarification of the unclear issues about SD is imperative since decision-makers need not only better data and information on the linkages among the principles and pillars of SD, but also enhanced understanding of such linkages and their implication for action in the interest of human development (Abubakar, 2017; Hylton, 2019). Succinctly put, a concise and coherent discourse on SD is needed to further illuminate the pathway and trajectory to sustainable development in order to encourage citizenship rather than spectatorship.

Acknowledging the pervasiveness of WCED's definition, as Abubakar (2017) argues that SD is a core concept within global development policy and agenda. It provides a mechanism through which society can interact with the environment while not risking damaging the resource for the future. Thus, it is a development paradigm as well as concept that calls for improving living standards without jeopardising the earth's ecosystems or causing environmental challenges such as deforestation and water and air pollution that can result in problems such as climate change and extinction of species (Browning & Rigolon, 2019).

Looked at as an approach, SD is an approach to development which uses resources in a way that allows them (the resources) to continue to exist for others (Mohieldin, 2017). Evers (2017) further relates the concept to the organizing principle for meeting human development goals while at the same time sustaining the ability of natural systems to provide the natural resources and ecosystem services upon which the economy and society depend. Considered from this angle, SD aims at achieving social progress, environmental equilibrium and economic growth (Gossling-Goldsmiths, 2018; Zhai & Chang, 2019). Exploring the demands of SD, Ukaga et al. (2011) emphasised the need to move away from harmful socio-economic activities and rather engage in activities with positive environmental, economic and social impacts.

It is argued that the relevance of SD deepens with the dawn of every day because the population keeps increasing but the natural resources available for the satisfaction of human needs and wants do not. Hák et al. (2016) maintain that, conscious of this phenomenon, global concerns have always been expressed for judicious use of the available resources so that it will always be possible to satisfy the needs of the present generation without undermining the ability of future generations to satisfy theirs. It implies that SD is an effort at guaranteeing a balance among economic growth, environmental integrity and social well-being. This reinforces the argument that, implicit in the concept of SD is intergenerational equity, which recognises both short and the long-term implications of sustainability and SD (Stoddart, 2011). According to Kolk (2016), this is achievable through the integration of economic, environmental, and social concerns in decision-making processes. However, it is common for people to treat sustainability and SD as analogues and synonyms but the two concepts are distinguishable. Gray (2010) reinforces the point by arguing that, while "sustainability" refers to a state, SD refers to the process for achieving this state.

Sustainable development has been defined by many in various ways. Adebola (2007) defines sustainable development as a kind of development that can be initiated and managed properly in such a way as to give attention to continuity and preservation as people explore an explicit available resources for the enlargement of their existence. Kundan in (Ugoh, 2008) describes sustainable development as a construct, which envision development as meeting the need of the present generation without compromising the needs of the future generation. Okeke in Osuafor (2010) posited that for development to be sustained, there must be human development. According to Arogundade (2011) the major essential tool for achieving sustainable development should include,

- (1) Improving the quality of basic education
- (2) Reorienting existing education programme to address sustainable development.
- (3) Developing public awareness and understanding, and
- (4) Providing training for all sectors of private and civil society.

Kundan further argues that continued sustainable development is only possible or assured when concrete steps are taken to make the youth acquire skills that will enable them to be self-reliant and therefore become the tools for achieving development and its sustainability in Vocational Education in Nigeria

Vocational education and sustainable development

Vocational education has been an integral part of national development strategies in many societies because of the impact on human resource development, productivity and economic growth. To achieve sustainable development, attention should be paid to strengthening



the bridge between education and schooling and preparation for the world of work with attention paid to improving vocational education and training in Nigeria. Technological development of a nation depends on the available technical know-how, the rudiment of which is a function of the quantity and quality of available vocational and technical training. It is a clear view that current preoccupation with university education in Nigeria reduces socio-economic opportunities of those who are more oriented towards work than academics. Graduates of vocational and technical institutions are highly skilled entrepreneurs. They rely on their effort and abilities. Nigerians hire engineers who are being paid huge sum of money to build roads and bridges. These people are graduates of vocational colleges. Unemployment is everywhere in Nigeria because most of our youths lack employability skills that are often acquired from vocational schools.

The society needs competent auto mechanics and truck drivers, carpenters, plumbers, electricians, electronics and computer operators, database, web and network technicians (and other personnel in this category) to function well. These are some of the skill in short supply in Nigeria.

According to Enahoro (2008), vocational education training is utilitarianism and it is a concept of reorganizing the importance of labour. Vocational technical education is the type of education Nigeria needs presently to reshape her crumbling socio-economic status because it is the type of education directed towards the preparation for occupational type since its recipients are equipped to face the challenges of the world of work.

Vocational education entails the enrichment of the capabilities that influence the effective psychomotor or cognitive domains of individual in readiness for entry into the world of work in order to satisfy their intrinsic and extrinsic values, work, and aspirations such that local and national needs would be met. The Federal Republic of Nigeria (FRN, 2004) through its National Policy on Education requires primary school pupils to acquire manipulative skills through some planned practical work taught by the teachers or through resource persons from the town where the school is located as earlier stated. At the secondary school level, effective teaching through practical work is also emphasized.

Challenges Facing Vocational Education in Achieving Sustainable Development in Nigeria

There are numerous challenges facing vocational technical education and training which has affected negatively our national life and national development. Among the numerous challenges are:

Lack of Adequate Training Facilities and equipment

Most vocational education departments in Nigeria universities do not have laboratory or workshop space let alone usable facilities and where they exist, they are grossly inadequate Oduma, (2007) posited that what is seen and referred to as vocational education laboratories in various institutions today is an eye-sore.

Acute shortage of Vocational Technical Teachers

Acquisition of skills requires that strict attention and supervision must be given to every student. With the overwhelming population of students in Nigeria schools, individualized instruction becomes very difficult especially during practicals due to shortage of vocational education teachers. So many studies (e.g. Osuafor 2008) have revealed shortage of vocational technical teachers in our schools.

Poor funding of Vocational Education

Universities in Nigeria are owned and funded by the Federal Government, state government and private individual. In Nigeria, the allocation to education as a share of the GDP is quite minimal. Okeke and Eze (2010), reported that sufficient fund has not been channeled to vocational education which is a major problem plaguing the system. Similarly, Ugiagbe in Okeke (2010) observed that poor funding causes acute shortage of the necessary facilities needed for effective implementation of the programme.

Poor remuneration of Vocational Teachers

Many universities across the country are inadequately staffed because of poor remuneration of vocational teachers. Uwaifo, (2005) opined that academics is not as attractive and commensurate to the effort, commitment and finances put in to acquire it; whereas a first degree graduate can function well in the industry and politics etc and earn good money.

Poor Public Impression and Apathy to Vocational Education

Vocational education in Nigeria has suffered a serious lookdown and obscurity in the past. Olufunke, (2003) observed that parents prefer their children to study courses like pharmacy, medicine, law, accounting etc because they regard vocational education as a course for Never-dowells who could not secure admission into other disciplines.

**Poor emphasis on the practical aspect of Vocational Education**

Most tertiary institutions charged with the responsibility to teach vocational education subjects in Nigeria today are poorly equipped with machines and relevant tools / equipment. Isyaku (2003) noted that vocational education in Nigeria has been bedeviled by inadequate supply of facilities and equipment necessary for acquiring skills and competencies for self-employment.

Aims and objective of the Study

The aims and objective of vocational and technical education as contained in the National Policy of Education revised in 2004 includes:

- To provide technical knowledge necessary for sustainable economic development.
- To provide the vocational skills necessary for sustainable economic development.
- To give training and impart the necessary skills to individual for sustainable development in Ibadan Oyo State.

Hypotheses

Ho1: There is no significant relationship between technical knowledge and sustainable development in Ibadan Oyo State

Ho2: There is no significant relationship between vocational skills and sustainable development in Ibadan Oyo State

Ho3: There is no significant joint and relative of technical knowledge and vocational skills on sustainable development in Ibadan Oyo State

METHODOLOGY

This chapter of the research work intends discussing the methodology which the researcher adopts in carrying out the research.

Design

The design adopted for this study is a descriptive survey design. This design was adopted because it enables the researchers explore the use, competence of Teachers in Technical Education and students in Technical education (TE) in Ibadan Oyo state and would not involve manipulation of variables.

Population of the Study

The population for this study consists of 120 adolescent of the three selected secondary school in Ibadan, Oyo State.

Sample and Sampling Technique

The entire population of 120 participant was used as the sample for the study because it is small in size. According to Israel (2003), the entire population should be used as sample if it is small (e.g. 150 or less) and in order to achieve the desired precision. The simple random sampling technique was adopted to select the sample size.

Instrument of Data Collection

The instrument use for data collection was the questionnaire. Which is in two parts, the questionnaire was titled: technical knowledge and vocational skills on sustainable development Questionnaire:-

Technical knowledge Scale (TKS)

The technical knowledge Scale (TKE) compiled by Beghetto (2006) was used to measure the creative of adolescent.

Vocational skills Scale (VSS)

The vocational skills Scale (VSS) was first compiled by Schutte et al. (1998), was used to measure the vocational skills of adolescent.

Sustainable Development Scale (SDS)

The sustainable development Scale (SDS) developed by Mensah & Enu-Kwesi, (2018), measure the sustainable development of the participants. The questionnaire contains four major parts, (Section A) contains Demographic data of the respondents, (Section B & C) consist of ten items each on the respondents for students. Use a four-point rating scale (Likert Scale Ranking Scale) of Strongly Agree, Agree, Disagree and Strongly Disagree was used in weighing responses to the questionnaire items. Strongly Disagree (SD) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 points, and Strongly Disagree (SD) = 1 point.

Validity of the Instrument

The questionnaire was submitted to the expert in evaluation and validation of instrument for scrutiny in order to ensure face and content validity. It was also given to some experts in the Department of Technical Education to criticize for the purpose of improving the instrument. Their suggestions were reflected into the final copy of the questionnaire by the researcher before it was used for the study.



Reliability of the Instrument

To ascertain the reliability, the instrument was tested using Cronbach alpha method to test the reliability of the instrument. A total of 20 copies of questionnaire were administered to a group of respondent in order to determine the internal consistency of the questionnaire. The responses were analyzed using Cronbach's Alpha with the aid of Statistical Package for Social Sciences (SPSS) version 23. The results yielded a reliability index of 0.867 which was considered very adequate.

Procedure of Data Collection

Copies of the questionnaire were administered by the researcher along with two research assistants. They were distributed in person to person basis to the respondents. The researcher and the research assistants waited for the respondents to answer the questionnaire. The direct delivery approach is used so as to minimize non-responses from the respondents and enable the researcher and his assistant to thoroughly explain the purpose, importance and confidentiality of all information to be given.

Method of Data Analysis

The research instrument used for this study were analyzed using a descriptive one sample mean test and Pearson Product Moment Correlation test while the hypothesis were mainly analyzed using Pearson Product Moment Correlation and Regression analysis at 0.05 level of significant.

RESULTS

Ho1: There is no significant relationship between technical knowledge and sustainable development in Ibadan Oyo State

Table 1: Result of PPMC showing the significant relationship between technical knowledge on sustainable development

Variable	Mean	Std. Dev.	N	R	P	Remark
Sustainable development	44.82	13.53	120	.446**	.043	Sig.
Technical knowledge	48.77	8.605				

*Sig. at .05 level

Table 1 above show that there was a positive significant relationship between technical knowledge and sustainable development in Ibadan Oyo State ($r = .446^{**}$, $N = 120$, $p < .05$) among Adolescent in Ibadan Oyo State. The result rejected the null hypothesis and accepted the alternate hypothesis which states there is significant relationship between technical knowledge on sustainable development in Ibadan Oyo State.

Ho2: There is no significant relationship between and vocational skills on sustainable development in Ibadan Oyo State

Table 2 Result of PPMC showing the significant relationship between and vocational skills on sustainable development

Variable	Mean	Std. Dev.	N	R	P	Remark
Sustainable development	26.78	8.385	120	.484**	.033	Sig.
Vocational skills	48.77	8.605				

*Sig. at .05 level

Table 2 above shows that there was a positive significant relationship between and vocational skills on sustainable development in Ibadan Oyo State ($r = .484^{**}$, $N = 120$, $p < .05$) among Adolescent in Ibadan Oyo State. The result rejected the null hypothesis and accepted the alternate hypothesis which states there is significant relationship between and vocational skills on sustainable development in Ibadan Oyo State.

Ho3: There is no significant joint and relative of technical knowledge and vocational skills on sustainable development in Ibadan Oyo State

**Table 3: Summary of Regression Analysis of the combined prediction of technical knowledge and vocational skills on sustainable development**

.R	R Square	Adjusted R Square	Std. Error of the Estimate			
0.675	0.656	0.837	8.64180			
SUMMARY REGRESSION ANOVA						
	Sum of Squares	Df	Mean Square	F	P	Remark
Regression	105.235	2	126.309	51.628 7.352	0.000 0.042	Sig. Sig.
Residual	23001.660	118	74.681			
Total	23106.895	120				

Table 3 showed there was significant joint contribution of technical knowledge and vocational skills on sustainable development in Ibadan Oyo State. That is sustainable development correlated positively with the independent variables (technical knowledge and vocational skills). The table also shows a coefficient of multiple correlations (R) of 0.675 and a multiple R square of 0.656. This means that 83.7% (Adj. $R^2=0.837$) of the variance in the sustainable development is accounted for by the independent variables, when taken together. The significance of joint contribution was tested at $p<0.05$ using the F- ratio at the degree of freedom (df=2/78). The table also showed that the analysis of variance for the regression yielded a F-ratio of 51.628. The above present is significant at 0.05 level, therefore, the null hypothesis was rejected while the alternate hypothesis was accepted.

Table 4: Relative contribution of the independent variables to the dependent variables (Test of significance of the regression coefficients)

Variable	Unstandardized Coefficients		Standardized Coefficients			
Model	(B)	Std.	Beta	t	Sig.	Remar
Constant	48.332	2.652	-	18.224	.000	-
Technical knowledge	.035	.046	.964	8.759	.004	Sig.
Vocational skills	.067	.287	.333	2.234	.008	Sig.

Table 4 reveals there a significant relative contribution of the independent variables to the dependent variable, expressed as beta weights. The relative coefficients of technical knowledge and vocational skills on sustainable development. Using the standardized regression coefficient to determine the relative contributions of the independent variables. Technical knowledge ($\beta = 0.964$, $t = 8.759$, $p < 0.05$) indicates most potent contributor to the prediction, follow by Vocational skills ($\beta = 0.333$, $t = 2.234$, $p < 0.05$), has a relative contribution to sustainable development. It implies that there was significant relative contribution of technical knowledge and vocational skills on sustainable development in Ibadan Oyo State. The above present is significant at 0.05 level, therefore, the null hypothesis was rejected while the alternate hypothesis was accepted.

DISCUSSION OF FINDINGS

The results revealed that there is significant relationship between technical knowledge and sustainable development in Ibadan Oyo State. The result corroborate the finding of Enahoro (2008) who found that vocational education training is utilitarianism and it is a concept of reorganizing the importance of labour. Vocational technical education is the type of education Nigeria needs presently to reshape her crumbling socio-economic status because it is the type of education directed towards the preparation for occupational type since its recipients are equipped to face the challenges of the world of work. According to Zhai & Chang, (2019) who considered from this angle, Sustainability Development aims at achieving social progress, environmental equilibrium and economic growth

The results revealed that there is significant relationship between and vocational skills and sustainable development in Ibadan Oyo State. The result support the finding of Ojimba (2012) posited that vocational education encompasses fields of study such as agricultural education, fine and applied arts education, business education and vocational trades in soap making, hair dressing, computer training etc. Based on the above definitions, vocational education is defined in this work as an educational training, which has been



designed systematically to enable an individual acquire the basic knowledge, skills, abilities, and understanding needed for ones efficient performance in his/her chosen occupational carrier for self-reliance. Education is recognized as the bedrock of any meaningful development while vocational education in particular is the cornerstone for any sustainable technological development programme. According to Browning and Rigolon, (2019) who stated that a development paradigm as well as concept that calls for improving living standards without jeopardising the earth's ecosystems or causing environmental challenges such as deforestation and water and air pollution that can result in problems such as climate change and extinction of species

There is significant joint and relative of technical knowledge and vocational skills on sustainable development in Ibadan Oyo State. Result was in line with Immaculate (2005) who opined that vocational and technical education are leaving experience meant to be impacted to an individual systematically in order to get him/her adequately equipped for a good employment in a recognized occupation. According to Osuafor (2008) stated that acquisition of skills requires that strict attention and supervision must be given to every student. With the overwhelming population of students in Nigeria schools, individualized instruction becomes very difficult especially during practicals due to shortage of vocational education teachers. So many studies have revealed shortage of vocational technical teachers in our schools.

CONCLUSION

If the middle level colleges continue to offer VE courses by churning out graduates who have hands on the job skills, then these colleges will have carved themselves a niche and hence remain afloat and a source of competitive advantage. Lifelong learning is a self-motivated and voluntary pursuit of knowledge for professional or personal reasons, it takes place throughout life and in many situations. It enhances social, citizenship, personal development, competitiveness and employability hence should be emphasized at all levels of learning. The results of this study are of great significance for improving the sustainability of economy, on the other hand, depends on adoption of appropriate production, distribution and consumption while sustainability of the environment is driven by proper physical planning and land use as well as conservation of ecology or biodiversity. Although the literature is awash with a plethora of definitions and interpretations of SD, implicit in the pervasive viewpoints about the concept is intergenerational equity, which recognises both the short and long-term implications of sustainability in order to address the needs of both the current and future generations

Recommendations

- ❖ It is against this background that the following recommendations are proffered for effective vocational education in Nigeria.
- ❖ Government should provide adequate fund to support polytechnic and technical colleges to ensure that facilities are provided and maintained.
- ❖ The government in partnership with the vocational educators should create awareness on the relevance of vocational education to individuals through workshops, seminars and conferences.
- ❖ Government should provide enough funds by increasing allocation. Proprietors of private institutions should also seek for alternative means of fund through sponsorship and partnership with industries, NGOs and Philanthropists.
- ❖ To ensure sustainable development through vocational education, teachers preparation programmes should be supported and serving teachers adequately remunerated by the government.
- ❖ To combat the poor public perception and misconceptions about vocational education, vocational educators and other stakeholders should embark on aggressive public education and career guidance programmes right from the secondary school level. The education must be geared towards improving the image of vocational education for the public to appreciate.
- ❖ There should be adequate emphasis on practical aspect of vocational education to enable the recipients acquire skills and reduce the over dependence on government paid jobs.
- ❖ Education and training should be made responsive to the changing needs of the globalized economy and there should be a widened access to education and training as this will reduce social and economic inequality.

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A STUDY ON CUSTOMER SATISFACTION TOWARDS USAGE OF DEBIT CARD

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ABSTRACT

A debit card is a payment card that can be used in place of cash to make purchases. It is similar to a credit card, but unlike a credit card, the money for purchase must be in the cardholder's bank account at the time of a purchase and is immediately transferred directly from that account to the merchant's account to pay for the purchase. Debit card is also called "check cards" or "bank cards, they can be used to buy goods or Services, or to get cash from an automated teller machine or a merchant who'll let you add and enter an amount onto a purchase. Debit cards are usually daily limits on the amount of cash that can be withdrawn. Most debit cards are plastic but there are cards made of metal, and rarely wood. Although you have to be aged at least 11 before you are allowed to own a debit card, most types of debit card are not available to fewer than 18. Customer satisfaction (often abbreviated as CSAT) is a term frequently used in marketing. It is a measure of how products and services supplied by a company meet or surpass customer expectation. Customer satisfaction is defined as "the number of customers, or percentage of total customers, whose reported experience with a firm, its products, or its services (ratings) exceeds specified satisfaction goals

KEY POINTS: Customer, Debit card, Usage

INTRODUCTION

The study tries to find out the customer satisfaction towards debit cards. In the era of electronic banking the importance of debit card has increased tremendously. Card appears as a powerful economic engine stimulating growth and generating new opportunities. Therefore, It is important to measure the customer satisfaction debit cards in this electronic era, and also through the study I am trying to find out the factors which influence the usage of debit card. Debit cards are a great way to get more financial freedom without the risk of falling into debt. While most people probably have a debit card from their bank, knowing more about them can make it even more useful for everyday spending. Unlike credit and charge cards, payments using a debit card are immediately transferred from the cardholder's designated bank account, instead of them paying the money back at a later date. Debit cards usually also allow for instant withdrawal of cash, acting as an ATM card for withdrawing cash. Merchants may also offer cash back facilities to customers, where a customer can withdraw cash along with their purchase. Some debit cards carry a stored value with which a payment is made (prepaid card), but most relay a message to the cardholder's bank to withdraw funds from the cardholder's designated bank account. In some cases, the payment card number is assigned exclusively for use on the Internet and there is no physical card. This is referred to as a virtual card.

In many countries, the use of debit cards has become so widespread they have overtaken checks in volume, or have entirely replaced them; in some instances, debit cards have also largely replaced cash transactions. The development of debit cards, unlike credit cards and charge cards, has generally been country-specific, resulting in a number of different systems around the world, which were often incompatible. Since the mid-2000s, a number of initiatives have allowed debit cards issued in one country to be used in other countries and allowed their use for internet and phone purchases.

Debit cards usually also allow an instant withdrawal of cash, known as a cash advance, acting as an ATM card for this purpose. Merchants may also offer cashback facilities to customers, so that a customer can withdraw cash along with their purchase. There are usually daily limits on the amount of cash that can be withdrawn. Most debit cards are plastic, but there are cards made of metal, and rarely wood.



STATEMENT OF THE PROBLEM

In this project 'A study on customer's satisfaction towards debit cards' aims at **identifying** the customer satisfaction towards debit cards. In this electronic world, debit card is very popular in customers for different uses. Because it is entirely different from older version of banking system. Using debit cards, the people can handle their money without carrying. They feel very safe and secure because they can deal their own money without any help of other third party. So, this project tries to find out the customer satisfaction towards debit card, how the people use debit cards in their daily life for different purpose and how they utilised its benefits.

OBJECTIVE

- To study the satisfaction level of customers towards debit cards.
- To find the willingness of the customer to use debit cards for different purposes
- To find out the difficulties faced by the customers while using debit cards
- To find the Benefit of customer satisfaction

RESEARCH DESIGN

Research Methodology

Research can be defined as "an activity that involves finding out, in a more or less systematic way, things you did not know". Research Methodology chapter of a research describes research methods, approaches and designs in detail highlighting those used throughout the study, justifying my choice through describing advantages and disadvantages of each approach and design taking into account their practical applicability to our research.

AREA OF THE STUDY

The study has been covered only in Coimbatore city with specification of SBI employees.

DATA COLLECTION METHOD

Data was collected by primary and secondary data method. Primary data was collected through questionnaires from the debit card users, Coimbatore city; while Secondary data were collected from the Research papers, Articles, Internet research.

PERIOD OF THE STUDY

The study has been conducted for a period of 3 months (January 2023 – March 2023). **SAMPLING TECHNIQUE**
To collect the sample for the purpose of research a sampling was used on the sample size of 137 people.

TOOLS FOR ANALYSIS

The main tools for analysis are

- Simple percentage analysis
- Chi square test

HYPOTHESIS

- **H01:** There is no significant relationship between annual income of the respondents and factors that influence to use debit card.
- **H01:** There is no significant relationship between annual income of the respondents and satisfaction level of customers towards debit card

II. THEORETICAL FRAMEWORK

WHAT IS A DEBIT CARD?

Debit cards are issued by your bank and work as a combination ATM card and credit card. However, unlike a credit card, a debit card links directly to your bank account, using the money you have on deposit to pay for your purchase or make your ATM withdrawal digitally.

HOW DOES A DEBIT CARD WORK?

Debit cards partner with major credit card brands, such as VISA, Mastercard and RuPay, to allow you to use your debit card for payment anywhere those branded cards are accepted. When using your debit card for an in-person purchase, you'll swipe, insert or use contactless pay at the card terminal just like a credit card. You'll then enter your personal identification number (PIN) into the machine, although



some merchants allow you to use your debit card without a PIN. Your PIN is a security measure that verifies your identity. Once your bank verifies you have the money to make the purchase, your transaction is approved. If you look at your bank statement, you might see that your purchase is pending, which means your bank hasn't yet transferred the money to the merchant, even though they've debited your account. When the bank sends the money to the merchant, your transaction will appear approved. When you use your debit card to pay for a purchase or get money from an ATM, you can complete the transaction because you already have the money necessary in your linked account.

TYPES OF DEBIT CARDS

There are four main types of debit cards. The key difference between the types is generally the entity issuing the card.

VISA DEBIT CARDS

Visa belongs to an American multinational financial services corporation. It is universally used and accepted. It is spread over 15,500 financial and government institutions of across 200 countries. The 24 hours of security monitoring is impressive. Visa debit card comes with Visa's zero liability policy which protects the card holders from unofficial charges in case of the stolen or lost card. The continuous monitoring of the card helps them to detect any suspicious activities. It is easy to use, globally accepted and can make online transactions smooth. It is popularly used and available in India.

VISA ELECTRON DEBIT CARDS

The characteristics of Visa debit card and Visa Electron debit cards are almost the same. The purchases are simpler and faster with a Visa Electron Debit Card. You cannot overdraw in case of funds shortage, which makes this card ideal for students or people with limited budgets. Due to its minimum expenditure, there's a control over the money you spend, that makes the demand for this card high.

RUPAY DEBIT CARDS

RuPay is an Indian multinational financial services and payment service system launched in the year 2012 by the National Payment Corporation of India. Reserve Bank of India initiated RuPay with a vision of establishing a national, international and open system of payment. RuPay emphasizes "rupee" and "payment" launched by our country for card payments. It is a widely accepted card at ATMs, point of sale devices and online transactions. The security system is amazing, as it has an embedded microchip that provides additional security against fake cards and also protection against anti-phishing.

MASTERCARD DEBIT CARDS

MasterCard is an American multinational financial services corporation. It is accepted worldwide at over 480 destinations. MasterCard debit cards makes transactions easy at restaurants, shopping malls, online purchases and even monthly bills. The security system is appreciable with zero liability protections and provides ID theft resolution. The 24/7 assistance also monitors issues related to identity theft. It is a famously used debit card in India.

III. ANALYSIS AND INTERPRETATION

SIMPLE PERCENTAGE

DEBIT CARD BENEFITS

Debit card benefits	No. of respondents	Percentage (%)
Online Purchasing	25	18.5
Shopping	46	33.8
Ticket Reservation	23	16.9
Money Transactions	31	22.3
Option 5	12	8.5
Total	137	100.0

(Source: Primary data)

INTERPRETATION

The above table exhibit that 33.8% of the respondents are benefited through Shopping, 22.3% of the respondents are benefited through Money Transactions 16.9% of the respondents are benefited through Ticket Reservation 18.5 of the respondents are benefited through Online Purchasing 8.5% of the respondents are benefited through option 5.

**INFERENCE**

Hence, most (33.8%) of the respondents are benefited through shopping

CHI-SQUARE TESTS

Chi-Square Tests			
	Value	df	Asymptotic(Significance 2-sided)
Pearson Chi-Square	36.966 ^a	12	<.001
Likelihood Ratio	38.065	12	<.001
N of Valid Cases	105		
a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .34.			

INTERPRETATION

H01: There is no significant relationship between annual income of the respondents and factors that influence to use debit card

Ha1: There is a significant relationship between annual income of the respondents and factorsthat influence to use debit card

From the above table, there is no significant relationship between annual income of the respondents and factors that influence to use debit card as significant value is <.001 which is more than 0.05 level of significant.

INFERENCE

Hence, there is no significant relationship between annual income of the respondents and factors thatinfluence to use debit card

Chi-Square Tests			
	Value	df	Asymptotic (Significance 2- sided)
Pearson Chi-Square	32.844 ^a	12	.001
Likelihood Ratio	37.926	12	<.001
N of Valid Cases	105		
a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .34.			

INTERPRETATION

H01: There is no significant relationship between annual income of the respondents and satisfaction level of customers towards debit card

Ha1: There is a significant relationship between annual income of the respondents and satisfaction level of customers towards debit card

From the above table, there is no significant relationship between annual income of the respondents and factors that influence to use debit card as significant value is .001 which is morethan 0.05 level of significant.

INFERENCE

Hence, there is no significant relationship between annual income of the respondents andsatisfaction level of customers towards debit card

SUGGESTION

- The bank should reduce the debit card cost in order to allow clients to acquire a greaternumber of business transaction.
- The banks should sensitize the clients on how to use debit cards effectively in order toallow their clients to use the service worldwide without much problems.
- In order to acquire loans from the banks, they should make sure that the debit card is a mustfor the clients and this will encourage them in use of credit cards effectively.
- The debit card issuer should protect debit card holders' privacy. High interest rate leads toreduction in debit card usage



CONCLUSION

The debit card issue in terms of number of debit cards witnessed a whopping growth during the past five years. In terms of key players SBI has touched the landmark figure of 90 million debit cards by 2015 taking the position of number one player in the segment. It is further concluded that there are a number of bank customers who do not have any knowledge about debit cards. Many people have knowledge about debit cards, but do not possess debit cards because he/she felt rate of service charges high. High income earners and highly educated class use debit cards more, availing debit card limits. Extent of usage of debit cards is smaller among higher proportion of the card holders. Customers' satisfaction is found to be less because of the high rate of service charges. Customers perceived core services and facilitating services at higher level.

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USING KINESIOTHERAPY IN THE REHABILITATION PROGRAM OF CHILDREN WITH CEREBRAL PALSY

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SUMMARY

The article presents the results of the use of decompression trainer and parter articular gymnastics exercises in rehabilitation of children with various forms of cerebral palsy (PTSD), formation and development of basic movement skills, physical fitness and endurance. The rehabilitation program for children diagnosed with PTSD was planned taking into account individual capabilities and needs. In order to increase the effectiveness of the rehabilitation program, the method of replacing training sessions was used. All treatment procedures are based on forms of play. The rehabilitation procedure is adapted to the level of personal development of the child, focusing on his strengths and needs. Passive, active and combined training methods were alternately used. Due to the introduction of the method of using the decompression trainer and parter articular gymnastics in the complex rehabilitation program, the volume of active movements and manipulative activity in patients increases, while the achieved results are preserved for a long time.

KEY WORDS: *children; cerebral palsy; rehabilitation; kinesiotherapy*

Today, the problem of diagnosis of children's cerebral palsy (PTSD) is very relevant for our country. In recent years, the incidence rate of PTSD in the world is on average 2.5 per 1000 newborns. PTSD is a severe disease associated with perinatal damage to the central nervous system (CNS) and is one of the causes of disability in children today. This disease is the cause of the formation of pathology of the locomotor system, which does not pass in a progressive form, which persists throughout a person's life, but of various severity, and leads to the development of pathological structures in the central nervous system, as well as to the violation of the functional functioning of vital internal organs. Experts say that with timely diagnosis, the earliest and long-term rehabilitation treatment of cerebral palsy, it is possible to significantly improve the general condition of patients, and at the same time, it is possible to improve the quality of life and socialization of the child. However, it should be emphasized that today there are no single standard methods of treatment and rehabilitation of this serious disease.

In recent years, kinesiotherapy with the help of decompression trainers has taken an important place in the complex rehabilitation system of children with paresis of arms and legs in various forms of PTSD.

Kinesiotherapy (in English - kinesiotherapy) is considered a direction of physical therapy, and at the same time it is being formed independently as a new system in the field of medicine. Kinesiotherapy is derived from the Greek word kinesis "movement" + therapy "healing" or treatment through movement. Kinesiotherapy is a field of physical rehabilitation in which certain human body conditions, movements - positions, active and passive exercises are used as the main means of treatment. Kinesiotherapy is a scientifically based set of exercises aimed at improving overall strength, endurance and mobility. In PTSD, kinesiotherapy plays a special role, with its correct and systematic application, the results of treatment of MAT pathologies can be high and stable. Practical experiments and theoretical studies have shown that the therapeutic effect of movements in PTSD does not reduce reflex mechanisms, but is carried out at the level of the spinal cord. In patients diagnosed with PTSD, correctly selected exercises and positions activate the affected brain structures with a beneficial effect. A set of special positions and exercises that affect the nervous structures of the head and spinal cord can be described as neurokinesiotherapy.

GOAL OF RESEARCH

to study the effectiveness of the kinesiotherapy method using decompression trainer and parter articular gymnastics exercises in the rehabilitation of children with various forms of PTSD.



MATERIALS AND METHODS

We analyzed the rehabilitation cards of 37 children who underwent a rehabilitation course with the help of a decompression trainer and parter articular gymnastics. Children diagnosed with various forms of PTSD took part in the training: PTSD with bilateral hemiplegia - 7; with spastic diplegia - 21; with spastic-hyperkinetic form - 9 children.

Treatment of children diagnosed with PTSD in a rehabilitation program should be tailored to the child's age and changing needs. The skills necessary for a 2-year-old child to learn about the environment are the skills necessary for a school-age child or the aspirations and needs of an adolescent to be free and independent. is very different. Accordingly, the children undergoing rehabilitation were divided according to age structure: 6 children aged 1-3 years; 3-7 years old - 15 children; 7-10 years old - 6 children; 10 children older than 10 years.

In the rehabilitation program, the decompression trainer and parter articular gymnastics trainings are alternately used. The average duration of the rehabilitation program is two months. Before starting the rehabilitation treatment, the motor skills of the children were significantly limited, 12 of the 39 children had severe motor movement disorders, these children could not walk independently, four of them could not sit independently. The used decompression trainer allows the patient to train voluntary movements and statics, as well as to perform partial tasks: to stimulate the functions of weakened muscles, to reduce muscle hypertonicity and to ensure normal joint mobility. With the help of a decompression trainer and parter articular gymnastics, you can teach the ability to measure and regulate the spatial, temporal and dynamic parameters of movements, develop the ability to coordinate balance, help the development of reflexes, on the basis of which movement skills are formed (sitting, sitting, standing, walking, crossing obstacles and other abilities) can be developed. Decompression trainer and parter articular gymnastics can perform exercises both horizontally and vertically. Before starting rehabilitation procedures, one of the important steps is to assess the mental abilities of the patients and the state of the nervous system together with the rehabilitator and neurologist. Somatic pathologies accompanying sick children are examined by pediatricians. An individual rehabilitation plan was created for each child, taking into account the patient's mobility skills, accompanying diseases and mental-psychological development. Each patient is comprehensively diagnosed. This allows for dynamic evaluation of patients in the current monitoring of treatment procedures, which is especially important for the analysis of the effectiveness of rehabilitation.

The structure of the training consists of two stages. The first warm-up stage: with the help of the instructor, the muscles were warmed up with light exercises, auxiliary equipment and toys were used to attract the child's attention and interest. In the second stage, decompression trainer and parter articular gymnastic exercises were carried out directly. The child was placed on a decompression simulator, and the main part of the training took place on the simulator. The level of exercise performed on the patient's decompression simulator is selected taking into account the severity of movement disorders and the task at hand. In all cases, and for safety purposes, the child is installed in a seat belt. When performing exercises on the horizontal plane, additional means of fixing the head, pelvis, arms or legs, if necessary, and the help of an instructor were used. In cases where the child could not perform the exercises independently, they were performed with the help of two instructors-methodists. After several repetitions, the child was asked to perform the set of exercises independently. Depending on the child's abilities, passive exercises are repeated until the child masters them, and after the ability to perform the task is formed, the next exercises are carried out.

The initial duration of the sessions was extended from 15 to 40 minutes, and the intensity of the loads gradually increased. The treatment course consists of 25 sessions. In severe patients, the method of individual training was used: therapeutic exercises, massage were performed together with decompression trainer and parter articular gymnastic exercises. Training in decompression simulators was carried out according to the principle of periodically repeating stereotypical locomotor system movements of arms or legs, helped to model the spatio-temporal organization of neuromuscular activity. This feature of the method is the basis for the formation and strengthening of "more physiological" in relation to the existing "pathology". In addition, regular exercises on the trainer helped to strengthen parietic muscles, increase their trophism, improve metabolic processes, restore impaired motor functions, and improve the emotional state of the patient. The average number of sessions in decompression trainers is 15, and the average duration of the session is 15-20 minutes. Taking into account the height, endurance and determination of children, the exercises performed by the legs and the lower part of the body were replaced by the exercises performed by the arms with the upper parts of the body. Therapy was conducted based on game forms. The rehabilitation program is tailored to the child's individual developmental level, focusing on their strengths and needs. Passive, active and combined training mode was used (using active-passive mode and "spasm control"). Passive therapy is a method of periodically repeating stereotyped movements of arms and legs with the help of an instructor, a rehabilitator. On the other hand, the active mode was implemented on the simulators, used in cases where the patient was able to independently resist the quantified loads of the simulator.

RESULTS AND DISCUSSION

Before starting and at the end of the treatment course, the state of the general musculoskeletal system, as well as changes in dynamics during training sessions, exercises and loads performed on decompression trainers were evaluated. As a result of a complex therapy course using decompression trainers, most of the patients with spastic forms of the disease improved the indicators of general motor activity, decreased stiffness of the joints. Also, it was found that the time of active training increased



by 3-4 times in children with poor independent mobility (less than 10% of the training time) during training on decompression simulators.

Positive dynamics of highly active movements of children's movement activity during general training in decompression simulators was noted. The most obvious positive dynamics of movement kinematics was noted in children with spastic forms of PTSD. In a survey conducted among parents of patients who received rehabilitation procedures, it was found that half of the patients out of 10 sessions of the treatment course tried to consciously control the movements of their limbs. After completing the training course, patients more actively mastered complex movements such as crawling and walking. As a result of the training, children's orientation towards objects and maintaining the vertical position of their body, leaning on their hands improved somewhat. As a result of increasing muscle strength, children began to maintain a straight spine, and their stature improved. Out of 9 children with severe mobility impairments, 4 children were able to jump. Children diagnosed with bilateral hemiplegia learned to stand on all fours, and positive dynamics were noted. With the help of the simulator, the children got a sense of support on their legs and they were able to take the first steps in their life, which would not have been able to move under normal conditions due to obvious hyperkinesia. No side effects were noted due to the fact that loads were properly dosed during the exercises performed on the simulators and performed in compliance with all safety rules. Positive motor activity results obtained from treatments performed following the principles of continuity and progression of rehabilitation at the time of discharge from the hospital were maintained for a long time in most children.

CONCLUSIONS

When using treadmills in the complex rehabilitation of children with PTS, 35 (89.7%) patients of the research group showed improvement in general motor activity, reduced friction in movements (as a result of reduced joint friction), stabilization of work ability, thus together, it is necessary to form the natural form of movement and the position of the body. Training on exercise machines allows patients to stand for the time that is most convenient for them. With the help of trainers, you can perform exercises that stimulate the functions of weakened muscles and joints.

Due to the regulation of the level of loads, children with different degrees of mobility impairments were able to move freely in any direction, as well as the ability to rotate around their own axis was formed. At the same time, the loads on the locomotor system are combined during training, as a result of which it is possible to maintain a vertical position, the movements of arms and legs are not restricted, while the child is protected from injuries and falls during movement. Implementation of the method of using a decompression trainer and parter articular gymnastics in the complex rehabilitation of children with PTSD significantly accelerates the recovery of basic movement skills. In the studied group of patients, the acquired skills were preserved for a long time during the follow-up.

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COMPLIANCE TO R.A. 11032 EASE OF DOING BUSINESS (EODB) AND EFFICIENT GOVERNMENT SERVICE DELIVERY ACT OF 2018: AN INPUT TO POLICY PROCEDURE OF THE LOCAL GOVERNMENT UNIT OF SAN PABLO CITY, LAGUNA, PHILIPPINES

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ABSTRACT

This study aimed to determine the level of implementation and compliance of the stakeholders to the Ease of Doing Business (EODB) law of the Local Government Unit (LGU) of San Pablo City which can be used for the improvement of processes and delivery of services in the LGU conducted in the year 2023.

Moreover, the research used a descriptive quantitative approach which generated a total of 450 respondents that aimed to study the relationship between the level of efficient government service delivery to the demographic profile of the respondents, challenges encountered by the stakeholders and the level of compliance in the implementation of the Ease of Doing Business. The study found the need for experts on computerization and digital innovation and technological advancement, which clearly shows that the city does not adapt to the transition in line with Ease of Doing Business implementation, streamlined procedures were not practised in the town, which is merely the core component of the law.

Based on the results of the study, Action Plan is being proposed to improve the process and implementation of Ease of Doing Business in the City of San Pablo such as: Improvement on the system or procedure being implemented in the Business One Stop Shop; Implementation of Electronic Database in the City; Improvement of the Citizen's Charter of the City; Providing alternative payment method; and Benchmark with other LGU's within Laguna.

KEYWORDS: *Action Plan, Business One Stop Shop, Ease of Doing Business.*

INTRODUCTION

The Anti-Red Tape Act - ARTA (2018)[1] amendments, the Ease of Doing Business and Efficient Government Service Delivery Act, and improvements to the issuance of construction permits are all ways that the government plans to speed up the distribution of business licenses and permits, according to Organization for Economic Co-operation and Development (2018) [2]. Some actions made in connection to construction permissions include: 1) the creation of a one-stop shop for permits connected to construction; and 2) making business clearance a post-requirement. These actions are anticipated to shorten the transaction's administrative processes from 8 to 23 days and the processing time from 122 to 36 days.

Republic Act (RA) 11032, also known as the or the Ease of Doing Business and Efficient Government Service Delivery Act of 2018, which is an amendment of RA 9485 or the Anti-Red Tape Act of 2007. In the Local Government Unit (LGU) San Pablo City, the City implemented the San Pablo Revenue Code of 1980[3] where it defines the business permit and regulation of the city. These laws and local ordinances seek to promote an increase in efficiency in the current systems and procedures of government services. These were signed to defeat corruption and bureaucratic red tape that stains the reputation of the government (Anti-Red tape Act of 2007). The Ease of Doing Business Act, (ARTA 2018) states that honesty, responsibility, and transparency are expected among all agencies regarding transacting with the public. All government offices and agencies that provide frontline services, such as LGUs, government-owned and government-controlled corporations, are required to adhere to a set deadline for completing assessments and transactions (Anti-Red tape Act of 2007).

Moreover, one of the main issues that EODB Act was signed is because of numerous complaints by entrepreneurs about the tedious and problematic process of applying for permits and licenses. EODB Act seeks to address these issues.

In addressing these issues, the law comes up with a single unifying business application form to be used in processing new business applications for business permits and one form for business renewals. Creation of Business One Stop Shop (BOSS) is created



to serve as a one-stop business facilitation service. Processing of manual or electronic submission of application for license, clearance, permit, certification, and authorization shall be established within local cities and municipalities and shall be facilitated by BOSS.

OBJECTIVES OF THE STUDY

1. Determine the demographic profile of both internal and external stakeholders engaged within the Business One Stop Shop - BOSS
2. Determine the Level of stakeholders' compliance with the Ease of Doing Business Act in terms of accountability, regulation and implementation, functionality and technical aspects
3. Determine the level of challenges encountered in the compliance and efficient service delivery in the Ease of Doing Business in Local Government Unit (LGU) - San Pablo City in terms of work engagement, red tape and adaptability to technology
4. Determine the level of efficient government service delivery of the stakeholders' compliance to the Ease of Doing Business Act concerning transposition, implementation and application
5. Determine significant relationship between demographic profiles, challenges encountered in implementing EODB and efficient government service delivery amongst the stakeholders

MATERIALS AND METHODS

Descriptive quantitative research design was employed in this research that measures relationship among available variables. Descriptive Quantitative research, also known as survey research, gathers numerical data to address inquiries about the accurate status of the study's subject. Grimes & Schulz (2017)[4] mentioned that descriptive studies are frequently the first scientific toes in new areas of inquiry. A clear, specific, and measurable definition of the disease or condition in question is an essential component of descriptive reporting.

Although descriptive studies are closely related to observational studies, they are not restricted to the observation data collection method. Case studies and surveys are also popular data collection methods for descriptive studies (Dudovskiy, 2019)[5].

Population and Sampling Technique

The respondents of this study were the business taxpayers, local government employees and the barangay officials within San Pablo City. The researcher used simple random sampling, purposive and total enumeration sampling techniques to assess data from various strata or subgroups. It allows to quickly obtain a sample population that best represents the entire population being studied. In this research, the respondents aim to collect the demographic profile of the respondents and assess the challenges encountered in the implementation of the law to know if it influences the stakeholders' level of compliance to the Ease of Doing Business Law.

Data Collection Procedure

Two main data-gathering instrument was utilized using questionnaire and interview. The researcher used the probability sampling technique, "stratified random sampling" to create a diverse research sample that represents every group in the population of interest. With this, one can lower the overall variance in the population. This research's primary data collection technique was quantitative surveys and interviews. Questionnaires were distributed to the respondents that were identified. Data was gathered in San Pablo City through personal interviews and surveys.

A quantitative research design was used to analyze the differences and relationships of variables and generate results, suggestions, and generalizations that could contribute to the study (Leavy, 2017)[6]. Statistical Package for the Social Sciences (SPSS) was used to compute the mean and standard deviation for the data collected. The data collected from the respondents were classified and tabulated for further analysis using Frequency and Percentage, Weighted Mean, and Analysis of Variance (ANOVA). Furthermore, the researcher used a descriptive correlational study.

RESULTS AND DISCUSSION

Table 1 Respondents Profile According to Age

Age	<i>n</i>	%
22 – 30	60	13
31 – 39	112	25
40 – 48	149	33
49 - 57	113	25
58 and above	16	4
TOTAL	450	100

Table 1 shows the distribution of respondents in terms of age. The result shows that 33% or one hundred forty-nine (149) of



the respondents are in the 40-48 age group. It was followed by 25% or one hundred thirteen (113) from the age group 49-57 and 25% or one hundred twelve (112) from age group 31-39. Meanwhile, age group 22-30 had a total of 13% or sixty (60) respondents while age group 58 and above had a total of 4% or sixteen (16) respondents. It only shows that the sample data gathered was spread to different age groups, and many employees surveyed was already experienced professional who had been working in the government for several years.

Table 2 Respondents Profile According to Sex

Sex	<i>n</i>	%
Female	211	47
Male	239	53
TOTAL	450	100

Table 2 shows that 53% or two hundred thirty-nine (239) of the total sample are female while 47% or two hundred eleven (211) respondents are male. The Philippine Statistic Authority (2019)[7] reports that 22.2 million, or 57.6 percent, of all employed people were wage and salary workers. 8.3 million, or 37.5 percent, of this total population were women, while 13.9 million, or 62.5 percent, were men. Mulenga (2019)[8] mentioned that gender might have become less relevant and important over time as group members collaborated and spent significant time performing together in specific contexts.

Table 3 Respondents Profile According to Marital Status

Marital Status	<i>n</i>	%
Single	210	47
Married	221	49
Separated	11	2
Widow/Widower	8	2
TOTAL	450	100

Table 3 shows that 49% or two hundred twenty-one (221) of the respondents are married. 47% or two hundred ten (210) of the respondents are single while 2% or eleven respondents are separated, and 2% or eight respondents are

widow/widower. This distribution shows that the researcher has conducted the survey regardless of the marital status of the respondents to provide distinct responses. Atif (2018)[9] stated that marital status is significant because it is linked to employee performance and various maintenance factors in job performance. The social changes that people experience later in life are significantly influenced by their marital status. Various studies have emphasized the significance of job satisfaction, organizational commitment, and work-life balance, central concerns for married and unmarried employees.

Table 4 Respondents Profile According to Educational Attainment

Educational Attainment	<i>n</i>	%
Elementary Graduate	0	0
High School Undergraduate	0	0
High School Graduate	0	0
College Undergraduate	185	41
College Graduate	255	57
With Units in Postgraduate	6	1
Master's Degree holder	3	1
Doctoral Degree holder	0	0
TOTAL	449	98

Table 4 shows that 57% or two hundred fifty-five (255) of the respondents are college graduate. It shows that most of the respondents working related to the Business One Stop Shop have a degree required for a technical staff who will oversee the transaction of the BOSS. Meanwhile, 41% or one hundred eighty-five (185) of the respondents are college undergraduate which are part of the assessment process and support staff to the technical officers and barangay officials working.



Also, post graduate unit earners and master's degree holder are present with 1% or six (6) and three (3) respondents respectively. These respondents cover those employees who are working at the top rank in the workplace, which provided viable inputs for the research.

Table 5 Respondents Profile According to Work Experience

Work Experience	n	%
1 – 7 Years	256	57
8 – 14 Years	174	39
15 – 21 Years	13	3
22 – 28 Years	6	1
29 – 53 Years	1	0
TOTAL	450	100

Table 5 shows that 57% or two hundred fifty-six (256) respondents are new to their work as they fall to the group of 1-7 years of work experience. This group are typically still adjusting to the government system but some of them can also be identified as somehow experienced and trained employees in their work. Meanwhile, 39% or one hundred seventy-four respondents came from the group of 8-14 years work experience. They have been with their organization for a long time and have adapted to the process of their work. Moreover, 3% or thirteen (13) respondents came from 15-21 years of work experience while 1% or six (6) respondents came from the 22-28 years work experience group. This group are good experiences and has been with the organization for the longest time so they can adapt to the challenges and trends that may arise.

Table 6 Profile According to Business Income

Business Income	n	%
Php10,100 – Php30,000	302	67
Php31,000 - Php50,000	89	20
Php51,000 – Php70,000	33	7
Php71,000 – Php90,000	18	4
Php91,000 and above	8	2
TOTAL	450	100

Table 6 shows that 67% or three hundred two (302) respondents are earning Php 10,100 to Php 30,000 net salaries. These businesses are those smallest of the small which often are not registered and secure business permits. However, they emerged as the top respondents showing that they also experience the existing problems in the BOSS even if they only have small business. 20% or eighty-nine (89) respondents are earning Php 31,000 to Php 50,000, these businesses are usually under retail and service sector. 7% or thirty-three (33) respondents are earning Php 51,000 to Php 70,000 while 4% or eighteen (18) respondents are earning Php 71,000 to Php 90,000. Lastly, 2% or eight (8) respondents are earning Php 91,000 and above.

This only means that the survey covers different businesses with different income ranges, which provided different perspectives and experiences within the BOSS in the city. This distribution also shows that the researcher has conducted the survey regardless of the business income of the respondents to provide distinct responses.

Table 7. Level of Stakeholder 's Compliance to the Ease of Doing Business Act in terms of Accountability

Indicative Statement	Mean	SD	Remark
The stakeholders....			
1. are accountable on the results of all the decisions made.	3.22	0.53	Moderately Compliant
2. provide a clear copy of one-time assessment of fees and charges.	3.28	0.53	Moderately Compliant
3. observe acceptability of feedbacks from clients about assessment of performance.	3.20	0.54	Moderately Compliant
4. seek approval of the higher ranked personnel if needed.	3.26	0.59	Moderately Compliant
5. listen from suggestions of the clients to develop relevant skills.	3.14	0.61	Moderately Compliant



6. respond immediately to the needs of the public clientele.	3.24	0.67	Moderately Compliant
7. give the right amount of tax to be imposed to the client.	3.58	0.56	Highly Compliant
8. issue official receipts corresponding to payment received.	3.85	0.36	Highly Compliant
Overall Mean	3.35		Moderately Compliant

Table 7 shows the level of stakeholder's compliance in terms of accountability. Indicator 8 ($M=3.85$, $SD=0.36$) got the highest ranking. We should base the BOSS process on accountability. In that case, all businesses should be issued an official receipt by the LGU, so it is relevant that this indicator got the highest ranking on the survey.

Yanuaría (2021)[10] mentioned that there are six reasons why a company or business should issue an official receipt. She claimed that the accuracy of accounting records to prove the existence of recorded transactions is one of the most significant benefits of getting an official receipt. Without a certified receipt, your accounting records would be lacking, which can be problematic over time.

Meanwhile indicator 5 ($M=3.14$) got the lowest ranking. This indicator of getting feedback from its clients based on their service they provided to provide improvements has been a problem for different organizations. Feedback plays a vital role for the improvement of the process to know what the things are they need to change to provide the best service to the people.

According to Markovic (2016)[11], it should go without saying that feedback is a crucial part of successful learning. Feedback raises a learner's self-esteem, learning drive, and, eventually, achievement. 65% of your employees want more feedback, therefore it's also what they desire. There are many different types and sizes of feedback.

Moreover, the level of stakeholder's compliance in EODB in terms of accountability got an overall mean of 3.35 (moderately compliant) which provides positive feedback from the respondents as they agreed on the indicators presented by the researcher.

Table 8. Level of Stakeholders' Compliance to the Ease of Doing Business Act in terms of Regulation and Implementation

Indicative Statement	Mean	SD	Remark
1. The office strictly regulates the application of business permit to all businesses.	3.12	0.72	Moderately Compliant
2. The office follows all the procedures, steps, costs and requirements to implement the policy properly.	3.03	0.75	Moderately Compliant
3. The office handles encoding of data appropriately.	2.86	0.74	Moderately Compliant
4. LGU-San Pablo City implements the Ease of Doing Business (EODB) in a timely manner.	2.69	0.74	Moderately Compliant
5. Streamlined procedure is properly observed in San Pablo City.	2.65	0.75	Moderately Compliant
Overall Mean	2.87		Moderately Compliant

Table 8 shows the level of compliance in the EODB in terms of regulatory and implementations. Indicator 1 ($M=3.12$) got the highest ranking among all indicators as the respondents agreed that the office is moderately compliant to strictly regulating the application of business permits to all businesses.

Frias (2015)[12] stated in her study that regulation can be viewed in three ways: "as a specific set of commands where regulation involves the promulgation of a binding set of rules to be applied by a body devoted to a specific purpose; as deliberate state influence where regulation has a broader sense and covers all state actions designed to influence industrial or social behavior; and as all forms of social control or influence where all mechanisms affecting behavior are regulatory."

Meanwhile, indicator 5 ($M=2.65$) got the lowest ranking among all indicators. However, the respondents still agreed that the city is moderately compliant with a streamlined procedure and is appropriately observed by the San Pablo City Government. According to Cflow Blogspot (2023)[13], simplifying company procedures helps eliminate duplications and assures the best use of resources. Process and procedure simplification is the best strategy to raise operational effectiveness and boost profits.

Moreover, the level of stakeholder's compliance in EODB in terms of regulatory and implementation got an overall mean of 2.87 (moderately compliant) which provides positive feedback from the respondents as they agreed on the indicators presented by the researcher.

**Table 9. Level of Stakeholders' Compliance to the Ease of Doing Business Act in terms of Functionality and Technical Aspect**

Indicative Statement	Mean	SD	Remark
1. I believe that LGU-San Pablo City can establish an electronic (or on-line) procedure as required in the EODB.	3.13	0.61	Moderately Compliant
2. The online transaction as required in the EODB is much easier and should be fully implemented.	3.00	0.71	Moderately Compliant
3. System-generated procedures should be fully adapted for faster transactions.	3.20	0.65	Moderately Compliant
4. LGU-San Pablo City does not have enough resources to shift to online transaction.	2.59	0.67	Moderately Compliant
5. LGU-San Pablo City has problem on internet connection to implement the electronic or online transaction under EODB.	2.63	0.69	Moderately Compliant
6. San Pablo LGU can complete transactions promptly.	2.77	0.62	Moderately Compliant
Overall Mean	2.88		Moderately Compliant

Table 9 shows the level of compliance in the EODB in terms of functionality and technical aspects. Indicator 3 ($M=3.20$) got the highest ranking among all indicators, as the respondents agreed that the office should have system-generated procedures that should be fully adapted for faster transactions. Calanas (2023)[14] mentioned that you could also help monitor your team's performance while staying connected to your business strategies by implementing efficient systems and processes. It lets employees focus on business growth and meeting objectives rather than worrying about minor details.

In addition, indicator 4 ($M=2.59$) got the lowest ranking among all indicators. However, the respondents still agreed that the City is moderately compliant and needs more resources to shift to online transactions. In her study, Calanas (2023)[14] highlighted that staying ahead of the competition is critical in today's business world. The digital landscape is changing faster than ever, and everyone is taking advantage of it. Employees can provide a consistent, reliable, and high-quality experience for people at various points in their customer journey if they have adequate systems and processes.

Moreover, the level of stakeholder compliance in EODB in terms of functionality and technical aspects got an overall mean of 2.88 (moderately compliant).

Table 10. Level of Challenges Encountered in the Compliance and Efficient Service Delivery in the EODB Act in LGU San Pablo in terms of Work Engagement

Indicative Statement	Mean	SD	Remark
1. I encountered difficulty in seeking good answer and recommendation due to lack of education and training needed to perform the task given.	2.48	0.59	Slightly Compliant
2. Lack of information needed to execute or perform the job properly.	2.47	0.58	Slightly Compliant
3. Employees need for educational service training in handling situational scenarios.	3.30	0.60	Moderately Compliant
4. Employees are not flexible to balance work and personal life.	2.32	0.55	Slightly Compliant
5. Dedication and commitment of the employees to the organization's goal are not well-observed.	2.44	0.64	Slightly Compliant
6. Employees educational background is not properly aligned to their job description or position.	2.66	0.68	Moderately Compliant
Overall Mean	2.61		Moderately Compliant

Table 10 shows the challenges encountered in the compliance and efficient service delivery of EODB regarding work arrangement. Indicator 3 ($M=3.30$) got the highest ranking among all indicators, as the respondents agreed with the employees' need for educational service training in handling situational scenarios.



According to Elmhurst University (2023)[15], service learning is crucial because it links in-class learning to practical experiences in the community. Students who participate are often more engaged citizens, develop their professional and personal interests, obtain valuable skills, and are more profoundly involved in their communities.

Meanwhile, indicator 4 ($M=2.32$) got the lowest ranking among all indicators, as the respondents disagreed that employees need to be more flexible to balance work and personal life.

Thomas (2021)[16] highlighted that having a healthy work-life balance has several advantages for employers. As dedication and motivation to work grow, productivity increases, absenteeism declines, and physical and mental health improves. Getting this equilibrium can also be advantageous for interpersonal interactions. Fulfilling work obligations is an essential part of having a happy life that is not only motivated by financial gain. The daily structure and social identity that professional employment provides and the expectations that must be met are credited by researchers as the causes of this.

Moreover, the level of challenges encountered in the compliance and efficient service delivery of EODB in terms of work arrangement got an overall mean of 2.61 which provides positive feedback from the respondents as they agreed on the indicators presented by the researcher.

Table 11. Level of Challenges Encountered in the Compliance and Efficient Service Delivery in the EODB Act in LGU San Pablo in terms of Red Tape

Indicative Statement	Mean	SD	Remark
1. I encountered problems when it comes to the existence of red tape (fixers) in LGU-San Pablo City.	2.76	0.73	Moderately Compliant
2. Delays in the process due to existence of red tape.	2.71	0.69	Moderately Compliant
3. Excessive unnecessary bureaucratic document requirements in transactions resorted to prolonged delivery of service.	3.04	0.77	Moderately Compliant
4. Allowing employees to transact on behalf of relative's business owners for faster transactions.	3.13	0.66	Moderately Compliant
5. Bribing of government officials leads to corruption.	2.57	0.70	Moderately Compliant
6. No appropriate sanctions were given to fixers.	2.74	0.65	Moderately Compliant
Overall Mean	2.82	Moderately Compliant	

Table 11 shows the challenges encountered in the compliance and efficient service delivery of EODB regarding the red tape. Indicator 4 ($M=3.13$) got the highest ranking among all indicators, as the respondents agreed that the City is moderately compliant with allowing employees to transact on behalf of relative business owners for faster transactions.

It inflicts that according to Kaufman (2016)[17], red tape has been an issue of concern since public administration became a discipline of study. Numerous studies have examined how red tape affects various outcomes, including organizational performance, and have identified red tape as a feature of public companies that has a detrimental impact on organizational practices and employees.

Meanwhile, indicator 5 ($M=2.57$) ranked lowest among all indicators. However, the respondents still agreed that the City is moderately compliant and that government officials are bribed, which leads to corruption.

Moreover, the level of challenges encountered in the compliance and efficient service delivery of EODB in terms of the red tape got an overall mean of 2.82 (moderately compliant).

Table 12. Level of Challenges Encountered in the Compliance and Efficient Service Delivery in the EODB Act in LGU San Pablo in terms of Adaptability to Technology

Indicative Statement	Mean	SD	Remark
1. I find it hard in applying using the system-generated procedure of business permits in LGU-San Pablo City	2.59	0.72	Some of the Time
2. LGU-San Pablo City needs to adapt transition from manual to online application of business permit.	3.12	0.59	Some of the Time
3. Use of electronic resources is not yet implemented in LGU San Pablo City in the application of business permit.	2.63	0.68	Some of the Time
4. LGU-San Pablo City needs additional experts to handle the newly adopted technology with	3.51	0.51	Most of the Time



regards to computerization and digital innovation.			
5. LGU-San Pablo City needs to maximize the use of new technology in the business permit application	3.47	0.52	Some of the Time
6. LGU-San Pablo City has limited capacity to handle big volume of application per day.	2.66	0.73	Some of the Time
Overall Mean	3.00	Some of the Time	

Table 12 shows the challenges encountered in the compliance and efficient service delivery of EODB regarding Adaptability to technology. Indicator 4 ($M=3.51$) got the highest ranking among all indicators as the respondents agreed that most of the time, LGU-San Pablo City needs additional experts to handle the newly adopted technology concerning computerization and digital innovation. Meanwhile, indicator 1 ($M=2.59$) got the lowest ranking among all indicators; although the respondents still agreed on some of the time, they found it hard to apply using the system-generated procedure of business permits in LGU-San Pablo City. ACS Distance Education (2021)[18] stated that being aware of technological

advancements relevant to your business does not imply that you must adopt every new emerging technology. It pays to put in a concerted effort to keep up with any pertinent developments in the field, but it is also wise about the technology to use. New technologies are occasionally passing trends. Others become widely accepted and rapidly growing, so being an early adopter pays off.

Moreover, the level of challenges encountered in the compliance and efficient service delivery of EODB in terms of Adaptability to technology got an overall mean of 3.00 (some of the time).

Table 13. Level of Efficient Government Service Delivery of the Stakeholders' Compliance to the Ease of Doing Business Act concerning Transposition.

Indicative Statement	Mean	SD	Remark
1. Establish and set-up a Business One Stop Shop (BOSS) for systematic and faster transactions.	3.32	0.63	Some of the Time
2. Collects and provides accurate amount of business data released by the BOSS personnel to the business owners.	3.14	0.66	Some of the Time
3. Provides electronic / computerized breakdown of fees and charges.	3.46	0.53	Some of the Time
4. Issues electronic print-out of official receipts.	3.73	0.45	Most of the Time
5. Prompt releasing of business permits.	2.79	0.76	Some of the Time
6. There is no problem in printing, processing, and storing all data collected in the application process.	2.65	0.62	Some of the Time
7. Error is seldom encountered during the filling-up of the application form and processing of the collected data.	2.71	0.62	Some of the Time
Overall Mean	3.11	Some of the Time	

Table 13 shows the level of efficient government service delivery regarding the compliance of EODB concerning transposition. Indicator 4 ($M=3.73$) got the highest ranking among all indicators as the respondents agreed that most of the time, LGU-San Pablo City issues electronic print-outs of official receipts with a similar finding above that the LGU gives official receipts to every transaction.

It connotes that, according to Yanuaria (2016)[10], requesting an official receipt is crucial since it can be used to reduce or avoid paying taxes lawfully. Due to lower net income, the company's tax obligations will be reduced due to the official receipt's ability to be utilized as an expense. Subtracted from sales. Meanwhile, indicator 6 ($M=2.65$) ranked lowest among all indicators. However, the respondents still agreed that sometimes, printing, processing, and storing all data collected in the application process is fine. The privacy of both officials and clients is more. Important than ever in government.

Moreover, the level of efficient government service delivery regarding the compliance of EODB for transposition got an overall mean of 3.11 (some of the time).

**Table 14. Level of Efficient Government Service Delivery of the Stakeholders' Compliance to the Ease of Doing Business Act concerning Implementation**

Indicative Statement	Mean	SD	Remark
1. The office clearly provides the step-by-step procedure in the business permits application.	3.15	0.74	Moderately Efficient
2. The LGU-San Pablo provides spacious BOSS (Business One Stop Shop) to accommodate volumes of clienteles.	3.30	0.65	Moderately Efficient
3. The Citizens Charter is visible within the BOSS.	3.24	0.64	Moderately Efficient
4. The LGU-San Pablo abides with the mandate of no 4. contact / apprehension policy.	2.57	0.75	Moderately Efficient
5. There is alternative payment method option (such as online payment, bank transaction)	2.42	0.75	Slightly Efficient
6. The office allows different payment terms within a year (such as quarterly, semi-annually, annually)	3.64	0.48	Highly Efficient
7. information is available on the website and social media pages to inform the public on the complete procedure	3.05	0.61	Moderately Efficient
8. Officials are open to suggestions and recommendations for efficient service delivery	2.83	0.72	Moderately Efficient
Overall Mean	3.02		Moderately Efficient

Table 14 shows the level of efficient government service delivery regarding the compliance of EODB concerning implementation. Indicator 6 ($M=3.64$) got the highest ranking among all indicators, as the respondents mentioned that LGU-San Pablo City is highly efficient in allowing different payment terms within a year (such as quarterly, semi-annually, and annually).

According to Johnson (2023)[19], clearly defined payment terms will simplify estimating cash flow, taking on new projects, and engaging in new prospects. The company's cash flow may suffer if there is leniency with payment terms or neglect to contact clients with unpaid balances, which, according to U.S. research, is why 82% of small businesses fail. Bank research, it is critical to establish clear payment terms, so customers know what to expect.

Meanwhile, indicator 5 ($M=2.42$) ranked lowest among all indicators. However, the respondents mentioned that it is slightly more efficient if an alternative payment method (such as online payment or bank transaction) is available. Alternative payment methods, sometimes called local payment methods, allow for the distribution of more goods and services to a broader global audience, according to Mileva (2023)[20].

Many companies are increasingly open to accepting non-cash or non-credit card payments. Alternative payment methods (APMs) are modern ways to pay for products and services that have been purchased. They substitute for more traditional payment options like cash or large credit cards.

In addition, the level of efficient government service delivery regarding the compliance of EODB concerning implementation got an overall mean of 3.02 (moderately efficient).

Table 15. Level of Efficient Government Service Delivery of the Stakeholders' Compliance to the Ease of Doing Business Act concerning Application

Indicative Statement	Mean	SD	Remark
1. The office applies all the procedure in line to the EODB	2.69	0.70	Moderately Efficient
2. The office accepts online and manual application procedures.	3.03	0.51	Moderately Efficient
3. The office conducts strategic planning to avoid future problems on the process.	2.61	0.67	Moderately Efficient
4. LGU-San Pablo City adapts to the transition in line to the EODB.	2.56	0.67	Moderately Efficient
5. LGU-San Pablo is open to significant and valuable techniques for faster transaction development.	2.66	0.67	Moderately Efficient
6. Government officials review all the process flow and implementation plan.	2.71	0.73	Moderately Efficient
Overall Mean	2.72		Moderately Efficient



Table 15 shows the level of efficient government service delivery regarding the compliance of EODB to application. Indicator 2 ($M=3.03$) got the highest ranking among all indicators, as the respondents mentioned that LGU-San Pablo City is moderately efficient in accepting online and manual application procedures. Online applications do not need a job seeker to personally meet with a possible employer or coworkers, according to Petersen (2019) [21], The applicant offers evidence of his credentials and expertise for consideration rather than taking a chance on a poor first impression, which might be advantageous for people who are timid or socially awkward. The absence of personal touch, however, can be a disadvantage for candidates who might not (look good on paper); but have other relevant attributes that might only become apparent during the type of informal interview that frequently takes place when someone picks up a job application in person. Meanwhile, indicator 4 ($M=2.56$) ranked lowest among all indicators. However, the respondents mentioned that LGU-San Pablo City is moderately efficient in adapting to the transition in line with the EODB.

Moreover, the level of efficient government service delivery regarding the compliance of EODB for application got an overall mean of 2.72 (moderately efficient), which provides positive feedback from the respondents as they agreed on the indicators presented by the researcher.

Table 16. Significant Relationship between Stakeholders' Demographic Profile and the Level of Efficient Government Service Delivery.

Stakeholders' Demographic Profile	Level of efficient Government Service Delivery		
	Transposition	Implementation	Application
Sex	$r = -.05ns$ $p = .293$	$r = -.080ns$ $p = .089$	$r = -.035ns$ $p = .461$
Civil Status	$r = -.01ns$ $p = .908$	$r = -.024ns$ $p = .614$	$r = -.034ns$ $p = .469$
Age	$r = -.002ns$ $p = .969$	$r = .004ns$ $p = .930$	$r = .005ns$ $p = .923$
Educational Background	$r = .100s$ $p = .033$	$r = .003ns$ $p = .943$	$r = .003ns$ $p = .957$
Work Experience	$r = .018ns$ $p = .701$	$r = -.025ns$ $p = .953$	$r = .034ns$ $p = .477$
Salary	$r = .021ns$ $p = .661$	$r = .034ns$ $p = .471$	$r = -.039ns$ $p = .406$

Table 16 shows that there is no significant relationship between respondents' demographic profile such as sex, civil status, age, educational background, work experience and salary to the level of efficient government service delivery along Transposition, Implementation and Application.

However, Educational Background has generated a significant result with the indicator of transposition since its p value = 0.033 is less than the 0.05 level of significance.

Moreover, the table also shows that there is no significant relationship between respondents' demographic profile and Ease of Doing Business Act in terms of implementation and application since its p value generated a result more than the 0.05 level of significance. The researcher used Anova Test to assess the relationship and differences between the two variables.

**Table 17. Significant relationship between Level of Stakeholders' Compliance to the EODB and Efficient Government Service Delivery.**

Indicators	Level of efficient Government Service Delivery		
	Transposition	Implementation	Application
Stakeholders Compliance			
Accountability	$r = .246s$ $p < 0.05$	$r = .257s$ $p < 0.05$	$r = .173s$ $p < 0.05$
Regulation and Implementation	$r = .179s$ $p < 0.05$	$r = .211s$ $p < 0.05$	$r = .192s$ $p < 0.05$
Functionality and Technical Aspect	$r = .83ns$ $p = .078$	$r = .199s$ $p < 0.05$	$r = .156s$ $p = .001$

Table 17 show shows the significant relationship between stakeholders' compliance and efficient government service delivery level along Transposition, Implementation and Application. The indicators for stakeholders' compliance, accountability, regulation and implementation both generated significant value since their p-value is less than 0.05 significance level. Meanwhile, functionality and technical aspects generated an insignificant result to the transposition since its p-value is 0.078, more significant than the significance level of 0.05. However, this variable generated significant results in terms of implementation and application.

Table 18. Significant Relationship Between Challenges Encountered in the Implementation of EODB and Efficient Government Service Delivery among the group of the stakeholders.

Indicators	Level of efficient Government Service Delivery		
	Transposition	Implementation	Application
Problems Encountered			
Work Engagement	$r = .018ns$ $p = .703$	$r = .085ns$ $p = .462$	$r = .072ns$ $p = .130$
Red Tape	$r = .010ns$ $p = .840$	$r = .006ns$ $p = .906$	$r = -.079ns$ $p = .096$
Adaptability to Technology	$r = .107s$ $p = .024$	$r = .138s$ $p = .003$	$r = .0104s$ $p = .027$

Table 18 shows the significant relationship between challenges encountered in the EODB and the level of efficient government service delivery along Transposition, Implementation and Application.

In the indicators for problems encountered, work engagement and red tape generated a non-significant result since all of its p values are more than the significance level. On the other hand, Adaptability to technology generated significance for all three variables since all its p values are less than the 0.05 significance level.

CONCLUSION AND RECOMMENDATION

Most of the respondents were female micro-business owners ranged from 40-48 years old with monthly business income of 10,000 to 30,000 pesos. Hypothesis prove that the level of government service delivery has no relationship to the demographic profile of the respondents such as sex, civil status, age, work experience, thus accepting the null hypothesis. Hence, employees educational background generated a significant result which correlates the quality of performance of the service providers in the city, thus rejecting the hypothesis.

Furthermore, the stakeholders' compliance in the implementation of the Ease of Doing Business in terms of transposition, functionality and technical aspects were observed in the city. On the other hand, significant result was also shown that LGU-San Pablo City does not adapts to the transition in line with the EODB law which only means that streamlined procedures were not properly practiced in the city, which is merely the core component of the law, It was also observed that faster transactions through computerized business permits and licensing system were not observed in the city, thus rejecting the null hypothesis.

It was proved that compliance to EODB has a strong relationship to the challenges encountered by the stakeholders in terms of adaptability to technology, consequently, the level of government service was greatly affected by application from manual to automation process that indicates the need for system advancement.



Based on the given results, the researcher recommends the following:

- Provide knowledgeable and skilled employees with relevance to technological advancement.
- Add experts on handling mechanism for system-operated procedure.
- Improvement of the system-generated procedure through the Implementation of Electronic Database in LGU San Pablo City with the intervention of the Department of Information and Communications Technology - DICT (2018)[22] to maximize the use of digital technology in line with the streamlining process for government faster transactions.
- Implementation of alternative payment method, many users are using different payment methods such as Gcash, pay maya and bank transaction. This method may improve the overall process of the BOSS in the LGU since it will help them fast-track the process of providing their service to its people.
- Benchmarking on the system and procedures of the other LGUs. One area for further research that can be done by other researchers is to conduct benchmarking on the system and procedures being implemented by the different LGUs in Laguna. A compilation of information on the best practices of the different LGUs may help or guide the LGU-San Pablo City in instituting changes or improvement in its existing system or procedures.

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AN AYURVEDIC PROTOCOL TO ALLERGIC RHINITIS – A CASE REPORT

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ABSTRACT

Allergic rhinitis is an atopic disease presenting with symptoms of sneezing, nasal congestion, clear rhinorrhea and nasal pruritis. It is an IgE mediated immune response that is against inhaled antigens in the immediate phase, with a subsequent leukotriene – mediated late phase. It affects one in six individuals and is associated with significant morbidity, loss of productivity and healthcare costs. The allergic response is classified into early and late phase reactions. In the early phase, allergic rhinitis is an immunoglobulin IgE – mediated response against inhaled allergen that cause inflammation driven by type 2 helper Th 2 cells. The initial response occurs within five to 15 minutes of exposure to an antigen, resulting in degranulation of host mast cells. Four to six hours after the initial response, an influx of cytokines, such as interleukins IL- 4 and IL – 13 from mast cells occurs, signifying the development of the late phase response. In this study, an ayurvedic protocol of sadyovirechana, nasya, therapeutic yoga and shamana aushadi is used to successfully manage a case of allergic rhinitis.

INTRODUCTION

The prevalence of allergic rhinitis in India is Prevalence of allergic rhinitis in India – 11.3% (6-7years) and 24.4 % 13-14 yrs and allergic rhinitis co-occurs in 60-70 % of children with asthma¹ which makes it highly disruptive to quality of life of an individual affected with it. Allergic rhinitis is an inflammatory disorder of the nasal mucosa induced by allergen exposure triggering IgE – mediated inflammation. Clinically, it is characterized by four major symptoms – rhinorrhea, sneezing, itching and nasal congestion. The conventional treatment of allergic rhinitis combines allergen avoidance, pharmacotherapy, and allergen immunotherapy² but long term use of anti histamines could cause headache, fatigue, tachycardia and gastrointestinal effects. Sometimes seizures and cardiac conduction abnormalities can also occur.³ Ayurveda explains pratishyaya in five types of which vataja pratishyaya is one among them. Ayurvedic panchakarma includes vamana, virechana, nasya, basti and raktamokshana. The pratishyaya chikitsa usually involves agni deepana, srotoshodana and vatanulomana. Nasya being the best therapy for urdwajatrugata rogas and first line shodana for nasagata roga, it is being adopted.⁴

CASE REPORT

A 36 yrs male patient came to the outpatient department of KLE Ayurveda Medical College and Hospital, Belagavi with complaints of Excessive clear nasal discharge, nasal obstruction, nasal congestion, excessive sneezing (50-60 times per day) watering from eyes since 3 days. Patient also had mild hoarseness of voice and heaviness in head since 3 days. Patient has continuous episodes of this condition since 2 years on exposure to dust or cold environment.

**On Examination**

EXTERNAL NOSE:	B/L
SHAPE-	NAD
SIZE -	NAD
COLOUR-	NAD
NASAL BRIDGE-	NASAL CREASE
ROOT OF NOSE-	NAD
TIP OF NOSE	NAD
NASAL VESTIBULE	NAD

EAR	RT	LT
PREAURICULAR	NAD	NAD
AURICULAR	NAD	NAD
EAC	CLEAR	IMPACTED WAX
TM	INTACT	INTACT HAZY

On Anterior Rhinoscopy

NASAL CAVITY	Rt	Lt
NASAL MUCOSA	INFLAMMED +	INFLAMMED +
NASAL DISCHARGE	THIN,CLEAR +++	THIN,CLEAR +++
TURBINATES	TH+	TH+
NASAL SEPTUM	NAD	NAD

**Fig 1:Inferior Turbinate hypertrophy in b/l nostrils****On PNS Examination**

FRONTAL SINUS	TENDERNESS +	TENDERNESS+
MAXILLARY SINUS	NO TENDERNESS	NO TENDERNESS

On Endoscopic examination

No polyp or structural abnormalities were found

**Throat Examination**

Posterior Pharyngeal Wall: Congestion

Tonsils: Nad

Uvula: Nad

INVESTIGATIONS

All routine investigations were done and blood reports were taken

Hb	12.9 g/Dl
WBC Count	9800 cells/cumm
Neutrophils	56
Lymphocytes	35
Eosinophils	08
Monocytes	01
ESR	30 mm /1st hour
Absolute Eosinophil Count	720 cells/mm
IgE	480 IU/ml

TREATMENT PROTOCOL

DAY 1	Deepana Pachana-Agnitundi Vati 1bd Chitrakadi Vati 1bd
DAY 2	Sadyovirechana – Eranda Taila- 60ml Ksheera - 40ml
DAY 3 to DAY 9	Mukhaabyanga with nirgundi taila Swedana – nadi sweda Sirovirechana with 5ml Of Ardraka Swarasa+5ml Of 1gm Guda +10ml Of Cow Milk- 6 Drops In Each Nostril Kavala – Triphala+Yashti+Haridra+Saindava Dhumapana – Haridra +Tila taila varti
Day 10 to Day 25	Haridrakhanda 100gm 1/2 Tsp Bd With Honey Before Food + Sitopaladi Churna 50gm + Talisadi Churna 50 Gm + Haritaki Churna 20gm Vynosadi Vati 1 Bd Patient Was Referred To Swastvritta Opd For – Anuloma Viloma And pranayama

RESULTS

The patient had significant improvement in symptoms of excessive sneezing, nasal congestion and nasal discharge. Normal breathing through nose was brought back and complete remission from headache. The appetite and bowel movements of patient were improved. The haematological investigations done on the 10th day had significant improvement in parameters of IgE, ESR, and eosinophil.



On 10 th day, RESULTS,

Hb	13.3 g/Dl
WBC Count	8200 cells/cumm
Neutrophils	53
Lymphocytes	40
Eosinophils	05
Monocytes	02
ESR	12 mm /1 st hour
Absolute Eosinophil Count	450 cells/mm
IgE	290 IU/ml

DISCUSSION

Allergic rhinitis in ayurveda is more or less correlated to vataja pratishya as the causative factors of allergic rhinitis like inhalation of dust particles, ingestion of certain foods, bathing with cold water, seasonal changes, humidity and pollution can be correlated to rajasevana, vishamasana, atijalakrida, rtuvaishmya, avashyaya and dhumasevana respectively. Moreover the symptoms of allergic rhinitis such as nasal obstruction, itching in nose, watery nasal discharge, paroxysmal sneezing, vacuum headache, hoarseness of voice and dryness of oropharynx can be correlated to anaddha nasa, pihita nasa, tanu srava pravartan, kshavatu, shanka nistoda, swara upaghat, gala talu oshta sosha respectively.

	ALLERGIC RHINITIS	VATAJA PRATISHYAYA
1.	NASAL OBSTRUCTION	ANADDHA NASA
2.	ITCHING IN NOSE	PIHITA NASA
3.	WATERY NASAL DISCHARGE	TANU SRAVAPRAVARTAN
4.	PAROXYSMAL SNEEZING	KSHAVATHU
5.	VACUUM HEADACHE	SHANKH NISTODA
6.	HOARSENESS OF VOICE	SWAROPAGHAT
7.	DRYNESS OF OROPHARYNX	GALA TALU OSHTA SOSHA

PROBABLE MODE OF ACTION

The disease itself being vataja pratisyaya caused by pratiloma of vata, agni deepana with chitrakadi vati and agnitundi vati is prescribed followed by sadyovirechana for vatanuloma. Nasya with nagara owing to its ushna virya has vatahara properties and sirovirechana does shodana and balances prana vata. Ginger because of its proven anti-inflammatory and antioxidant properties acts on the inflamed turbinates locally thereby aiding in reducing the symptoms of nasal congestion and obstruction. Here, milk and jiggery are added so as to avoid excess ushnatwa thereby taking care to avoid pitta utklesha.

Dhumapana with haridra and tila taila has local action as anti-inflammatory and anti-infective activity so as to avoid further progress of the disease to upper respiratory infections and the ushnatwa of dhumapana soothes the utklista vata. However, care should be taken to avoid excess ushnatwa by dhumapana. Kavala with triphala, yashtimadhu, haridra and saindava has an overall vata kaphahara property and also acts as an anti-inflammatory and smoothening mechanism in hoarseness of voice and dryness of oropharynx. Yoga plan of anuloma, viloma and pranayama post the nasya helps in the normal flow of pranavata and also clears the upper respiratory pathway of excess mucous. However, care should be taken not to advise anuloma viloma in acute stage of the disease. Samana aushadi haridra



khanda, sitopaladi churna, talisadi churna and laghusutasekara mishraka has overall vatakapha hara property, it is also deepana pachana and srothoshodana.

CONCLUSION

Thus the overall protocol of deepana, pachana, sadyovirechana, sirovirechana, kavala, dhupana, therapeutic yoga and samana aushadi has played a considerable role in reducing the symptoms of allergic rhinitis considerably because of which the haematological allergic parameters of ESR, IgE and eosinophil have reduced significantly post treatment. In ayurveda, many diseases require a protocol of shodana, shamana, rasyana and also yoga as integrative therapy as 80% of non communicable diseases are a result of severe disruption in good lifestyle choices leading to accumulation of small levels of toxic substances in the body and causing dosha and dhatu dushti which in turn require complete shodana and integrative therapy with life style changes.

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INTERNATIONAL EXPERIENCE ON FIGHTING EXTREMISM AND TERRORISM IN CYBER SPACE

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ABSTRACT

The article examines the current issues of combating extremism and terrorism in the global information space, which is increasingly used by extremist and terrorist groups to intimidate society, promote their criminal ideas, attract them to their ranks, and spread plans for possible terrorist attacks. The measures and experience taken by various countries to combat the spread of extremism and terrorism on the Internet are scientifically highlighted.

KEYWORDS: *information age, content, global risk, information attack, security, threat, extremism, radicalization, terrorism, international terrorism, political radicalism, deradicalization, manipulation, migration, idea, ideology, people, state, society, threat, ignorance, enlightenment.*

In all periods of human civilization, one or another problem has had an impact on the spiritual life of society. In the 21st century, which is called the "Information Age", the Internet is a convenient means of obtaining and exchanging information. The rapid development of information communications has created favorable opportunities for humanity, on the other hand, the lack of regulation of the virtual world, the secrecy of its activities, the convenience of posting information in text, image and voice, unlimited audience, the speed of information transmission, ideological and informational attacks, various ideological and spiritual threats are on the rise in the world. is causing a global danger by covering the spirituality of young people with alien ideas. Terrorist organizations and their supporters are masterfully using the internet for their nefarious purposes. In particular, it is one of the strategic factors that enable the wider use of the Internet in the recruitment, financing, propaganda, training of perpetrators, incitement to commit acts of terrorism, as well as gathering and disseminating information for terrorist purposes. In particular, social networks such as Telegram, Facebook, Instagram, YouTube, Odnoklassniki, Twitter, V Kontakte, and Tik Tok, used fake videos to create the worldview of "faith hunters" and He is poisoning the consciousness of ignorant people. Terrorist and extremist sites focus on underage users. This group is one of many. Superficial thinking, lack of critical approach to information, inability to analyze, reports about victims for their righteous cause serve as a good background for "cartoons" or video games. As a prize, virtual money, points, and chips are involved, which must be collected and saved. A particular aspect of terrorist Internet resources is financing and donations to terrorist organizations. Direct appeals for donations are easy to understand, even for a novice user. Internet magazines offering various products, i.e. e-commerce, are well disguised and do not always distinguish between who and what the user is buying. Requests to help sick children, victims of natural disasters or military operations may have come from various charities often backed by terrorists. The saddest thing is that in most cases young people become victims of such attacks. Terrorist propaganda on the Internet is primarily directed at the more influential and marginalized groups of society. Psychological conditions such as marginalization, discrimination, isolation serve as a favorable field for terrorist propaganda, which skillfully leads to radicalization and extremism. In addition to sites that openly promote terrorism (their number is several thousand today), there are a large number of news portals and sites that are not directly related to terrorist organizations, but support their ideology and help terrorists in various ways. Many sites change their e-mail addresses and servers from time to time, and the structure



of extremist and terrorist organizations often includes experts who know foreign languages well, have good skills in hacking computers and other devices, and are familiar with manipulative technologies and user psychology. Undoubtedly, in order to attract highly qualified specialists, terrorist adepts use all possible means, such as ideological and psychological work, blackmail, direct violence against them and their family members. The introduction of advanced information technologies into various spheres of society is the demand of the times. But it also has its own characteristics. At the same time, the information process also causes the following problems:

First, it causes infringement of copyright or intellectual property rights. This situation can be seen in the example of the direct acquisition of information distributed over the Internet today. Copyright protection organizations and plagiarism detection programs were created out of necessity.

Secondly, the possibility of widespread dissemination of unverified, biased information has increased. In fact, internet networks limit responsibility from authors.

Third, it leads to illegal disclosure of confidential, personal information. This sometimes implies material gain or achieving a specific goal, including defamation of a person.

Fourth, the number of websites and social media groups promoting terrorism and other perversions under the guise of religion is increasing day by day. This is a direct threat against spirituality, national and religious values, age-old customs and traditions.

Fifth, it harms moral and national values. Distance communication, a form of relationship consisting only of respect, to a certain extent damages our values, such as service to parents, striving for the welfare of loved ones, providing material and spiritual support to the needy.

Today, many opportunities are being created for young people to get an education and to acquire comprehensive knowledge. We are far from the idea of completely restricting social networks. The situation will not change if we tell the younger generation not to see it, not to get into it. Maybe if we teach them what is good and what is bad if they are educated about it at the right time, it will not have negative consequences.

The analysis shows that young people who do not fully understand that any video and audio materials on social networks with religious content are correct and do not fully understand that these actions lead to a violation and ultimately a crime, taking into account the increasing number of cases of liking these materials, i.e. clicking likes, in educational textbooks, young people are taught fake things on the Internet. It is necessary to form the literacy of distinguishing information, to prevent the ideas of terrorism and extremism in cyberspace, to enrich the topics about its legal consequences.

The world community has been using the practice of blocking sites and content that threaten peace and stability.

In particular, according to the statement of the Federal Prosecutor's Office of the Russian Federation, in 2014 (the highest figure in the last 10 years), 1034 extremist crimes were detected, and two-thirds of them were crimes related to the distribution of extremist materials on the Internet.¹ Therefore, the regulatory bodies of the Russian Federation constantly monitor social networks.

For example, in 2015, the Ostankino District Court in Moscow ordered the blocking of 4 online publications that posted extremist material.²

Also, on March 17, 2015, the French Ministry of the Interior announced that it had blocked 5 sites "whose content incites terrorism or justifies terrorist acts."³

In 1990, the "Computer Misuse" Act was adopted in Great Britain. In 2006, the prison term was increased to ten years for offenses related to the hacking of websites of state organizations and banks. In order to combat the spread

¹ ГП: Пик пресеченных экстремистских преступлений пришелся на 2014 год [Электронный ресурс]. URL: <http://www.rg.ru/2015/03/31/ekstremizm-anons.html> (дата обращения: 25.08.2015).

² http://www.mosproc.ru/news/butirskaya/po_trebovaniyu_butyrskoy_mezhrayonnoy_prokuratury_zablokirovan_dostup_k_chetyrem_internet_resursam_s/2015_r.

³ <https://ria.ru/20150317/1052947656.html> 2015г.



of extremism and terrorism, special bodies and committees operate in the country, including: the anti-terrorist department of the city police, the electronic communication security group under the government communication center.⁴

In 2015, the United States announced the beginning of a new phase of the fight against extremism and terrorism on the Internet, and announced that law enforcement and special services will focus on the Internet.⁵

The German government is also paying serious attention to the issue of combating the promotion of extremist and terrorist ideas on the Internet, despite the fact that many legislative restrictions have been accepted with great opposition by the public, the media and computer companies. According to the law passed in early 2007, attempting to register an e-mail under the name of a fictitious (non-real) person is theoretically considered a crime. In January 2007, German law enforcement agencies launched a special task force designed to identify radical propaganda, as well as analyze the work of some potentially dangerous sites.⁶

On May 17, 2023, the Supreme Court of the Republic of Uzbekistan announced the names of the list of materials prohibited for importation, preparation, distribution and display in the territory of the Republic of Uzbekistan, which were found to be inspired by the ideas of extremism and terrorism.⁷

After all, the priority strategic direction of the development of the state is to ensure the stable development of the country and the free and prosperous life of its citizens. At this point, the President of Uzbekistan Sh.M. Mirziyoyev addressed the issue of radicalism and extremism in his address to the Parliament and said, "We will not allow any kind of radicalization in our society, poisoning the minds of our youth with destructive foreign ideas, using religion for political purposes, and ignorance taking the place of enlightenment. For this, not only responsible organizations, but all of us should work together to reveal the humanitarian essence of our holy religion, to educate our children in the spirit of national and universal values in the family, neighborhood and educational institutions"⁸ is the basis of the solution to this problem.

Therefore, it is necessary to increase the sense of a deep look at the social and political processes taking place in different regions and regions of the world, conflicting conflicts, to organize spiritual and educational work against threats of any kind based on the requirements of the time, especially in this regard, the young generation, who is considered our future, is sacred for each of us. we must mobilize all our strength and capabilities to protect our family from the influence of foreign ideas under the guise of religion.

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THE IMPORTANCE OF SCIENTIFIC AND EDUCATIONAL CENTERS IN AVOIDING THE INFLUENCE OF DESTRUCTIVE FORCES

(In the case of Uzbekistan and the Arab Republic of Egypt)

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ANNOTATION

Respectively approaching to the national history and to the culture, to the intellectual and spiritual ability which considered the biggest wealth in the world, protecting and enhancing it, behaving the offspring with the human customs, moreover, saving them from the diverse strange ideas play the main role in the life of each country in the world.

KEY WORDS: scientific and educational centers, destructive forces, world, national history, ability, research.

The scientific heritage of the great scholars which surprises the world is not the heritage of one nation, but it belongs to whole popularity, and it is the main knowledge and philosophy source to the new generation, significantly it provides new inventions as a durable base undoubtedly.

In order to deeply research and widely promote the rich heritage of Imam Bukhari, the Sultan of Hadith science, and the great thinkers who emerged from the Muslim world, their invaluable contribution to the development of science, and to educate the young generation in the spirit of inter-ethnic and inter-religious tolerance, Imam Bukhari International Scientific Research Center was established on March 27, 2017¹.

To establish inter-religious and inter-civilizational dialogue at the international level, to reveal the humanitarian nature of Islam in today's complex era, when various threats to capture the human heart and mind are increasing, to fight against ignorance with enlightenment, to educate the young generation with humanistic ideas, the Center of Islamic Civilization in Uzbekistan was established by the Decree of the President of the Republic of Uzbekistan dated June 23, 2017².

On September 10, 2017, at the 1st Science and Technology Summit of the Organization of Islamic Cooperation in Kazakhstan, the Muslim community was informed about the project, and the member countries of the organization were called to actively cooperate towards this great goal.

By revealing the true nature of Islam and educating young people in the spirit of love for the Motherland and respect for national and religious values, the ground will be created for restoring the role of our country in the development of today's Islamic civilization. Just as the "House of Wisdom" in Baghdad, Khorezm Ma'mun Academy and the scientific school of Mirzo Ulugbek, established in Samarkand in the 15th century, were the foundations of the upsurges that took place in our country in their time. The Center of Islamic Civilization in Uzbekistan, which is being built in Tashkent, is expected to be the foundation of the Third Renaissance in the history of our country.

¹ Decision No. 2855 of the President of the Republic of Uzbekistan "On measures to establish the Imam Bukhari International Research Center under the Cabinet of Ministers of the Republic of Uzbekistan" dated March 27, 2017.

² Decision No. 3080 of the President of the Republic of Uzbekistan "On measures to establish the Center of Islamic Civilization in Uzbekistan under the Cabinet of Ministers of the Republic of Uzbekistan" dated June 23, 2017.



Studying the heritage of Imam Maturidi, founder of Maturidiyya school, and his followers, researching and promoting their contribution to the science of Kalam and Aqida, improving and protecting the national cultural property, behaving the offspring with the human customs, moreover, saving them from the strange ideas play the main role in the life of each country in the world. On this purpose, on 11 August, 2020, founded the scientific research center named by Imam Maturidi³.

The purpose of these Centers, established at the initiative of the President of Uzbekistan Shavkat Mirziyoyev, is to deeply study the scientific heritage of great scholars who made a great contribution to the development of the Islamic religion, to establish inter-religious and inter-civilizational dialogue at the international level, and to promote the humanistic essence of the Islamic religion, to fight against ignorance with enlightenment, to educate the young generation in the spirit of humanistic ideas and national pride.

On September 19, 2017, in his speech at the 72nd session of the UN General Assembly, President Shavkat Mirziyoyev took the initiative to adopt a special resolution called "Enlightenment and religious tolerance"⁴. On December 12, 2018, the resolution "Enlightenment and religious tolerance" proposed by Uzbekistan was adopted at the plenary session of the UN General Assembly. Special attention was paid to the promotion of the idea of enlightenment, and the importance of integration, mutual respect, compromise, and mutual understanding in order to strengthen security and peace in the world.

On the basis of the grand idea of "Enlightenment against Ignorance", a wide coverage of the true humanitarian essence of religion, virtues such as goodness, peace and humanity are the expression of our ancient values, and intensive organization of scientific and educational activities in this field was launched.

In the spiritual and educational struggle against religious bigotry and extremism, in the Arab Republic of Egypt, which has been clashing with destructive forces for several years and has a lot of experience in this regard, scientific centers operate in this direction.

The Al-Azhar complex⁵ in Egypt is an educational and religious center that forms the intellectual potential of society. Sheikhs of al-Azhar performs the task of training specialists in the religious field. The head of the Al-Azhar complex, the chief imam of Egypt, Ahmed Tayyib, is considered one of the most moderate Sunni religious figures in Egypt. Ahmad Tayyib was criticized by the Morsi regime for being a supporter of Hosni Mubarak and opposing radical groups in the country. He has always emphasized in his speeches that Al-Azhar will never become a propaganda site of the Muslim Brotherhood. In July 2013, under the leadership of Major General Abdul Fattah al-Sisi, he actively supported the overthrow of the regime of Mohammed Morsi. Under the leadership of Ahmed Tayyib, active propaganda against the destructive ideas of radical movements is carried out in the Al-Azhar complex.

In June 2015, under the Al-Azhar complex, the "Al-Azhar Observatory for Combating Extremism" (مرصد الأزهر لمكافحة التطرف) was established, aimed at studying the activities of extremist and terrorist organizations and analyzing the expected threats in advance. It has become one of the main institutions of the Arab Republic of Egypt in the fight against extremism. Its purpose is to monitor processes related to extremist ideas and ideologies disseminated by terrorist groups in mass media.⁶

³ Decision No. 4802 of the President of the Republic of Uzbekistan "On measures to establish the Imam Maturidi International Scientific Research Center" dated August 11, 2020.

⁴ Mirziyoyev Sh.M. The approval of our people is the highest evaluation given to our activities. - Tashkent: Uzbekistan, 2018. - P.244-254.

⁵ The Al-Azhar complex is a large official religious complex in Cairo, which includes a mosque, a university, secondary and special education institutions, and several other structures. The complex was built in 970-972 by order of the Fatimid caliph al-Muiz on a par with the city of Cairo. The Fatimids named it "Azhar" after the name of Fatima Zahra. Al-Azhar has been teaching since 975. At that time, education in Al-Azhar was not limited to religious sciences, but philosophy, logic, mathematics, and medicine were also taught there. In 1961, the decision "On the development of Al-Azhar" was adopted.

⁶ Al-Azhar Observatory for Combating Extremism. <https://www.azhar.eg/observer>



For the study and analysis of such processes, 50 employees with excellent knowledge of foreign languages have been allocated, they monitor extremist ideas and opinions on websites and social media in different languages, and quickly prepare answers and refutations to them in 12 languages. Its official website is available in Arabic, English, Persian, Urdu, German, Japanese, Spanish, Swedish, and French. Also, the "I listen and speak" project was introduced, and this propaganda activity is carried out in cooperation with the Al-Azhar International Fatwa Center.

In November 2016, Al-Azhar International Fatwa Center started its activity in Egypt as part of "Darul-Ifta"⁷. It was established following the decision of the Chief Imam of Al-Azhar, Ahmed Tayyib, to identify and respond to bigoted fatwas on the Internet. About 300 researchers and religious leaders work in the center. In addition to answering questions from different parts of the world, the fatwa center also identifies fake fatwas distributed by extremist platforms.

Today, the Al-Azhar International Fatwa Center organized a live broadcast of "Ask Al-Azhar" to answer questions about Islam. The center has launched its electronic fatwa service and has also provided hotlines for those who send questions.

A counter-propaganda mechanism against radical ideas was developed based on the experience of the "Al-Azhar Observatory for Combating Extremism". It stipulated the implementation of step-by-step measures. In particular, at the initial stage, the Internet and social network sites are monitored, at the 2nd stage, radical content information is identified, at the 3rd stage, a refutation (article, video, photo, expert opinion) is prepared in relation to the radical content information, at the 4th stage, refutations prepared by experts are studied and published on the Internet or social network sites, at the 5th stage, the attitude of Internet users to the published material is studied, and at the final stage, analytical information, refutations, and studies are prepared. Also, articles and opinions published in mass media are studied and statements are made about them.

"Al-Ahram Center for Strategic and Political Studies" (مركز الاحرام لدراسات السياسة والاستراتيجية) started its activity in 1968 and specializes in the study of regional, international political, and strategic issues. Today, the scope of the Center's activities has expanded, and one of its main tasks is to analyze the religious situation in the Middle East region, in particular, to fight against extremism and terrorism.⁸

The Center publishes the quarterly "Situation in Egypt" and the annual "Arab Strategic Report" and "Catalogue of Islamic Organizations" devoted to the analysis of the internal problems of Egypt and the countries in the region.

The center's scientific activities include the analysis of international conflicts, the analysis of internal and external relations in Arab countries, the study of issues related to political, economic, social, military, cultural and historical events in Egypt, as well as the determination of Egypt's role in the region.

This Center plays an important role in promoting Egypt's initiatives in the international arena to maintain peace in the world, ensure stability in the region, and fight against international terrorism.

In recent years, attention has been paid to maintaining peace and tranquility between the two countries, further strengthening interreligious tolerance, and ensuring the well-being of the population as a strategic task.

On September 4-5, 2018, the President of Egypt Abdulfattah al-Sisi paid a state visit to Uzbekistan. During the visit, the leaders of the two countries paid special attention to strengthening regional security, combating international terrorism and extremism.

On February 20-21, 2023, the President of the Republic of Uzbekistan Shavkat Mirziyoyev paid an official visit to the Arab Republic of Egypt. Egyptian President Abdulfattah al-Sisi said at the meeting that promoting moderate Islam and establishing close cooperation in the fight against international terrorism is important for achieving positive results.

⁷ The House of Fatwa was established in 1895 by the leading scholars of Al-Azhar. It prepares fatwas and religious conclusions on contemporary issues based on the Qur'an, Hadith, and Sharia sources. The most influential scholars who are graduates of "Al-Azhar" work in the institution. In its activities, it relies on moderate Islamic views and cooperates with religious institutions of foreign countries.

⁸ The Al-Ahram Center for Political and Strategic Studies in Egypt. <https://www.iicss.iq>



On March 3-4, 2020, the international conference on "Imam Abu Mansur Maturidi and Maturidiyya Teachings: Past and Present" held in Samarkand. At the conference, it was also noted that the fight against the destructive forces of various forms of bigotry, the strengthening of people's social activity, and the importance of "fighting ignorance with enlightenment" are more important than ever.

Sheikh Ahmad Tayyib of the Al-Azhar complex, who participated in the conference, said in his speech: "There is only one way to get out of the "desert of death" that can take the whole community to its end - and that is to restore the heritage of the ancestors, to study it, to introduce it into the educational system, to select the methods that combine intellectual and technical development and contribute to the "New Renaissance" with this heritage. At this point, I express my deep gratitude to Uzbekistan for its leadership in this field. I consider this to be a proud and commendable work."⁹

At the conference, the works being carried out on the organization of scientific research centers specializing in the study and promotion of the religious and spiritual heritage of great scholars were highlighted. The consequences of extremism and terrorism, as well as issues of strengthening international cooperation in combating them, were also discussed. In this regard, it was recognized that the fundamental reforms implemented in the religious sphere in Uzbekistan brought the study of the legacy of great scholars who made a great contribution to the development of Islamic civilization to a new level, the ideas of scholars such as Imam Maturidi, Abu al-Muin al-Nasafi served the development of society and the peace of the country for centuries, and the use of this teaching on the basis of the principle of "enlightenment against ignorance" is having a positive effect in the context of increasing destructive ideologies acting in the name of Islam.

In particular, the Chief Imam of Egypt, Ahmed Tayyib, expressed his full support for Uzbekistan's initiative to fight with "enlightenment against ignorance". He emphasized that the strengthening of mutual cooperation between the two countries is of urgent importance in this direction.

As a conclusion of the above opinions, it can be said that it is important to develop new ideological and spiritual-educational methods of fighting against extremism and terrorism by analyzing the positive experiences of the Arab Republic of Egypt and Uzbekistan in this direction, which have been struggling with religious fanaticism for many years.

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⁹ Imam Abu Mansur Maturidi and the Maturidiyya Teachings: Past and Present // Proceedings of the International Conference. - Tashkent: Mawarannahr, 2020. - P. 3-4.



HISTORICAL-SOURCE ANALYSIS OF THE COSTS SPENT ON THE WATER ECONOMY OF THE MIDDLE ZARAFSHAN OASIS AT THE BEGINNING OF THE 20TH CENTURY

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ABSTRACT

In this article highlights of historical-source analysis of the costs spent on the water economy of the middle zarafshan oasis at the beginning of the 20th century.

KEY WORDS: *Russian Empire, Turkestan region, Zarafshan oasis, water economy, "cotton work", cotton farming.*

One of the main goals of the agrarian policy of the government of the Russian Empire in the Turkestan region was to increase the cultivation of cotton raw materials and transport it as a commodity. With the development of cotton farming, the need arose to regularly improve the irrigation system and reclamation of land in the territory. Such cases would have required the government of the Russian Empire to study the existing land-water relations in the Turkestan region. To this end, colonial administrators implemented a number of measures to study the history of the country.

This is a new phase in the water management history of Zarafshan Oasis and has been instrumental in the scientific study of its water resources and irrigation systems as well as the implementation of preliminary irrigation works towards improving its water supply. The policy of the administration of the Empire in Turkestan was to get as much profit from the territory as possible at the expense of trifles.

During the colonial period, only 50,000 hectares of land in Turkestan was irrigated, and the funds allocated to it did not exceed 50,000 rubles per year. For more than half a century (1865-1917), the imperial government spent a total of 36.4 million rubles for the irrigation of Turkestan, of which 34.9 million rubles (96 percent) date from 1895-1915. Of this, 25 million rubles were spent on the construction of a water farm, the rest of the project to provide a place for exploration, irrigation system and reclamation[1].

From the lands from which the government of the Empire began to assimilate, cotton was harvested higher in the early days. The area of irrigated total land in the locality was increased from 1,100 desyatina in 1901-1905, to 3,000 desyatina, i.e. expanded 3 times.

The issue of the allocation of an additional 3 million 230 thousand rubles for the expansion of irrigation stations (i.e. to reach plots divided into 8-10 desyatina) was introduced into the State Duma, but the duma refused to allocate additional funds in February 1914[2]. This work could only be done at the expense of the material resources of the population.

In the agrarian policy of the colonial administration in the Turkisgon region, two main tasks stood: a) to increasingly strengthen the position of the Imperial government in the Turkestan territory; b) to use the rich natural and economic reserves of the territory in their own interests. The local scientist Prince M.L.Masalsky, in his words, focuses on the issues of land and water in Turkestan, arguing that in order to achieve cheap cotton raw materials, it is necessary to establish a single government of cotton in the territory, take measures to move Russians.

The prime goal and main directions of the Russian Empire, which are considered from the Agrarian Policy in Turkestan, are taken by the minister of state property and ziroat A.V.Krivoshein expressed: "there are three views on this central issue. If in the first there is a glowing inscription "cotton", in the second there is an inscription "watering",



and finally, even if in the third it is not very conspicuous, and in fact, more importantly – the inscription “moving and settling the Russians” stands. The minister expressed the main directions of the center's colonial policy in Turkestan in a very concise, concise way, namely in three words: “cotton”, “irrigation”, “resettlement of Russians”. A.V.Krivoshein emphasizes the initial economic aspect of the issue, trying to clearly substantiate his views. “To our domestic market, over the past 20 years, it has been necessary to pay 700 million rubles for American cotton only as a duty. And since 1900 we demand from 40 million rubles a year”[3].

M.Bradovsky more compactly expresses the role and significance of the Turkestan territory in the chapter of Russian interest. "This territory annexed to the empire," he wrote, " should be regarded as a colony closely connected with the Empire... The site is capable of conveying southern climate products for the need of European Russia's manufacturing industry. With a partly nomadic cattle rancher and partly grassy, mostly peasant population, the colony developed a very low manufacturing industry. That is why it naturally becomes a market where European Russia manufactures are sold agonically" [4].

But there is another important practical aspect to the matter. It is known that by the end of the XIX century, capitalism had developed rapidly in Russia, and this process led primarily to the sharp development of the light industry, especially the textile industry. The raw materials needed for the textile industry were cotton which at the time was mostly purchased from America. In 1894, the Russian Minister of land affairs and state property, who was on a trip to the Turkestan territory, spoke at a meeting of the Yermoloy State Duma and expressed the firm opinion that "Turkestan cotton can compete not only in the domestic market, but also with American cotton, displacing it from consumption altogether by the time." After that, the State Duma created a special “Cotton commission”, cotton production became one of the priorities of government policy. "Cotton raw materials for the textile industry, i.e., began to be supplied with Turkestan cotton. the government of the Empire began to implement its policies consistently.

At the same time, work performed throughout the year: including newly built water structures, the volume of necessary materials spent on them, Labor and sums were recorded in the diary and reported in the work on the surface of the water farm. For example, Dargam is recorded in the Diary of an elder of stream.

Next to the village of Samarkand uezd Jartepa, an iron and brick gated water diversion facility was built on the site where 1048 rubles 59 kopecks were spent in 1904 for the division of the Kazan, Eskidargom canals, or in the same year it was separated from the city ditch to divide the Ark ditch. In addition, a brick tunnel was built to throw the waters of Lake Magiyon Sizot, located near the village of Yerteshar, under the upper Siyab canal into the Zarafshan river, which cost 2324 rubles 25 kopeika[5].

In 1905, a Dargot was built to bring water from the ravine to the new city, which cost 1,565 rubles 53 kopecks, or also a Mullion ditch was extracted from the city's ditch, and a brick-and-mortar was built on his head, which cost 4,113 rubles for the structure. 5,548 rubles were spent on the dargah of Khishrov Arik, 7,639 rubles for the dargah of the Dimishqqi bolo canal, 18 kopecks for the dargah of Khishrov Arik[6].

According to the information from the Diary of the elder Mirzaariq stream, in 1906, 2,225 rubles were spent on 11 kopecks for the arghot of the city stream, which took place from Mirzaariq. It is noted that 2028 rubles were spent on the Dargat of the city stream near the Sozangaran gate. It is also noted in the diary of Anhor stream elder that in 1906, 300 workers were recruited per day to introduce a normal water distribution from this irrigation network, but half or sometimes even less was given the indicated Labour Force[7].

In 1904-1908, 7050 rubles were spent on 10 kopecks in the construction of dargat and water separators along the Obi-rahmat Canal[8].

In 1906-1908, 3023 rubles 66 kopecks were spent on the construction of a new dargat and water exchange in the new urban part of the city of Samarkand. Also, 2004 rubles were spent on 24 kopecks for dargat, which was built in 1908 from Bogishamol to Yumuchka stream[9].



Thus, all of the elder of the ariq were assigned responsible tasks such as meeting the need for water in the farm, eliminating disagreements arising in the irrigation process, collecting information about the state of the water economy and its improvement and communicating them to the uezd and regional irrigation organizations[10].

The establishment of a colonial Irrigation Administration in Turkestan was somewhat regulated by the service fees paid to the mirobs. Although in the early years after the conquest of the territory by Tsarist Russia, for the lower classes of the water industry, including mirob and bandbons were harvested from 2 coins at the expense of double land from farmers as before, “qoshpuli” as well as kafsan, but Russian irrigators and Creek elders who served in the water management administration received salaries at the expense of for example, in the late 19th - early 20th centuries, 99.8 thousand rubles per year were allocated for irrigation workers in the Turkestan Region[11]. This corresponds to 5 kopecks per desyatina area of fertile land in Turkestan[12].

During this period, the head of irrigation in the Samarkand region was charged 2800 rubles for a year's salary, rubles for each of the irrigation techniques, and 1200 rubles for supervisory conductors. The stream elders received a salary from the state from 360 to 720 rubles per year. The total annual salary of 23 stream elders in the Samarkand region was 14,240 rubles[13].

Since 1912, in accordance with the requirements of irrigation services, a certain salary was assigned by the Turkestan administration in place of kafsan, even for mirobs serving in the irrigation of the territory. After that, mirobs began to receive an annual salary from 130 to 240 rubles for work. In the Samarkand region at the beginning of the 20th century there were 454 mirobs, who received a salary of 56,860 rubles for the year. The water meter in hydraulic posts costs from 144 to 900 rubles per salary for hydrotechnicians, for which 786 rubles are allocated in a year. In addition to these, horse controllers were appointed for the purpose of establishing order in the trunk channels, which were assigned a monthly salary of 15 rubles, and each year an average of 2,250 rubles was allocated for these states from 1,800 to 2,700 rubles[14]. For mounted controllers assigned along the Zarafshan River, a salary of 25 rubles per month was set, for which a total of 600 rubles were allocated in a year.

For special measures involved to bring information from hydrometric posts installed along the Zarafshan river to the irrigation manager of the Samarkand region, a salary of 15 rubles to 20 rubles was established, for which 630 rubles were spent in a year. For regional irrigation services in general, 89,350 rubles were spent on an average account in one year[15]. Judging by the information contained in the archival documents, a number of measures of the colonial administration created at the beginning of the 20th century, bills (ceding irrigation works in Turkestan to concessions and, in return, buying and selling the remaining mikdorini with their water to them as personal property, “Water Law of 1910”, etc.) were aimed at practically eliminating the land-water

It is known that at the end of the XIX century, a crisis began, in which Russian agriculture was recognized by the government itself. In the “regulation on the management of the Turkestan territory” of June 12, 1886, special field-exploration groups began to develop irrigated agriculture in the Russian south, to expand irrigation in the Turkestan territory. Later, a legal basis was laid for a wide range of searches and searches carried out in the field of land and water reserves research in the Turkestan region.

In conclusion, irrigated land was divided into field or open land, horticultural and agricultural land, depending on the crops. Irrigation farming was the result of incredibly large labor. The construction of large irrigation facilities and their regular timely cleaning and repair work required large funds, the organized power enthusiasm of a large number of people. By the beginning of XX, agriculture had greatly expanded, the type of crops had increased, cotton sole rule had grown, it was displaced to take it to Russia. As a result of this, the policy of organizational displacement became political and irrigated land expanded.



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INTERACTIONS OF ARCHAEOLOGICAL CULTURES IN THE EARLY MIDDLE AGES IN TASHKENT OASIS

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ABSTRACT

This article refers to the genetic relations and periodical harmony of Burghulik, Qovunchi culture and Shoshtepa memorial. In addition, it deals with the analysis of the division of 1, 2, 3 levels of Qovunchi culture, construction and collection of potteries.

KEY WORDS: *Tashkent oasis, Sogd, Ferghana Valley, Mavaraunnahr, Burghulik culture, Qovunchi culture, Jetiasar culture, Eylatan culture, Shashstapa settlements, ceramic products.*

INTRODUCTION

The Burghulik culture, located in the ancient Tashkent oasis, has been studied as an ancient agricultural culture of the Late Bronze and Early Iron Ages of the region. The periodical date of the Burghulik includes the IX-IV centuries BC, which, in turn, is divided into two stages. Burghulik I belongs to the IX-VII centuries BC, and Burghulik II belongs to the VI-IV centuries BC, there are no signs of architecture in the material culture of the inhabitants of this period, the inhabitants mostly lived in cellar-shaped huts. Pottery products consisted of hand-made, coarse-grained earthenware. Their type is very limited and consists of oval bowls and semi-bowls, earless cubes and jugs, double-necked jugs and palms, wide-bellied cubes with a funnel-shaped handle. They are baked in special one-story barns. The surface of the dishes is light reddish brown, and baked in a brittle state.

RESEARCH METHODS

The research was carried out using objectivity, analysis, synthesis, comparative analysis, generalization and historical chronological methods.

MAIN PART

It is known that the base of the owners of the Burghulik culture was settled local Saks. In terms of shape, the ceramics of the representatives of the Burghulik culture are similar to the pottery products of the Chust and Eylatan cultures of ancient Fergana. In the last phase of the Chust culture and in the monuments of the Eylatan culture, the construction of houses and defense structures from mud appears. The size of the raw materials belonging to the Chust culture is 55x30x10-12; 40-42x20x? cm. [7:228]. Traces of mud walls were also found in Tuyabogiz settlements of Burghulik culture. The size of the bricks is 40-43x24x12 cm.[3:449].

However, construction materials are not found in Shosh I and Shosh II phases of the monument. They are found only from Shosh III stage. According to the character of pottery products and settlements, the Shosh I phase belongs to the Burghulik culture, while the Shosh II phase continues the Burghulik tradition in all areas, the influence of other ethnic groups, that is, representatives of the Jetiasar culture formed in the lower reaches of the Syrdarya, is noticeable in the pottery complex[11:133]. These are gray-black earthenware pots with low double handles, gray-black jugs with flat tall ears, etc., which are ceramics typical of the material culture of the Sarmatian tribes. The arrival of the Sarmatians in the form of the Jetiasar culture into the Tashkent oasis in the Shoshtepa stratigraphy is in the BC. It dates back to the beginning of the III century. They gradually mixed with the local residents of Burghulik and led to the formation of the Qovunchi culture. So, Shosh II stage (III century BC) characterizes the period of transition from Burghulik culture to Qovunchi culture. It is during this transitional period that elements characteristic of the Qovunchi culture (clay wall traces found in Tuyabogiz settlements and the type of Jetiasar people in the anthropological material series) begin to appear. The Shosh III stage is the period in which the Qovunchi culture was fully formed, and the Shosh III complex, unlike the Shosh I and Shosh II stages, is characterized by its own components [11: 134].

1). In material culture, an array of architecture and construction appears. 2). In material culture, a monumental defense complex is formed, which is completely different from an ordinary village. 3). Fundamental qualitative changes occur in material



culture. 4). Based on the mixture of multi-component ethnic groups in the population structure, a new anthropological type is founded, that is, the "Central Asian type between two rivers" specific to the Uzbek people. 5). A military-political state confederation of semi-sedentary and semi-nomadic tribes, that is, the Kang state, will be formed under the leadership of the newly formed ethnos.

The Qovunchi culture, which was formed in the middle basins of the Syrdarya, is divided into three chronological stages:

1). Qovunchi I, its characteristic features: as an innovation in material culture, an architectural building complex, monumental defense structures appear, fundamental quality changes occur in the structure of the archaeological complex, the penetration of pastoral Turkic-speaking ethnic groups among the local population accelerates.

There are radical changes in pottery [1:72-74]: ceramics are made entirely by hand, unlike Burghulik culture pottery products, the bottom of the pottery is flat and flat. Most of the type of dishes is a clear reddish whitish with a faint brown, on which a sweetish brown or black color is whitish. They are tall jugs and cubes, their necks are narrower, the collar-shaped lip is turned slightly outward, and sometimes they have a cross-shaped or triangular-shaped stamp on their shoulders.

The jugs are tall, one-handed, and sometimes the handle is made in the form of an animal. A tap is attached to the jug on the opposite side of the handle. The surface of such jugs is decorated in black, sometimes a colorful pattern is depicted in a wavy form. The third type of vessel is a wide-mouthed, flat-bottomed palm, with a small double handle on the shoulder. The upper part is given a colorful pattern just like the jugs. There are a lot of ceramic pots in the ceramic complex. They are round, bulging, spherical in shape, rough, black on the surface, burnt. Their parts touched by the flame are brownish-red in appearance. The handle is made in the shape of a rope-like or ram-horned animal. Pottery pots of this type resemble single-eared pottery pots of the Prokhorov culture of the Sarmat tribes.

There are many mugs with zoomorphic handles among Qovunchi I ceramics. Their abdomen is spherical, slightly turned out or raised above the shoulder. Cylindrical copies are also found among mugs. The top of the cup holder is finished with an animal figure. Another common type of pottery is the conical bowl below the shoulder, with a wide mouth, a narrower flat bottom, and a shoulder that separates from the conical body. Sometimes there are also copies with double-edged blades.

Among the characteristic ceramic items of the Qovunchi I period, it is possible to show water containers, ceramic pans, incense burners and wick lamps, ceramic lids, pot holders, six hanging pans. The sides of the six hanging pans are depicted in the form of a horned ram's head. In them, realistic images of animals are beautifully expressed with taste.

2). During the period of Qovunchi II, the monumental architecture and defense system continue to develop. The Citadel (Arki-Alo) appears in the architectural complex of this period. For example, in Shoshtepe, a rectangular Arki-Alosi built of straw of the new (Shosh IV=Qovunchi II A) period rises above the circular wall of the Shosh III (Qovunchi I) phase [11: 59-60].

The walls of the citadel will be strengthened up to 4 meters with additional internal devices, the corridors will be turned into rooms. However, in the period of Qovunchi II B (Shosh V), the rooms were filled with raw clay and a straw platform was created inside the outer wall of the Citadel. A new monumental complex will be built on top of it, constructed of the constructions of the Qovunchi II B period, i.e. straw bricks. This complex covers the outer wall of the former Citadel and raises the majestic new Citadel in the form of a rectangle. As a result, the outer wall of the Citadel thickened by 6 m. A wide area was formed on the outer wall, which served as a place for the mechanism of the anti-enemy flint-throwing device.

Ceramics found in different horizons of the citadel consist of jugs and dates, jug and cube, bowls and lids, pans and mugs with zoomorphic handles, pots with baker's heads, and they are widely found in Qovunchi II Phase monuments of the Tashkent oasis, South Kazakhstan and Northern Fergana Valley [11:60-61]. During this period, especially, the production of ceramic lids develops on a large scale. Embossed, fingerprint-printed flowers flourish in the design of dishes. They are designs based on gluing a clay tape to the surface of the vessel, and even rope-like adhesive flowers are spread on pitchers and date pots, mugs and hanging pans. One of the most important innovations for the Qovunchi II Phase was the introduction of the slow-turning hand wheel in pottery. As a result, the production of relatively elegant, thin vessels took the place of earlier crude vessels. In the complex of ceramic vessels, previously unknown jugs with a wide neck, a narrow neck, and one ear, characteristic of the complex of the II-III centuries AD of the Jetiasar culture, appear [1: 75-76].

3). The monumental architecture and defense system will continue to develop in the Qovunchi III complex. The construction of a complex of fire-worshipping temples and the establishment of a vangze property under them will be included. The city is surrounded by defensive walls. Due to the acceleration of urban processes in the large cities of the oasis, the second city is beginning to form in the city. We can see this situation in the example of the Kanga city monument.

In the oasis, millennium BC. From the 3rd century onwards, the first urban life, which began inextricably with the development of agricultural culture, led to the rise of various branches of handicrafts, the development of natural underground raw materials, and, first of all, the development of the mining industry. From the period of Qovunchi II (from the beginning of the 1st millennium AD), mining of semi-metallic ore deposits rich in copper and silver, iron and gold begins. At first, miners absorb them in a simple way, when they come to the surface. Smelting of ores is initially carried out near ore deposits. Little by little, specially specialized mines are emerging for their development. We can include the monuments of Shovgaz, Kadovadtepa, Tashbulok, and Kulota in these specialized mines.

From the period of Qovunchi III, the mining industry becomes the main direction of the economy. Mining and crushing of ore, smelting ore in special furnaces, obtaining pure metal raw materials, making labor and military weapons from it, as well as



the division of labor in the mining industry, that is, the process of specialization in metallurgical production is accelerating. In the Ohangaron valley, cities such as Tunket, specializing in metal production, appear. Life related to metallurgy is accelerating in every big and small town and village of the oasis. Trade related to metallurgy develops, minting of coins is established.

There are controversial arguments among experts on the question of the Qovunchi culture and the chronological dates of its stages. For example, G. V. Grigorev divided the Qovunchi culture into two stages. Since no iron objects were found in the lower layers of Qovunchitepa, he dated the Qovunchi I phase to the end of the Bronze Age, that is, BC. It marks the end of the II millennium and the beginning of the I millennium. According to the archaic nature of the Qovunchi II archaeological complex, BC. He identifies it with the middle of the 1st millennium and emphasizes that it is based on the culture of the Sak tribes [2:39].

A.I.Terenojkin emphasized that the Qovunchi complex was contemporary with the Usun culture, and initially dated it to the millennium BC. He considers it to belong to the first half of the 1st millennium [9: 86-87], and later Qovunchi dates it to the first half of the 1st millennium BC. II-I centuries [9: 84-86]. It was concluded that the woolen complex belongs to II-IV centuries AD [8: 159-160]. S.P. Tolstov states that the first phase of the Qovunchi belongs to the I-II centuries AD, and the Qovunchi II to the II-IV, perhaps the V-VI centuries [10: 175-176]. B.A.Litvinskiy singles out the woolen complex among the monuments of the Qovunchi culture and characterizes it as an independent Jun culture [5: 29-37] and dates it to the III-IV centuries AD [6: 101-102].

T.G.Oboldueva attributes the Qovunchi culture to the beginning of the Christian era and considers it a local variant of the Sughd culture in the Syrdarya basin. L.M.Levina, looking at the Jun monuments as a variant of the Qovunchi culture, adds the Jun complex to the Qovunchi II complex and divides the Qovunchi culture into three stages [4:181-182]. According to the periodic date proposed by him, Qovunchi is the first millennium BC. I, AD III, Qovunchi II AD IV-V, Qovunchi III AD, the beginning of the VI AD are based on the VIII centuries [4: 178-188].

Yu.F. Buryakov, recognizing the division of Qovunchi culture into three stages, identifies the Qovunchi I stage with the II and II centuries BC, the Qovunchi II stage with the II-IV AD, and the Qovunchi III stage with the first half of the IV-VI centuries AD [1: 79]. In this matter, the stratigraphic observations made by M.I. Filanovich in Shoshtepa are closer to the historical truth in our opinion. Because, in the stratigraphy of Shoshtepa, Shosh I (VI-IV centuries BC), Shosh II (III century BC), Shosh III (II-I centuries BC), Shosh IV (early I-III centuries AD), Shosh V (early III century-VI century), Shosh VI (VII-VIII centuries) are divided into stages. If you compare the periodic stages of Shoshtepa with the stages of the Qovunchi culture, you can see the following situation: Shosh-I=contemporaneous with the II stage of Burghulik culture, Shosh-II transitional period, Shosh-III=Qovunchi-I, Shosh-IV=Qovunchi-II A, Shosh-V=Qovunchi-II corresponds chronologically to B, and Shosh-VI to Qovunchi-III. Based on this stratigraphic scheme, it is possible to imagine the absolute chronological dates of the stages of the Qovunchi culture as follows: the periodic date of the Qovunchi-I stage is BC. It can be defined as the beginning of the II-II century AD, the II-IV centuries of Qovunchi-II, the beginning of the V-VIII centuries of Qovunchi-III AD.

CONCLUSION

In conclusion, it can be said that in 2012, during the stratigraphic observation of the upper layers of the temple of Suyurlitepa in the Ohangaron valley, the temple was destroyed during the military campaigns of the Arabs (general Qutayba ibn Muslim) to Central Asia, that is, the invaders set fire to this fire worshiping temple and burned it. After that, the activity of the synagogue stopped. Because, two or three rows of cinders were collected on top of the fire layer of more than 1 m., and thick soil mixed with brick fragments was thrown on them and plastered. Pottery shards belonging to the early Middle Ages (VII-VIII centuries) and several pieces of mysterious ceramic fragments were found among the covered soil. On top of this plastered layer, a series of rectangular adobe bricks of the Samonite period were laid. This scene observed on the ruins of the synagogue is one of the proofs that it is correct to define the upper limit of the Qovunchi III phase with the beginning of the VIII century.

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PREPARATION AND EVALUATION OF MEDICATED HERBAL CANDY OF MAHUA FOR SORE THROAT

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ABSTRACT

Madhuca longifolia commonly known as Mahua belonging to family Sapotaceae, is an Indian tropical tree, known for its sweet flowers which are edible and used by tribals for its medicinal purpose. The known pharmacological activity of the flowers of *Madhuca longifolia* are anti-inflammatory, anti-bacterial, anti-oxidant, analgesic, anti-pyretic and wound healing properties and has no side effect even after consumption of larger doses. The prevalence of throat infections is rising day-by-day due to the increasing pollution, bacterial infection, gastro-intestinal disease, injury, allergies etc. This study aimed to formulate and evaluate medicated herbal candy of Mahua flowers for sore throat. The candy was prepared using a combination of natural ingredients such as dried Mahua flowers, clove, cardamom, cinnamon, honey, corn syrup and lemon juice. The candies were evaluated for their physicochemical parameters and antibacterial properties. The antibacterial property was evaluated by measuring the Zone of Inhibition (ZOI) obtained from the experiment. The results showed that the candy had desirable taste, color, and texture and can be an alternative to conventional sore throat remedies.

KEYWORDS: *Madhuca longifolia*, anti-inflammatory, antibacterial

INTRODUCTION

A sore throat can be defined as painful, dry, or scratchy feeling in the throat. Pain in the throat is one of the most common symptoms seen in most of the population. Sore throats are mainly caused by infections or by environmental factors such as dry air and can also be caused by smoke, chemicals, injury etc. Based on the part of the throat they affect sore throat can be divided into three types: 1. Pharyngitis: Pharyngitis is a type sore throat in which swelling and soreness occur in the throat. 2. Tonsillitis: In this condition swelling and redness of the tonsils occur. 3. Laryngitis: Laryngitis can be defined as swelling and redness of the voice box or larynx.^[5] Sore throats can be caused from infections to injuries. Some of the causes are Colds, the flu, and other viral infections. Mahua candy is a small, typically medicated tablet intended to be dissolved slowly in the mouth to temporarily stop cough, lubricate, and soothe irritated tissue of the throat usually due to a sore or strep throat, possibly from the common cold or influenza. Candy is prepared using natural ingredients that help relieve cough. No side effects are there. The medicated herbs are present in the candy helps soothe and lubricate the irritated throat tissue. People refer to cough drops as lozenges, due to their shape. Many cough drops are not suitable for children as they have pharmaceutical drug in them.

Nowadays this type of product “HARD CANDY” is required, that contains natural ingredients which can be safe for all age groups. Mahua candy contains mahua flowers, honey, Sugar, Cinnamon, Clove, Cardamom, and Lemon are commonly used in our home kitchen and are beneficial for human health.

Madhuca longifolia, also known as mahua, belongs to family Sapotaceae. Mahua flowers are rich source of sugars responsible for sweet taste. It contains Vitamin C which is responsible for antioxidant activities. It also contains Vitamin –A. Mahua flowers contain various minerals like calcium and Phosphorus, and few amounts of proteins and fats. Medicinal properties of *Madhuca longifolia* flowers are Antibacterial, Antioxidant, Anti-inflammatory, Analgesic, Antipyretic, Anti-ulcer, wound healing activities.^[7]

Cinnamon: Also, known as Cinnamon bark, Kalmi, Dalchini, Taj, Ceylon cinnamon. The known properties of cinnamon are astringent, stomachic and carminative. It has anti-inflammatory properties. It is anti-microbial so inhibiting the growth of bacteria



and fungi.^[4]

Clove: Synonyms are Caryophyllum, Clove flower, Clove buds and Laung. Clove is used as carminative, stimulant, flavoring agent and as an anti-antiseptic. Clove is also used as Dentalanalgesic in toothache. It is also used as a spice in culinary purpose for flavoring the food dishes, pickles.^[4]

Cardamom: Also known as Cardamom fruit, Cardamom seeds. Cardamom is used as carminative and Stimulant. In India, green cardamom is broadly used to treat in teeth and gums. It is also used to.^[4]

Honey: Synonyms are Madhu, Honey purified, Mel and Madh. Honey is known for its anti-microbial and wound healing properties. It is commonly used as a home remedies in case of throat infection.^[2]

MATERIALS AND METHODS

Table 1: Formulation table for Madhuca candy

Sr no.	Ingredients	Quantity taken (1 tbsp. = 14.7 ml) (1 tsp. = 4.2 g)
1	Mahua pulp	2 tbsp
2	Clove	1 tsp
3	Cardamom	1 tsp
4	Cinnamon	1 tsp
5	Honey	2 tbsp
6	Sugar syrup	1 tbsp
7	Corn syrup	1 tbsp
8	Lemon juice	q.s

Methods of making mahua candy

1) Procedure for making mahua pulp

The dried flowers of madhuca longifolia were taken



The flowers were washed and cleaned to remove the foreign particles



The cleaned flower was taken and soak them for 24 hrs.



The soaked flower were ground in the mixture and paste was prepared.^[1]

2) Procedure for Making Mahua Candy:

Add 2 tbsp. Corn syrup, 3 tbsp. Sugar syrup and mahua flower pulp in pan and heat it on medium flame.

Add 2 tbsp. Honey, ½ tsp clove, cardamom. Lemon juice

Boil the mixture with continuous stirring for 15-20 min. On a medium flame until desired consistency is obtained

Pour the hot thick mixture of mahua paste in the candy Mould and allow it to cool at room temperature and refrigerate for 30 min.

Demould the candies and coat them with fructose sugar if needed.^[1]



Fig 1: Medicated herbal candy of Mahua for sore throat

EVALUATION PARAMETERS FOR MAHUA CANDY**1) Physical parameters/ Sensory evaluation**

The hard cough candy were examined in terms of the different organoleptic characteristics i.e., color, appearance, taste, texture, flavour, mouth feel and overall acceptability.

2) pH Measurement

The acidity or alkalinity of a candy was indicated by using lab pH meter, a scale from 1 to 14. 1% w/v solution of candy was prepared by dissolving 1 gm candy in 100ml distilled water and its pH was recorded.^[9]

3) Ash Value

Weigh accurately about 3gm of the powdered drug in silica crucible. Place the powdered drug in Muffle furnace until the sample is turned into ash. and allow it to cool. Weigh the ash and calculate the % of the total ash in contrast to the air dried sample.

4) Shelf-Life Study

Shelf-life study was started from the 2nd day of making the product. Mahua candy was stored under the refrigerated condition for 4 weeks in its packaging materials. The product was observed at frequent intervals for any change in appropriate color, odour, texture, taste and moisture.^[1] The observations are as follow:

**Table 2: Shelf-life study of mahua candy**

Day	Observation
Week 1	No change in color, odour, texture and taste
Week 2	No change in color, odour, texture and taste
Week 3	No change in color, odour, texture and taste
Week 4	No change in color, odour, texture and taste

5) Evaluation of Microbial Analysis

Determination of bacteria helps in analysis of sample quality after the production and storage practices. This is done by cup plate method and total plate count method (serial dilution method).

1) Serial dilution method

Procedure

- mix the bacterial suspension by rolling the test tubes between the palms of hands to ensure even dispersion of cells in the cultures.
- By using sterile pipette, aseptically transfer 1ml from the bacterial suspension to first flask containing 99ml saline solution.
- Discard the pipette in the beaker of disinfectant. The bacterial suspension has been diluted 100 times (10^{-2}). Mix the contents of the first flask and transfer 1ml suspension to the second flask (containing 99ml saline) with a sterile pipette.
- This original culture is diluted (10^{-4}). Mix the contents of the second flask and transfer 1ml suspension to third flask containing 99ml sterile solution with a sterile pipette.
- Finally, in the third flask bacterial suspension is diluted to 10^{-6} .
- Add approximately 15 to 20ml nutrient agar medium into three large size test tubes, sterilize by autoclave at 121°C for 15 minutes and cooled at 45°C .
- Mix all the dilutions and transfer 1ml from each dilution to large size test tubes.
- Mix the bacterial suspension by rolling the test tubes between the palms of hands to ensure even dispersion of culture in the medium.
- Immediately pour the media of three test tubes into 3 sterile petri plates to solidify.
- Incubate these plates in an inverted position for 24 to 48 hours at 37°C .^[3]

2) Cup plate method

Procedure

- Each petri dish was filled to a depth of 4-5 mm with a nutrient agar medium that was previously inoculated with suitable inoculums of suitable test organism, and then allowed to solidify.
- The petri dish were specially selected with flat bottom and were placed on level surface so as to ensure that the layer of medium is in uniform thickness.
- The petri dishes were sterilized at $160-170^{\circ}\text{C}$ in hot air oven for 30 mins before use.
- Small sterile borer of uniform size was placed approximately at 10 cm height, having an internal diameter of approximately 6-8 mm and made of aluminium (or) stainless steel.
- Each plate was divided in to five equal portions along the diameter.
To each portion one cylindrical cavity was made in medium with the help of sterile borer. Five cavities for test compounds were made. The petri dishes were incubated at 37°C for 18 hours. Diameter of the zone of inhibition (ZOI) was measured and the average diameter for each sample was calculated.^[3]

**6) Phytochemicals analysis of plant extract****Table 3: Phytochemical analysis of plant extract**

Test for Carbohydrates	Test for Alkaloids	Test for Tannins	Test for Proteins
Molisch's Test: 2-3 drops of Molisch's reagent added to small amount of analyte in test tube and mixed well. Few drops of concentrated sulphuric acid added drop-wise along walls of test tube to facilitate the formation of purple to reddish brown color.	Mayer's Test: 2-3ml filtrate, add few drops Mayer's reagent gives white ppts.	FeCl₃ Test: To 2-3ml of aqueous or alcoholic extract, add few drops of 5% FeCl ₃ solution. It will give black color precipitate.	Biuret's Test: 2mL filtrate + 1 drop of 2% copper sulphate sol, add 1mL of 95% ethanol, KOH pellets. It gives a pink colored solution.
	Hager's Test: 2-3ml filtrate with few drops Hager's reagent gives Yellow ppts.		
Fehling's Test: Add sample to test tube and add Fehling's solution in tube. The tube must kept in water bath and make observation and record if there is any development of brick red precipitate.	Wagner's Test: 2-3ml filtrate with few drops of Wagner's reagent gives reddish brown ppts.	Lead acetate Test: To 2-3ml of aqueous or alcoholic extract, add few drops of lead acetate solution. It gives white precipitate.	Millon's Test: 2mL filtrate, few drops of Millon's reagent, gives a white precipitate.
Benedict Test: Add sample in test tube and add Benedict's solution to the test tube and heat it in water bath and observe the development of brick red color.	d) Dragendroff's Test: 2-3 ml filtrate with few drops of Dragendroff's reagent gives red brick color.		Ninhydrin's Test: 2mL filtrate, add 2 drops of Ninhydrin solution (10mg ninhydrin + 200mL acetone), it gives a purple colored solution.
			Xanthoprotic test: Sample extract, few drops of conc. nitric acid, it gives a yellow colored solution.

RESULTS AND DISCUSSION**1. Collection of dried flowers and soaked in water****Fig 2: Dried flowers of *Madhuca longifolia* soaked in wa**



2. Pulp of Dried Mahua Flowers.



Fig 3: Pulp of dried flowers of Mahua

3. extract of Dried Mahua Flowers



Fig 4: Extract of dried flowers of Mahua

4. Result of Agar plate formation



Fig 5: Figure showing the agar plates

5. Antibacterial activity of candy

1. By Cup Plate method



Fig 6: Antibacterial activity by cup plate method

2. By Serial Dilution or total plate count method

➤ Serial dilutions:



Fig 7: Antibacterial activity by Serial dilutions

➤ Result



Fig 8: Positive result of antibacterial activity

Table 4: Table showing result of serial dilution

Days	Dilutions used	Colony count (cfu/ml)
Day 2	10^{-2}	2
	10^{-4}	3
	10^{-6}	0
Day 3	10^{-2}	0
	10^{-4}	0
	10^{-6}	0



6. Evaluation of candy

Table 5: Evaluation of candy

Physicochemical parameters	Observations
Colour	Dark brown
Odour	Aromatic
Taste	Sweet
pH	4.5
Ash value	2.16 g
Shelf-life study (4 weeks)	Stable

7. Final Finished Product



Fig 9: Final Product Prepared

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LOCAL SAND IN CEMENT CONCRETE: SILCHAR

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ABSTRACT

Sand plays a crucial role as an important component of concrete. Concrete is a widely used construction material. By examining the role of sand in enhancing workability, strength, and durability, we gain insight into its importance in shaping the structural integrity of concrete. Sand available in different Mohal of Barak Valley like Taranathpur river of Dwarbond, Katakhal river, Jatinga river, are found to be fail in zoning after Particle size Distribution Test. It is found to be fine to very fine in nature. So, for important Structure like multistorey buildings and bridges it does not give target strength in mix design. To achieve target strength, we have to mix crusher sand 5mm down with local sand subject to other property of sand, cement and stone clips. This technique not only gives us target strength but saves cement 20-25% per cubic meter concrete. Crusher sand is easily available from stone crusher in this region.

KEYWORDS: *Crucial, target strength, mix design, river, local sand, stone crusher.*

1. INTRODUCTION

Sand is a crucial component in the production of concrete, one of the most widely used construction materials in the world. Sand is also known as Silica (SiO_2) in chemical term. It is formed by the decomposition of sand stone due to various weathering effects of nature. So from the origin point of view, it is a crucial part of sand stone, hill or other rocks in nature which is found as deposits in soil by excavating pits in some places, river banks or beds and sea shores. In modern days it plays an important role in the Civil Engineering field of activity and development.

Sand is the most important ingredient of Plain Cement Concrete (P.C.C) Reinforced Cement Concrete (R.C.C.), Pre-stressed Cement Concrete (P.S.C) and Mortar etc. In other words, this crucial part of its origin sacrifices himself for a novel cause of humanity. So, I used the term Reinforced Cement Concrete in spiritual expression as a paste formed by mixing- quality sand as symbol of sacrifices, stone as sincerity, cement as spirituality, steel as serenity and water as soul of serviceability in some specific proportion or magnitude to feel the magnificent strength of holy spirit depending upon the quality control as sacredness maintained during the entire process to fulfil the desirous dream of mankind.

The Concrete is the foundation of modern civilization and all most all structures stand on this foundation. The sand used in concrete is known as fine aggregate in Civil Engineering term. In R.C.C. single storeyed or multistore building or any R.C.C. structure, concrete is the soul backbone. So objective of this article is to emphasize on to provide quality sand or fine aggregate to produce quality concrete.

A good quality sand or fine aggregate should be hard, strong, durable, free from injurious amounts of clay, loam, vegetable, and other such foreign matter. It should be properly washed to ascertain that it should be free from clay, silt and other such organic matter before used in concrete or mortar. Such material below 4.75 mm size is termed as fine aggregate or sand and it should not contain more than 9 to 10% of silt particles.

Grading or particle size distribution of aggregate is a major factor determining the quality of concrete. The grading of fine aggregate has been found to influence the workable concrete can be made with various grading of aggregate, there are identifiable properties of fresh concrete more than that of the coarse aggregate (store). Although good workable concrete can be made with grading of aggregate, there are certain limits which a grading must lie to produce a satisfactory concrete. The grading of fine aggregate, Zone-



I, II, III and IV. Where the grading falls outside the fine aggregate or sand shall be within the limit given in table 1 of I.S.:383-1970 and describe of any particular Grading Zone of sieves other than 600 micron I.S. Sieve by a total amount not exceeding 5%, it shall be regarded as falling within the Grading Zone. This tolerance shall not be applied to percentage passing any other size on the coarse limit of Grading Zone-I or the finer limit of Grading Zone-IV. Please find below grading table of fine aggregate as per IS.383-1970.

Grading of Fine Aggregate Based on Zoning As per IS: 383-1970

Table 1.

I.S Sieve Designation	Grading Zone-I	Grading Zone- II	Grading Zone-III	Grading Zone-IV
10mm	100	100	100	100
4.75mm	90-100	90-100	90-100	90-100
2.36mm	60-95	75-100	85-100	95-100
1.18 mm	30-70	55-90	75-100	90-100
600 micron	15-34	35-59	90-79	80-100
300 micron	5-20	8-30	12-40	15-50
150 micron	0-10	0-10	0-10	0-15

2. CASE STUDY AREA

Barak Valley is situated in the southern part of the Indian state of Assam .It is located in between 24° 49' N latitude & 92° 48'E longitude. The pioneer city of the Barak valley is Silchar. The Region is named after the Barak River. Barak valley mainly consists of three districts namely Cachar , Karimganj, and Hailakandi. Karimganj is the second largest city in this region which is considered as the cultural centre of Barak valley. The official language of Barak valley is Bengali. Majority of the people speak a dialect of Bengali, which is known as Sylheti. Religious composition of the valley population is Hindu: 50%, Muslim: 46%, and others 4%. Hindus are majority in Cachar district (60%) while Muslims are majority in Karimganj district (53%) and Hailakandi district (57%). Apart from the Bengali nation, Barak Valley is the home land of Kacharis, Hmar, Manipuris (Both Bishnupriya and Meitei), Rongmei Nagas and tea garden labourers.

In our Barak Valley area, no sand of any Mohal falls within the limit of any particular Grading Zone as given in the above table. Sand of some mohal even does not fit for making mortar as well. But here it is in use for making both concrete and mortar causing jeopardy to the structural members or items.

2.2 Location of study area

Silchar and its hinterland the pioneer city of Barak Valley, has been selected as the study area in this dissertation. The study area includes Silchar and its nearby rural and semi urban areas. The study area has been concentrated along the main roads within the study area

The trial mix design involved two variations: one using natural local sand and the other utilizing blended sand. This undertaking was extensive as we aimed to achieve a concrete strength target of 260 kg/cm² (M20) while ensuring that the sand grading fall within the acceptable limits for any Grading Zone, as previously mentioned. During our investigation, we discovered that the combination of sand with 5mm down crusher chips/dust yielded positive results. We observed that incorporating clean and fine sand (with larger grain sizes) sourced from various locations in Barak Valley, such as Taranathpur of Dwarbond , Jhatinga river, and Kathakal river, along with clean 5mm down crusher chips, proved beneficial.To achieve optimal outcomes, it was crucial to incorporate 21% to 25% of the total fine aggregate as 5mm down crusher dust in a well-balanced manner.

For example:

By Weight

For 1 kg total Fine Aggregate.

i) Above mentioned river sand -770 gms (77%)

ii) 5 mm down crusher chips- 230 gms (23%)

Total- 1000 gms (100%)

i.e. 23% Crusher chips to the total wt. of fine aggregate in each batch. This will very nearly match with the grading limit of the Grading Zone-III. The concrete with this fine aggregate will speak the rest in cube test.



3. MATERIAL USED

Cement:

The investigation made use of locally available 43-grade Ordinary Portland cement, which was tested for various properties in accordance with the IS:4031-1988 standard. The cement met the specifications outlined in the IS:12269-1987 standard.

Coarse Aggregate

The machine is employed as a coarse aggregate alongside crushed annular granite metal, which has an average size of 20mm. It is required to be devoid of dust, clay particles, organic matter, and similar impurities. Various properties of the coarse aggregate are examined and presented in the table. The grading of the coarse aggregate complies with the specifications of IS 383-1970.

Fine Aggregate

The fine aggregate used in this context consists of locally available natural sand and blended sand. This aggregate is carefully selected to ensure it is free from clay, slit, organic impurities, and other contaminants. Various properties of the sand, such as specific gravity and bulk density, are tested following the guidelines specified in IS:2386-1963. The examination of the particle size distribution reveals that the fine aggregate closely aligns with the specifications outlined in zone III of IS:383-1970.

Water

Clean water must be used for the purpose of mixing and healing, ensuring it is free from excessive amounts of oils, acids, alkalis, salts, organic substances, or any other harmful materials. It should be noted that concrete can be adversely affected by impure water. According to the guidelines outlined in IS:456-2000, water that meets the necessary criteria can be used for both blending and curing concrete.

4. PARTICLE SIZE DISTRIBUTION OF SAND BARAK VALLEY REGION

Local Sand obtain from river in barak valley, Silchar are tested. Local Sand mix with stone dust obtained from crusher , quatity of (20-30)% and particle size distribution was conducted . After the particle size distribution it was found that the grading of zone obtain is zone III. It is gives better compressive strength for cement concrete.

4.a) Blended Sand

Total Weight 1000 gm.

Above mentioned river sand -750 gms (75%) (Taranathpur)

5 mm down crusher chips- 250 gms (25%)

Table (4.a)

Sieve Size	Weight retained in gm.	Percentage retained	Cumulative percentage of Fine Aggregate	Percentage of Fine Aggregate passing
10mm	0	0	0	100
4.75mm	8.10	0.8	0.81	99.19
2.36mm	22.50	2.25	3.06	96.94
1.18 mm	64.20	6.42	9.48	90.52
600 micron	281	28.1	37.58	62.42
300 micron	450	45.0	82.58	17.42
150 micron	161	16.1	98.68	1.32
75 micron	12.5	1.25	99.93	0.07

Silt Content 0.07%

Fineness modulus 2.3

Zone-iii

4.(b) Blended Sand

Total Weight 1000 gm.

Above mentioned river sand -700 gms (70%) (Kathal)

5 mm down crusher chips- 300 gms (30%)



Table (4.b)

Sieve Size	Weight retained in gm.	Percentage retained	Cumulative percentage of Fine Aggregate	Percentage of Fine Aggregate passing
10mm	0	0	0	100
4.75mm	8.20	0.82	0.82	99.18
2.36mm	22	2.2	3.02	96.98
1.18 mm	64	6.4	9.42	90.58
600 micron	280	28.0	37.42	62.58
300 micron	451	45.1	82.52	17.48
150 micron	162	16.2	98.72	1.28
75 micron	12	1.2	99.92	0.08

Silt Content 0.08 %

Fineness modulus 2.32

Zone-iii

4.(c) Sieve Analysis Sand Katakhal river (Barak Valley Region)

Total Weight 1000 gm.

Table(4.c)

Sieve Size	Weight retained in gm.	Percentage retained	Cumulative percentage of Fine Aggregate	Percentage of Fine Aggregate passing
10mm	0	0	0	100
4.75mm	7	0.7	0.7	99.3
2.36mm	16.5	1.65	2.35	97.65
1.18 mm	18.2	1.82	4.17	95.83
600 micron	62	6.2	10.37	89.63
300 micron	721	72.1	82.47	17.53
150 micron	148	14.8	97.27	2.73
75 micron	20.5	2.05	99.32	0.68

Silt Content 0.68 %

Fineness modulus 1.97

Zone-iv

4.d) Blended Sand

Total sample 1000 gm

Above mentioned river sand -770 gms (77%)(Jhatinga)

5 mm down crusher chips- 230 gms (23%)

Table (4.d)

Sieve Size	Weight retained in gm.	Percentage retained	Cumulative percentage of Fine Aggregate	Percentage of Fine Aggregate passing
10mm	0	0	0	100
4.75mm	32	3.2	3.2	96.8
2.36mm	55	5.5	8.7	91.3
1.18 mm	125	12.5	21.2	78.8
600 micron	180	18	39.2	60.8
300 micron	250	25	64.2	35.8
150 micron	300	30	94.2	5.8
75 micron	50	5	99.2	0.8

Silt Content 0. 8%

Fineness modulus 2.30

Zone-iii



5. RESULTS AND DISCUSSION

Compressive strength, a crucial characteristic in concrete design, can be achieved by natural river sand or with blended sand. We conducted a study over a 28-day period to assess the resulting compressive strength. Three Cubes for each set are used. Compressive Strength of M₂₀ grade of concrete used in both sample

Table : Comparison between natural local river sand and blended sand.

Evaluated properties	Local River Sand	Blended Sand
Average Compressive Strength	180 kg/cm ²	260 kg/cm ²

The findings revealed that combining clean and courser sand with a smaller grain size sourced from specific locations in the Barak Valley, including Taranathpur of Dwarbond, Jhatinga river, and Kathakal river, yielded favourable results. The addition of clean crusher chips measuring 5mm down contributed to enhancing the overall strength and performance of the concrete. The trial mix design involving the combination of natural local sand, blended sand, and 5mm down crusher chips resulted in positive outcomes. The incorporation of clean and coarser sand from various sources along with a well-balanced proportion of 5mm down crusher dust helped achieve the desired concrete strength target. These findings can serve as a valuable reference for concrete mix design in the Barak Valley region, but further research and experimentation are necessary to adapt the mix design for other locations.

6. RECOMMENDATIONS

The utilization of a mix consisting of 5mm down crusher sand and local sand, along with proper consideration of other properties of sand, cement, and stone chips, enabled us to achieve the desired target strength. This approach not only resulted in cost savings but also utilized readily available resources effectively. By implementing this technique, we can enhance the efficiency and sustainability of concrete construction while maintaining the required structural integrity.

7. CONCLUSION

From this investigation, it is found that blended sand gives better compressive strength as compared to natural river sand of Silchar for same grade of cement concrete. By using this technique, we were able to achieve the desired target strength while significantly reducing the amount of cement required per cubic meter of concrete. The availability of crusher sand from the stone crusher region made it convenient for us to access this material for our project. We conducted a trial mix design that compared the performance of natural local sand with blended sand. The experimental goal was to find a solution that would not only meet the strength requirements but also ensure that the sand grading complied with the acceptable limits for any Grading Zone. Through testing, it was found that the combination of 5mm down crusher chips with local sand yielded positive outcomes. We sourced the clean and coarser sand from various locations in Barak Valley, such as Taranathpur of Dwarbond, Jhatinga river, and Kathakal river. Incorporating this blend of sand with the 5mm down crusher chips proved to be beneficial in achieving the desired concrete strength. To achieve optimal results, it was crucial to carefully balance the incorporation of 21% to 25% of the total fine aggregate as 5mm down crusher dust. This careful blending of materials played a significant role in attaining the target strength while reducing the cement requirement by 20-25% per cubic meter of concrete. This technique will save money as well as structure enhancing strength of Civil Engineering structure.

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ROLE OF PARATRANSIT IN REGIONAL PASSENGER MOVEMENT: SILCHAR, ASSAM

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ABSTRACT

Paratransit is a specialized transport service which acts as a bridge between the private automobile and public transit. It mostly provides shared ride service and door to door service maintaining flexibility in terms of route and schedule. The goal of this study is to assess the role of paratransit in the regional passenger movement. The paratransit vehicles are used as a substitute of bus service in the vicinity of urban area particularly in the NE region. The reason may be lower population density, narrow roads and the frequency of service. The small size Paratransit vehicles like Auto-rickshaw, Cruiser, Tata-sumo, Winger, Tata-magic, Auto-van, Mahindra Maxx, Ambassador are found to be very effective to provide services in the semi-urban/ rural areas at a higher frequency. Various surveys like modal split survey, vehicular occupancy survey, operator survey and techno-economic characteristic survey of the vehicle have been conducted in the study area and the share of Paratransit in passenger movement have been found out with respect to all the modes. The degree of variations of the level of utility of regional Paratransit at various locations has been studied and presented. Suggestions and recommendations have been made to improve the Paratransit service systems and the study area.

KEYWORDS: paratransit, automobile, route, regional, passenger, road network

1. INTRODUCTION

Paratransit service consists of small capacity vehicle such as Cruiser, Maxx, Tata Sumo, Winger, Auto-rickshaw, Tata magic etc. which operate on flexible schedule and route. Regional Paratransit plying for carrying passengers from neighbouring rural/ semi urban areas to and from urban areas. Motorized Paratransit have continued their dominant in carrying regional passengers over conventional public transit such as bus due to their smaller capacity (which required very less time to fill up the vehicle), less parking time, no fixed route and follows demand stop policy. Nowadays, their number is increasing day by day and hence passengers need not to waste their time for getting a vehicle and passenger can alight anywhere he likes on the road side. However, their services in respect of traffic safety, comfort, reliability and overall service condition should be improved. Therefore, there is need to study the existing Paratransit system on regional basis and to find how the service can be improved. The objective of the study is to assess the role of Paratransit in the transportation of regional passengers.

Paratransit is a transportation service usually in highway vehicles operated in public streets and highways in mixed traffic; it is generally provided by private operators and it is available to certain groups of users or to the general public, but adoptable in its routing and scheduling to individual users degrees (Vuchic 1979)

2. CASE STUDY AREA: SILCHAR

Barak Valley is situated in the southern part of the Indian state of Assam. It is located in between 24°49'N latitude & 92°48'E longitude. The pioneer city of the Barak valley is Silchar. The Region is named after the Barak River. Barak valley mainly consists of three districts namely Cachar, Karimganj, and Hailakandi. Karimganj is the second largest city in this region which is considered as the cultural centre of Barak valley. The official language of Barak valley is Bengali. Majority of the people speak a dialect of Bengali, which is known as Sylheti. Religious composition of the valley population is Hindu: 50%, Muslim: 46%, and others 4%. Hindus are majority in Cachar district (60%) while Muslims are majority in Karimganj district (53%) and Hailakandi district (57%). Apart from the Bengali nation, Barak Valley is the home land of Kacharis, Hmar, Manipuris (Both Bishnupriya and Meitei), Rongmei Nagas and tea garden labourers.



2.1 Location of study area

Silchar and its hinterland the pioneer city of Barak Valley, has been selected as the study area in this dissertation. The study area is being indicated in figure 2.1. The study area includes Silchar and its hinterlands. The study area has been concentrated along the main roads.

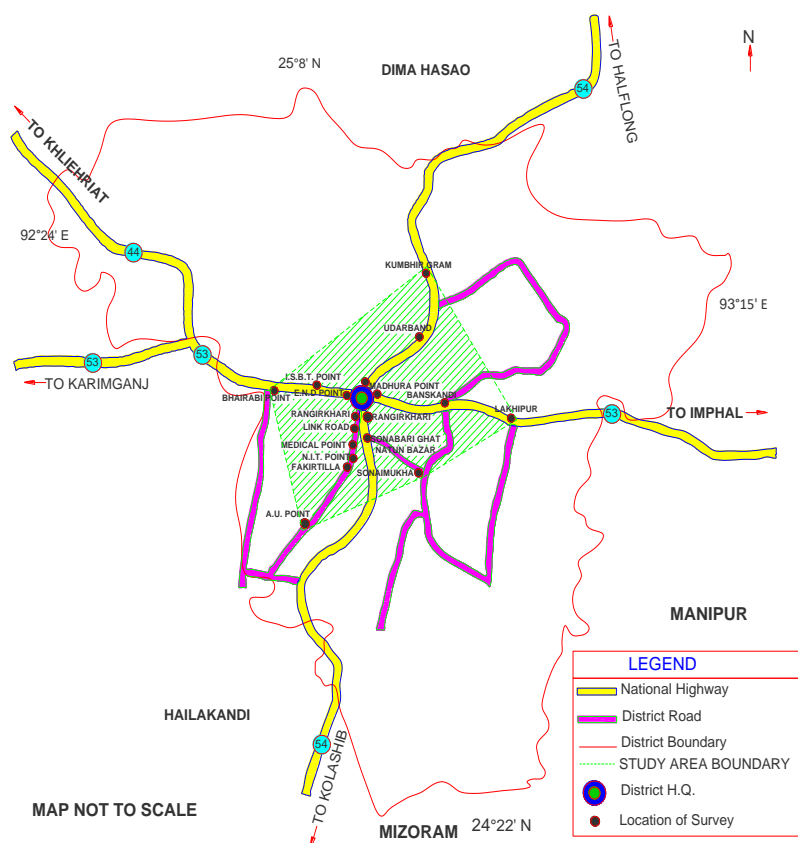
2.2 Population

As per 2011 census the population of Silchar found to be 172,830

2.3 Regional Linkage:

Silchar is connected by all weather road with other districts of the Barak Valley and the neighbouring states. The Silchar – Imphal road (National Highway no.-53), Silchar-Aizwal road (National Highway no.-54), Silchar- Badarpur road (National Highway no.-53) and Silchar-Shillong road (National Highway no.-44), Silchar-Hailong road (National Highway no.-54) are the National Highways which connect Silchar with the neighbouring states of Assam, Mizoram and Meghalaya. Silchar is also connected with other parts of our country by Air and Railways. All this road connectivity is shown in **Figure 1.1**.

Figure 1.1 REGIONAL ROAD NETWORK AND STUDY AREA, SILCHAR



3. SURVEY

Four types of survey were conducted to assess the role of regional paratransit in study area as shown in table. The number of samples collected under different types of survey are also indicated in the table 3.1.

**Table 3.1: Samples Collected**

Types of Surveys	No. of Samples Collected
Techno-Economic characteristics of the vehicles	8
Operator Survey (no. of operators)	120
Traffic Survey (no. of vehicles)	13787
Vehicular occupancy Surveys.(no. of vehicles)	1342

3.1 Techno-Economic characteristics of the vehicles:**Table 3.2 Techno-economic characteristic of vehicles**

Type of Vehicles	Cruiser	Tata-sumo	Auto Van	Tata magic	Winger	Auto-rickshaw	Ambassador	Mahindra Maxx
Physical Dimension	Exterior dimension	Exterior dimension	Exterior dimension	Exterior dimension	Exterior dimension	Exterior dimension	Exterior dimension	Exterior dimension
Length in (mm)	4832	4258	2800	3790	4290	2800	4325	4445
	1660	1726	1270	1500	1905	1120	1662	1834
Height in (mm)	2055	1925	1885	1845	2045	1185	1593	1975
Weight in (kg)	2850	1800	855	1000	1740	435	1200	1720
Wheel Base in mm	3050	2425	2000	2100	3200	2000	2464	2794
Engine Type	Diesel	Diesel	Diesel	Diesel	Diesel	Petrol	Diesel	Diesel
Seating capacity	9+1	9+1	6+1	5+1	9+1	3+1	5+1	9+1
Ground clearance in mm	210	190	130	160	165	130	152	200
Engine displacement	2596CC	2956CC	395CC	702CC	1948CC	338CC	1995 CC	2523CC
Tyre size	7.00R15	185/85R16	4.50*10 8 PR	R12		4.00-8.6PR	165/58R15	185/85R16
Mileage km/l	16.9 km/l	18 km/l	36+/-2	30 KM/L	17km/l	36 KM/L	16KM/L	14 km/l
Engine description	2.6L60bhp 4 stroke	70PS(51KM ,69hp)	7.5HP	16BHP	90bhp	11HP	2.0L DSZ 80BHP	2.5L TC1-4 (63bhp)
No. of cylinder	4	4	1	-	4	1	4	4

Techno-economic characteristics survey of the vehicles was done to know the technical specification of the vehicles that is being operated in the study area. It was collected from the agency or the suppliers of the vehicle. The techno-economic characteristics of the paratransit vehicles are shown in table 3.2.

3.2 Operator survey

Operator survey was carried out to understand the socio-economic status of the Paratransit operator, service facilities and infrastructure facilities. The data are directly collected from the Paratransit operators at their parking lots where the operators were resting or waiting for passengers. A set of questionnaires were asked to know the characteristics of the operators. The summarised data of socio-economic characteristics of the operators are tabulated in the following Table 3.3.

**Table 3.3 : Socio-economic Characteristics of the Operator.**

Sl. no.	Items	Percentage
1.	Age group in year	
	18-30 yrs	40%
	31-40 yrs	32.5%
	41-50 yrs	15.83%
	51-61 yrs	10%
	61-70 yrs	1.67%
2.	Educational qualifications	
	Illiterate	0%
	Under H.S.L.C	60%
	H.S.L.C	20.83%
	Under Graduate	14.17%
	Graduate	4.17%
	Post Graduate	0.83%
3.	Number of income earners in the family	
	Earning member one	72.5%
	Earning member two	21.67%
	Earning member three	5.83%
	Earning member four	0%
	Earning member five	0%
4.	Residential Status.	
	Migrated	9.17%
	Permanent resident	90.83%

3.3 Traffic Survey

Modal Split Survey

Modal Split survey is the traffic survey of different class of vehicles operating in the particular road sections. The survey has been conducted for one hour at every major intersection along the five major roads connected to Silchar. The major roads considered are Silchar-Hailakandi road, Silchar-Sonai road, Silchar-Lakhipur road, Silchar- VIP road and Silchar-ISBT road. The data collected are indicated in table 3.4 .

Table 3.4 : Modal Split Survey Data for Silchar

SL No.	Types Of Modes	No. of Average hourly vehicles
1	Bus	324
2	Winger	1638
3	Auto-rickshaw	3477
4	Cruiser	4324
5	Rickshaw	552
6	Tata-sumo	774
7	Auto van	187
8	Tata-magic	100
9	Ambassador	284
10	Maxx	192
11	Car	272
12	M. cycle	293
13	Bolero	269
14	Van	135
15	Bicycle	959
16	Others	398



3.4 Vehicular Occupancy Survey

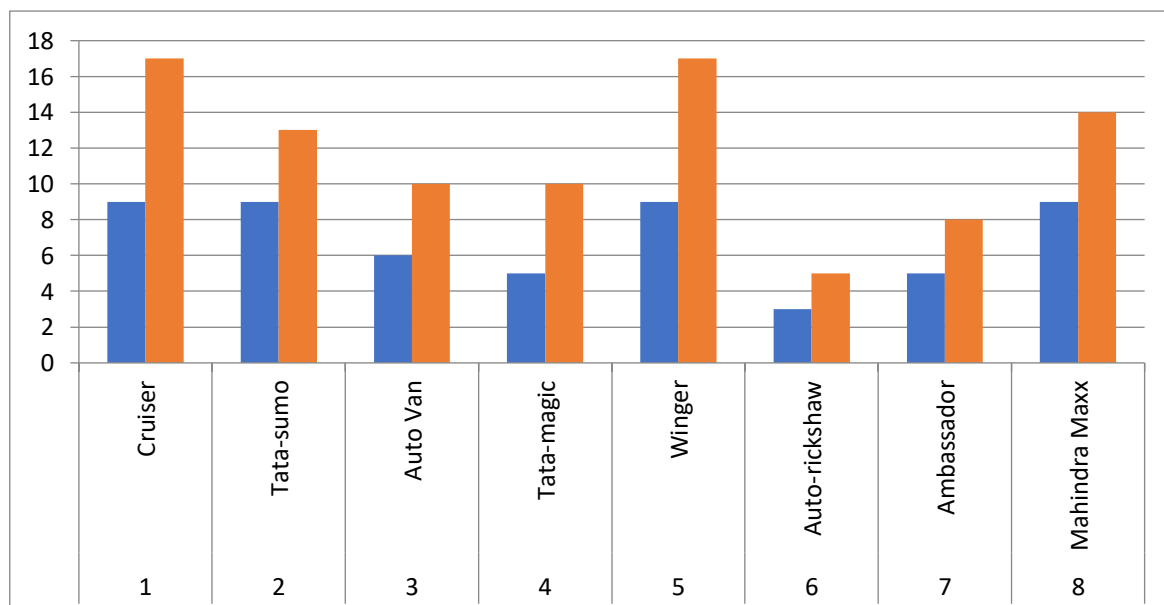
Vehicular occupancy survey was conducted on different point location of the study area at different time of the day. Some time number of passengers per vehicle are found to be less than normal seat capacity and some times over loaded on the back of the vehicles during peak hours of the day. But average vehicular occupancy is found to be near to normal seat capacity. But private vehicle like Car, Bolero, Van etc are found to be very less vehicular occupancy value in comparison to their seating capacity.

The objectives of the survey were to find the average number of passengers carried by different types of vehicles. The survey was conducted on different locations of the important roads under considerations. Each type of vehicle was observed independently on a section and number of passengers carried by the vehicle type was recorded and from it average vehicular occupancy of the vehicle was found out which is shown in Table 3.5 below.

Table 3.5. Average Vehicular Occupancy of Different modes in the Study Area.

Sl. No.	Types of Modes	Total no. of vehicle	No. of passenger	Average vehicular occupancy (Passenger/Vehicles)	Seat Capacity Excluding Driver
1	Bus	101	2554	25	34
2	Car	120	287	2.4	4
3	Auto-rickshaw	120	430	3.6	3
4	Motor cycle	120	198	1.65	1
5	Rickshaw	78	126	1.6	2
6	Cruiser	115	1613	14.03	9
7	Bolero	85	158	2	7
8	Winger	105	1572	15	9
9	Van	95	264	2.78	9
10	Tata-sumo	105	1276	12.15	9
11	Auto van	65	525	8.08	6
12	Tata-magic	40	392	9.8	5
13	Maxx	58	617	10.64	9
14	Ambassador	35	272	7.77	5
15	Bicycle	120	120	1	1

After analyzing the modal Split Survey and vehicular occupancy survey, percentage of the number of passengers can be found out.

Figure 3.1: Seating Capacity Vs Actual Capacity of Paratransit Vehicles Operating in the Study Area



It is observed that most of the vehicles in Silchar are overcrowded.

Traffic density and modal split were found to be affecting the PCU value and PCU values for Indian highways based on empirical data were developed as enclosed in **Table 3.6** below. Traffic data is collected and analyzed for various locations, traffic densities and PCU values for each mode are derived.

Table 3.6. PCU factors suggested by IRC for Rural Roads

Sl. no.	Vehicle Class	Equivalency factor
1	Passenger car, tempo, Auto rickshaw, Agricultural tractor.	1
2	Bus, Truck, Agricultural tractor- trailer unit	3
3	Motor Cycle, scooter and pedal cycle	0.5
4	Cycle rickshaw	1.5
5	Horse drawn vehicles	4
6	Small bullock cart and hand cart	6
7	Large bullock cart	8

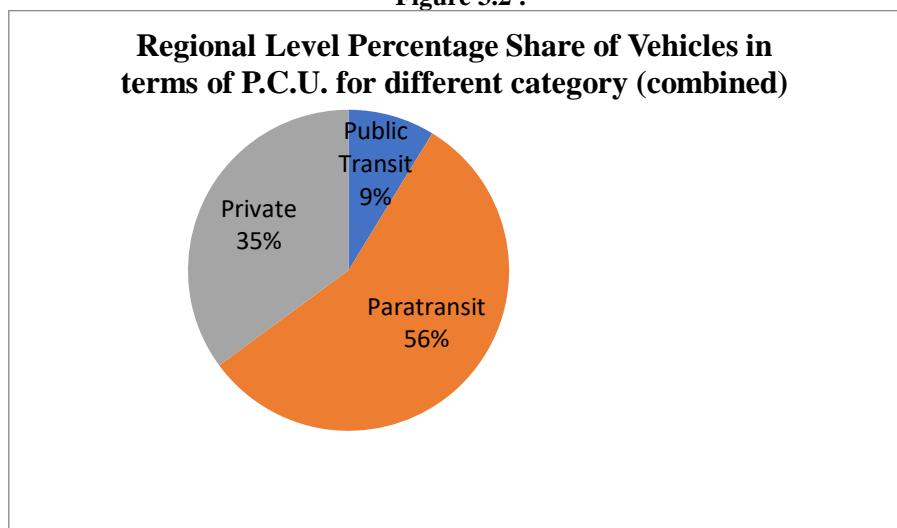
6. RESULT AND DISCUSSION

From figure 3.2 we observe that public transit is 9%, Private is 35% and paratransit is 56%.

Table 3.7 Regional Level Percentage Share of Vehicles in terms of P.C.U. for different category (combined)

Sl. no	Category	Percentage
1	Public Transit	8.73
2	Paratransit	56.18
3	Private	35.09

Figure 3.2 :



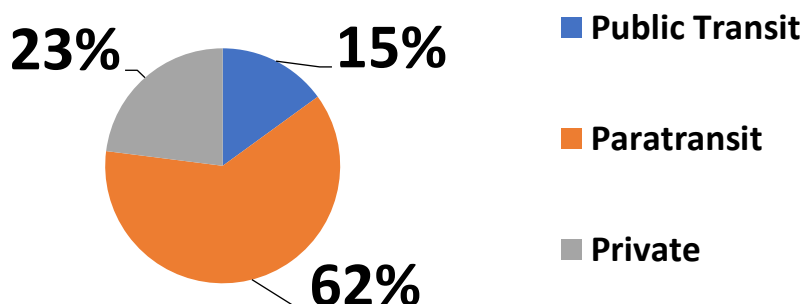
**Table 3.8: Regional Level Percentage Share of Vehicles within Paratransit modes in terms of PCU**

Sl. No	Name Of Paratransit vehicles	Total no. of vehicles	Percentage Share
1	Winger	58.97	3%
2	Auto-rickshaw	761.41	44%
3	Cruiser	294.87	17%
4	Rickshaw	218.62	13%
5	Tata-sumo	72.62	4%
6	Auto van	69.63	4%
7	Tata-magic	122.12	7%
8	Ambassador	76.69	5%
9	Maxx	45.37	3%
	Total	1720.3	100%

Table 3.9 Study area (Regional) level percentage share of occupants for different category

Sl. no.	Category	Percentage share of occupants on					Regional level Percentage
		Hailakandi Road	Sonai Road	Lakhipur Road	V.I.P. Road	I.S.B.T. Road	
1	Public Transit	14.49	12.35	1.94	19.31	25.8	15
2	Paratransit	63.46	70.35	76.4	51.56	50.02	62
3	Private	22.05	17.3	2166	29.13	24.18	23
4	Total	100	100	100	100	100	100

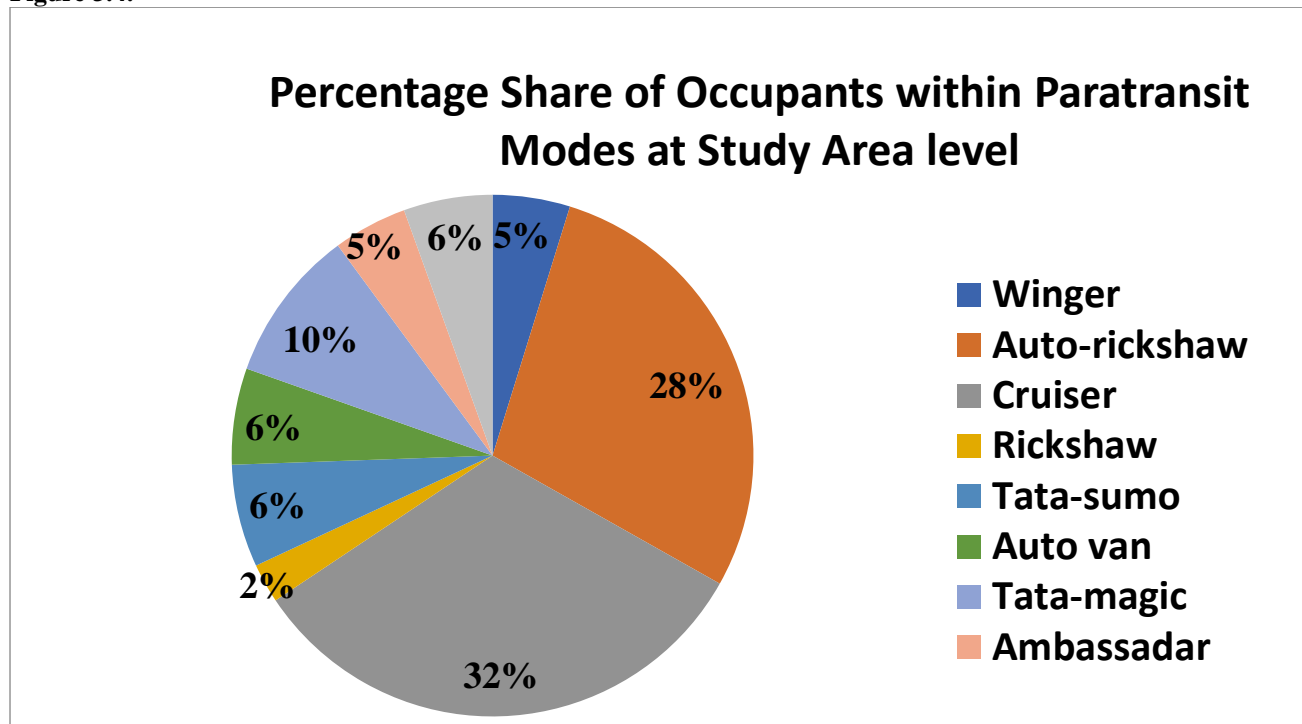
Percentage share of occupants within all modes at study area (Regional) level

**Figure 3.3:**

From **Figure 3.3**, it is found that the Paratransit mode is the highest passenger carrier service which is playing very important role in giving mobility to those people who have not their own vehicle. As the population is increasing tremendously transportation demand is also increasing which is 62% fulfilled through the Paratransit service. The road condition in the Barak Valley is deteriorated and often big pot holes are found on the road for which speed of Paratransit vehicle have to be reduced. The travel time is increased and fuel consumption is also increases which is a great loss from the economic point of view. It also becomes a source of discomfort and it endanger to the safety of the passenger. Paratransit are medium size vehicle and hence it quickly filled up by passengers but in case of buses it takes more time . **Figure 3.4** , which shows the highest share of Cruiser 32%.



Figure 3.4:



7. CONCLUSION

After analysing the various modes under Paratransit operated in the study area and present scenario of the study area in terms of regional road net work of Silchar the following conclusions can be drawn.

- ❖ The important Paratransit modes plying on regional road network of Silchar are Cruiser, Winger, Tata-Sumo, Tata-Magic, Maxx, Ambassador, Auto-rickshaw, Auto-Van and Rickshaw.
- ❖ The private mode includes two wheelers, Bicycle, Car, Van, Bolero and the public transit includes buses.
- ❖ It is found that the Paratransit shared in terms of vehicles in the study area is 56% among all the modes. Private modes and public transit modes have 35% and 9% respectively.
- ❖ The Paratransit share in terms of PCU Auto are: rickshaw 44%, Cruiser 17%, Rickshaw -13%, Tata-magic-7%, Ambassador -5%, Auto-Van-4%, Winger-3% & Maxx- 3%.
- ❖ The role of Paratransit in terms of passengers carried is found to be 62%, private and public transits are found to be 23% and 15% respectively.
- ❖ Within the Paratransit in terms of passengers carried Cruiser has 32%, Auto-rickshaw 28%, Tata-magic 10%, Tata-Sumo-6%, Auto-Van 6%, Maxx 6%, Winger 5%, Ambassador 5%, & rickshaw 2%.
- ❖ 40% operator has age group 18-30 years. Maximum operators are under H.S.L.C. 60%, maximum operators are single income earners in their family 72.5%.
- ❖ Most of the operators are permanent resident of Cachar district 90.83% and only 9.17% are migrated from other district of Assam.
- ❖ The Paratransit is the maximum passenger carrier 62% but there are little proper parking lots and infrastructure facility for these Paratransit in the study area.
- ❖ Most of the vehicles are found to be over loaded during pick hours which sometimes cause accidents.
- ❖ Regional paratransit service gives mobility to passengers & all same time it gives employment to many youths of weaker section of society.

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FORMULATION AND EVALUATION OF PHARMACEUTICAL POLYHERBAL PILL FOR THE TREATMENT OF MOUTH ULCER CONTAINING *GLYCYRRHIZAE GLABRA*, *FOENICULUM VULGARE* AND *CURCUMA LONGA*

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ABSTRACT

Oral health is a key indicator of overall health, well being and quality of life. Mouth ulcers are small sores that form on your lips, gums, inner cheeks, tongue or palate. They are painful and can be extremely uncomfortable and make it difficult for some people to eat, drink, and brush their teeth. They can be triggered by several different factors including minor injuries, hormonal changes, emotional stress, vitamin deficiencies, viral and bacterial infection. There are chances of occurrence of multiple mouth ulcers at same time at different locations. So the objective of this study was to develop and evaluate a herbal pill combining the powders of Licorice, Fennel and Turmeric to treat the mouth ulcers occurring at different location. Herbal pills were formulated using Hand Rolling method. While evaluating the pills weight variation, friability, hardness, disintegration and swelling index were determined. Herbs are a completely natural approach for prevention and treatment with lesser side effects.

KEYWORDS: Licorice, Fennel, Turmeric, Evaluation

INTRODUCTION

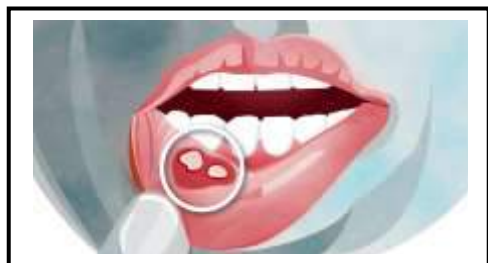
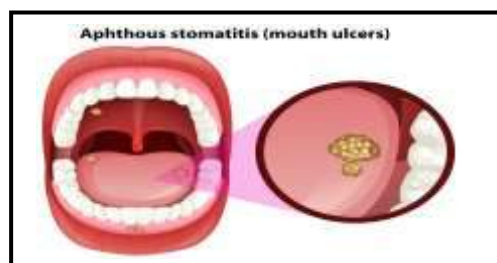
A mouth ulcer is the loss or erosion of the delicate lining tissue of the mouth (mucous membrane). They are small sores that form on gums, lips, inner cheeks or palate (roof of mouth). They're usually yellow or red, and they can be quite painful. Mouth ulcers are also called as aphthous ulcers. . They are painful and can be extremely uncomfortable and make it difficult for some people to eat, drink, and brush their teeth. They can be triggered by several different factors including minor injuries, hormonal changes, emotional stress, vitamin deficiencies, viral and bacterial infection.

Although many formulations like gels, creams, suspension, mouth wash, tablets are commercially available, no therapy can be said completely useful for the treatment of mouth ulcers. There are chances of occurrence of multiple mouth ulcers at same time at different locations. The herbal pills were formulated to treat the mouth ulcer. In comparison to different dosage forms the pills are cheap and can be easily formulated. Chitosan used in the formulation possesses antibacterial as well as mucoadhesive activity, which will facilitate rapid release of drugs at the site of absorption and hence the better bioavailability of drug.

Glycyrrhiza glabra, Foeniculum vulgare, Curcuma longa and Chitosan are known to have wound healing, anti-bacterial, soothing, cooling activities can be effective in the treatment of mouth ulcers. The more acceptable remedies are they are natural that they are safer and lesser side effect than the synthetic medicines. Now a day the demand of the herbal remedies have increasing in the world market. The aim of this study is to formulate and evaluate polyherbal pills for the treatment of mouth ulcers.



Fine powders of medicinal drugs are mixed with water or honey, to make a soft mass. Blending of this mass by mechanical machines or by hands in circular form is called as pills. Pills are cheap in comparison to different dosage form. Patients are more compliance because they are easy to carry.

**FIG 1****FIG 2****MATERIAL AND METHOD****TABLE 1: Formulation of pills**

	Each pill contains	
Sr. No	Components	Amount
1.	Liquorice powder	3 gm.
2.	Fennel powder	3 gm.
3.	Turmeric powder	1 gm.
4.	Chitosan	1 gm.
5.	Gum tragacanth	0.5 gm.
6.	Honey	qs.

Method

Weigh all the ingredients separately. Liquorice, Fennel, Turmeric, Chitosan, Gum tragacanth. Add them in the mortar and triturate them with the help of pestle until the fine powder is formed. Pass them through the sieve no. 80 sieve. Then collect the fine powder and add into the china dish. Mix honey according to the need, and form the dough The pills are prepared using mechanical machine or with the help of Hand Rolling method. Dry the pills under the sunlight. Store them in the well closed container.

TABLE 2: List of material and their purpose:

Materials	Purpose
Glycyrrhiza glabra (Liquorice)	Lubricate and sooth irritate mucous membrane
Foeniculum vulgare Miller (Fennel)	Cooling effect and helps in digestion
Curcuma longa (Turmeric)	Antimicrobial and Antiseptic
Chitosan	Mucoadhesion, antiulcer activity
Gum tragacanth	Antibacterial, binding agent
Honey	Wound healing property

TABLE 3: List of equipments:

Instrument
Weighing balance
Sieving machine
Monsanto Hardness Tester
Roche friabilator
Disintegration tester
Hot air oven



PREFORMULATION STUDIES

1. Organoleptic evaluation

Organoleptic characters such as colour, odour, taste was observed

2. Angle of repose

The flow properties of the powder in the formulation were determined by calculating the angle of repose by the fixed height method. A glass funnel with 10 mm in diameter of the bottom was fixed at the height of 2 on over the plain and smooth flat surface. About 10 gm. of a sample was passed from funnel until the tip of the pile formed and touches the bottom of the funnel. A rough circle drawn around the pile base, and the radius of the powder cone was measured. Θ was calculated by the average radius. Formula for the calculation of angle of repose is as follows:

$$\tan \Theta = h/r$$

Where,

Θ = Angle of repose

h = Height of the pile

r = Average radius of the powder cone

3. Bulk Density

The bulk density (BD) of the powder mixture was determined by pouring gently 8.5gm of sample mixture through a glass funnel into a 100 ml graduated cylinder. The initial volumes occupied by the sample were recorded. The bulk density was calculated by using the following formula given as:

$$\text{Bulk Density} = \frac{\text{Weight of the powder}}{\text{Volume of packing}}$$

4. Tapped density

The tapped density (TD) of the powder mixture was determined by pouring gently 8.5gm of sample mixture through a glass funnel into a 100 ml graduated cylinder. The cylinder was tapped from the height of 2 inches until a constant volume obtained and then the average value of all formulation reported. The final volumes occupied by the sample after tapping were recorded and tapped density calculated by using the formula given.

$$\text{Tapped Density} = \frac{\text{Weight of the powder}}{\text{Tapped volume}}$$

5. Hausner's ratio

The Hausner's ratio is a number that is correlated to the flowability of a powder or granular material.

Hausner's ratio can be calculated by following formula

$$\text{Hausner's ratio} = \frac{\text{Tapped volume}}{\text{Bulk volume}}$$

6. Moisture content

2gm powder is weighed (w) and placed in porcelain dish. Weight of powder + porcelain is recorded (w_1). Porcelain containing powder is placed in hot air oven at 105°C. Weigh the porcelain with dried powder (w_2). % moisture content = $(w_1 - w_2) / w \times 100$. Loss on drying is determined

EVALUATION OF PILLS

1. Morphological Evaluation

Colour, odour, taste was observed

2. Hardness

Monsanto hardness tester was used to evaluate hardness of pill. The tester consists of a barrel containing a compressible spring held between 2 plungers. The lower plunger was placed in with the tablet, and a zero reading was taken. The upper plunger was forced against a spring by turning a threaded bold until the pill fractures. As the spring compressed a pointer along with a gauge in the barrel to indicate the force. The force of fracture was recorded, and the zero-force reading was deducted from it. 10 pills of formulation are evaluated.

**3. Friability**

Roche friabilator was used to determine friability of the pills. Twenty prior weighed pills were placed in friabilator, which was then operated for hundred revolutions. The pills were then dedusted and reweighed. The friability was computed by formula as followed

$$F = \frac{(1-W_2) \times 100}{W}$$

4. Disintegration Time

From each formulation 3 pills were randomly selected to determine the disintegration time. The buffer (PH 6.8) was used as disintegration medium and temperature was maintained at normal body temperature that is $37 \pm 0.5^\circ\text{C}$. The disintegration time of 3 pills was noted down and average disintegration time was calculated.

∴ Avg disintegration time = 29 mins

5. Weight Variation Test

Twenty pills were selected randomly. Pills were weighed and average weight was calculated. The percentage deviation was computed.

Avg weight = 250mg

6. Mucoadhesion Test

Chitosan added in the formulation shows antibacterial activity as well as mucoadhesive activity. It inhibits the growth of both Gram-positive and Gram-negative bacteria. By using mucoadhesive approach the pills will produce prolong and local action. For the evaluation of mucoadhesive approach we determined swelling index of the pills.

Swelling index.**Method**

Step1. Preparation of phosphate buffer of PH 6.8:

Step 2 Preparation of agar gel.

Step 3 Setting of agar gel.

Step4 Take the initial weight of the pill.

Step5 Place the pill in the agar gel.

Keep the pill on the surface of the gel for 60 min.

And then determine the final weight of the pill.

$$\text{Swelling index} = \frac{W_1 - W_2}{W_2} \times 100$$

RESULT AND DISCUSSION

W_2

TABLE 5

CHARACTERIZATION OF POWDER		
Sr.No	Parameter	Observation
1.	Organoleptic Character i. Colour ii. Odour iii Taste	Light brown Aromatic Aromatic
2.	Angle of Repose	Passable
3.	Bulk density	0.34gm/ml
4.	Tapped density	0.425gm/ml
5.	Hausner's ratio	1.25
6.	Moisture content	0.456%

**TABLE 6**

CHARACTERIZATION OF HERBAL PILL		
Sr. no.	Parameter	Observation
1.	Morphological evaluation i. Colour ii. Odour iii. Taste	Deep Brown Aromatic Aromatic
2.	Hardness	2kg/cm ²
3.	Friability	Passes
4.	Weight variation	4.44 %, pass
5.	Disintegration	29 mins
6.	Swelling index	162%

SUMMARY AND CONCLUSION

Herbal therapy is a Holistic therapy, integrating emotional, mental and spiritual levels. Life style, emotional, mental and spiritual considerations are part of any naturopathic approach. The use of herbs does not generally involve “drug” actions or adverse effects. Although medicinal plants are widely used and assumed to be safe, however, they can potentially be toxic. There are some “drug like” plant remedies that their actions approach that of pharmaceuticals. Modern medicines recognize herbalism as a form of alternative medicine. Modern medicine does make use of many plant derived compound as the basis for pharmaceutical drugs. Most herbs are safe to use but there are some herbs that should only be used by a professional practitioner. In this study, pills were formulated using powders of liquorice, fennel, turmeric using gum tragacanth and honey as binder. Chitosan shows antibacterial and mucoadhesive action. Also, the quality control tests of pills were done according to the set of criteria of IP and the obtained results were found to be within the specified limits of each test.

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MONITORING OF WATER CONSUMPTION IN VERTICAL VALVES

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ABSTRACT

The efficient and sustainable management of water resources is crucial for ensuring the well-being of communities and the environment. Vertical valves are commonly used in water supply systems to regulate the flow of water. Monitoring the water consumption of vertical valves can provide valuable insights into the efficiency of water distribution systems, identify leaks and reduce water losses. In this paper, we propose a method for monitoring the water consumption of vertical valves using a combination of flow meters and data loggers. We present the results of a case study where the proposed method was implemented in a water distribution system and highlight the benefits of this approach.

INTRODUCTION

Water is an essential resource for human beings and the environment. The efficient and sustainable management of water resources is crucial for ensuring the well-being of communities and the environment. One of the major challenges faced by water utilities is the efficient distribution of water. Vertical valves are commonly used in water supply systems to regulate the flow of water. However, these valves can be a significant source of water losses due to leaks and inefficient operation. Monitoring the water consumption of vertical valves can provide valuable insights into the efficiency of water distribution systems, identify leaks and reduce water losses.

Water Consumption in Vertical Valves

Vertical valves are an important component of water supply systems, used to regulate the flow of water through pipelines. These valves are typically installed at strategic points in the distribution system to control the flow of water to different areas. Vertical valves can be classified into two types: isolation valves and control valves.

Isolation valves are used to shut off the flow of water to a particular section of the distribution system, for example, when maintenance work needs to be carried out. Control valves, on the other hand, are used to regulate the flow of water to a particular area of the distribution system. Control valves are often used in combination with pressure-reducing valves to ensure that the water pressure remains within a specific range.

The water consumption of vertical valves can be affected by a range of factors, including the size of the valve, the pressure of the water in the system, and the age and condition of the valve. Inefficient operation of vertical valves can result in water losses, which can have significant economic and environmental consequences. By monitoring the water consumption of vertical valves, water utilities can identify inefficiencies in the system and take corrective action to reduce water losses.

METHODOLOGY

To monitor the water consumption of vertical valves, a combination of flow meters and data loggers can be used. The flow meters are installed at the inlet and outlet of the valve to measure the flow rate of water passing through the valve. The data loggers are used to record the flow rate data at regular intervals, which can be analyzed to determine the water consumption of the valve.

The data loggers can be set to record flow rate data as frequently as every minute, or as infrequently as once a day, depending on the specific requirements of the monitoring program. The data collected by the data loggers can be analyzed to determine the average water consumption of each valve, and identify valves that are consuming more water than necessary.

CASE STUDY

To demonstrate the effectiveness of the proposed method, a case study was carried out in a water distribution system that supplies water to a residential area. The study involved the installation of flow meters and data loggers in 10 vertical valves located at different points in the water distribution system. The data was collected over a period of one month.



The data collected by the data loggers was then analyzed to determine the water consumption of each valve and identify valves that were consuming more water than necessary. Table 1 shows the average water consumption of the 10 valves monitored in the case study.

Table 1: Average Water Consumption of Valves

Valve Number	Average Water Consumption (m3/day)
1	10.2
2	12.5
3	8.7
4	9.1
5	11.3
6	7.8
7	6.5
8	5.2
9	4.9
10	3.5

The results indicate that Valve 2 had the highest water consumption, while Valve 10 had the lowest water consumption. This information was used to identify valves that were consuming more water than necessary and take corrective action to reduce water losses.

Benefits of Monitoring Water Consumption in Vertical Valves

Monitoring the water consumption of vertical valves can provide valuable insights into the efficiency of water distribution systems and promote sustainable management of water resources. By identifying inefficiencies in the system and taking corrective action to reduce water losses, water utilities can reduce their operating costs and improve their environmental sustainability.

Furthermore, monitoring the water consumption of vertical valves can also help to identify leaks in the system. Leaks can be a significant source of water loss, and can have economic and environmental consequences. By identifying leaks early, water utilities can take prompt corrective action to repair the leaks and reduce water losses.

In addition to reducing water losses, monitoring the water consumption of vertical valves can also help to optimize the operation of the water distribution system. By identifying valves that are consuming more water than necessary, water utilities can adjust the operation of the valves to reduce water consumption and improve the efficiency of the system.

Here's a sample schedule for implementing the proposed method for monitoring the water consumption of vertical valves:

Planning Phase:

- Define the scope of the monitoring program and identify the valves to be monitored.
- Determine the frequency of data collection and the duration of the monitoring program.
- Develop a plan for installing flow meters and data loggers at the selected valves.
- Estimate the cost of the monitoring program and secure funding.

Implementation Phase:

- Install flow meters and data loggers at the selected valves according to the plan developed in the planning phase.
- Set up the data loggers to record flow rate data at the desired frequency.
- Test the flow meters and data loggers to ensure that they are functioning correctly.

Data Collection Phase:

- Collect flow rate data from the data loggers at the selected valves over the duration of the monitoring program.
- Store the flow rate data in a secure database or cloud-based platform for analysis.

Data Analysis Phase:

- Analyze the flow rate data to determine the average water consumption of each valve.
- Identify valves that are consuming more water than necessary and take corrective action to reduce water losses.
- Use the data to optimize the operation of the water distribution system and reduce its environmental impact.

Reporting Phase:

- Prepare a report summarizing the results of the monitoring program, including the average water consumption of each valve and any corrective actions taken.
- Provide recommendations for further improvements to the water distribution system based on the findings of the monitoring program.
- Share the report with relevant stakeholders, such as water utility management, regulators, and customers.

**Maintenance Phase:**

- Maintain the flow meters and data loggers to ensure that they continue to function correctly.
- Regularly review the data collected to identify any trends or changes in water consumption patterns.
- Use the data to inform ongoing maintenance and operational decisions for the water distribution system.

It's important to note that the duration and frequency of each phase can vary depending on the specific requirements of the monitoring program and the size of the water distribution system. However, this schedule provides a general framework for implementing and maintaining a program for monitoring the water consumption of vertical valves.

CONCLUSION

In conclusion, monitoring the water consumption of vertical valves using a combination of flow meters and data loggers can provide valuable insights into the efficiency of water distribution systems, identify leaks and reduce water losses. The case study presented in this article demonstrates the effectiveness of the proposed method in monitoring the water consumption of vertical valves and identifying inefficiencies in the water distribution system.

By implementing this method, water utilities can optimize the operation of their water distribution systems, reduce water losses, and promote sustainable management of water resources. We recommend that water utilities consider implementing this method to improve the efficiency of their water distribution systems and reduce their environmental impact.

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FORMULATION AND EVALUATION OF HERBAL FLOATING TABLET BRAHMI FOR PEPTIC ULCER

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ABSTRACT

The Development and Assessment of a Herbal Floating Tablet for Peptic Ulcer Disease. The goal of creating a herbal floating tablet is to extend the drug's duration in the gastrointestinal tract.

This will increase the drug's bioavailability and result in greater absorption than with a conventional dose form. Due to its gastro-retentive feature, the medicine remains at the site of inflammation for a longer amount of time, resulting in a more targeted action and fewer adverse effects than with conventional dose forms. Both industrialised and developing nations have seen a sharp rise in the usage of herbal products in recent years.

One of the most significant medicinal plants, Bacopa Monnieri (Brahmi), has several beneficial properties including anti-ulcer, anti-inflammatory, anti-microbial, hepatoprotective, analgesic, antipyretic, anti-bacterial, and anti-fungal properties. Due to a number of factors, peptic ulcer disease is very common in the community.

KEYWORDS: Brahmi, Formulation, Quality control parameters, Evaluation

INTRODUCTION

A gastric ulcer is a break in the mucosa of the stomach lining that extends past the muscle and is larger than 5 mm in diameter. Between 45 and 50 percent of the stomach mucosa worldwide is colonised by *Helicobacter pylori*. Particularly in underdeveloped countries where the socioeconomic standing is poorer and the housing is more crowded, people are immunised against this bacterium at a young age. The second most frequent cause of stomach ulcers is NSAID use. When compared to those who don't, patients who take these drugs have a relative chance of getting stomach ulcers. NSAID drugs can cause ulceration through a variety of methods. Fresh juice from the entire *Bacopa Monnieri* plant was tested by Rao et al. for Brahmi juice showed significant anti-ulcer effect, with the exception of ethanol-induced ulcers[1].

While cell shedding (microorganism DNA/mg of protein) and mucin secretion in terms of total carbohydrates: proteins ration (TC:P), two crucial parameters of defensive factors, were significantly decreased and increased respectively, indicating enhancement of protective mucosal factors, brahmi juice was found to have little to no effect on the offensive acid-pepsin secretion. In terms of TC:P, brahmi juice increased or either showed a potential to enhance individual carbs, but it also tended to increase mucosal glycoproteins. Drug delivery systems for floating tablets float in the stomach without slowing down the gastric emptying rate because their bulk density is lower than that of gastric fluids. Herbal floating tablet has a number of benefits. Its ability to prevent ulcers[2].



RATIONALE

Reason behind developing such kind of formulation is to promote herbal pharmaceuticals that have fewer side effects as considering human health. This formulation allows the medicine to spend the most time in gastric juice for prolong action.

Bacopa moniera commonly known as Brahmi is an important medicinal plant that has been attributed with medicinal properties in traditional literature. Bacopa mannieri have active ingredient i.e. Bacosides which have anti-ulcerogenic activity

Floating drug delivery system has a bulk remain buoyant in the stomach without affecting the gastric emptying rate for a prolonged period. While the system is floating on gastric content the drug is released slowly at the desired rate from system. After release of drug the residual system is emptied from the stomach.

The result in an increased gastro-retention time, reduce fluctuation and reduce the dose frequency and improve patient compliance.

MATERIALS AND METHOD

Table 1: List of ingredients and quantity

Ingredients	Quantity (1tablet in mg)
Brahmi powder	250mg
Liquorice	30mg
Sodium Carbonate	70mg
HPMC 4K	60mg
Talc	10mg
Magnesium Stearate	5mg

Procedure

Magnesium Stearate, Sodium Bicarbonate, and Talc were also used in the formulation of all the tablets utilizing the direct compression method and a polymer called HPMC 4K. All ingredients were carefully weighed using an electronic balance after being passed through sieve no. 80. To create a consistent tablet blend, the extract, HPMC, and Sodium Bicarbonate were thoroughly blended in a mortar and pestle. Finally, the mixture was combined with talc and magnesium stearate. Using a single punch tableting machine, the tablet blend was then crushed into individual tablets after being individually weighed in accordance with the formula[3].

Evaluation

Preformulation

1) ANGLE OF REPOSE

A glass funnel with a bottom diameter of 10 mm was positioned at a height of 2 cm over a smooth, level surface. A sample of about 10gm was pushed down the funnel until the tip of the pile produced touched the bottom. The radius of the powder cone was measured after a crude circle was drawn around the pile's base. was determined using the typical radius.

$$\tan \theta = H/R \dots\dots\dots(1)$$

Where,

θ = angle of repose

H= height of pile

R= average radius of powder cone

2) BULK DENSITY

By carefully pouring 25 gm of the sample mixture through a glass funnel and into a 100 ml graduated cylinder, the bulk densities (BD) of the prepared herbal powder mixture were ascertained. It was noted how much space the sample initially occupied. Using the following equation, given as eq. 2, the bulk density was determined[3].

$$BD = \frac{\text{Weight of Granules}}{\text{Volume of Packing}} \dots\dots\dots(2)$$

3) TAPPED DENSITY

By gently pouring 25gm of the sample combination through a glass funnel and into a 100ml graduated cylinder, the tapped density (TD) of the prepared herbal powder mixture was ascertained. When a steady volume was achieved, the cylinder was tapped from a height of 2 inches, and the average of all formulations was then reported..After tapping, the sample's final volume was measured, and the tapped density was determined using the equation 3 formula [4].

$$\text{Tap Density} = \frac{\text{Weight of Granule}}{\text{Tapped Volume}} \dots\dots\dots(3)$$



4) COMPRESSIBILITY

An effective empirical guide is provided by Carr's compressibility. By comparing the bulk density and tapped density, it was possible to determine the compressibility of the herbal powder mixture.

Carr's Index: $(TD-BD/TD*100)$(4)

5) HAUSNER RATIO

It also illustrates the densification of the herbal powder mixture brought on by feed hopper vibration, which was computed using the equation in Equation 5.

Hausner ratio = $\frac{\text{Tapped volume}}{\text{Bulk volume}}$(5)

6) DRUG EXCIPIENTS COMPATIBILITY STUDY

Every excipient utilised in the formulations was mixed with medication concentrations that were reasonable given the final dose form. Each excipient was extensively mixed with the drug extract to increase molecular interactions between the two and, if possible, speed up the reaction. Each drug's extract and excipient mixture was placed separately into vials and stored for a month under study conditions of 40°C and 75% relative humidity for two weeks to track changes. Samples were examined for physical changes after 30 days of drug extract storage with excipients in varied ratios at room temperature, however the combination of Bacopa monniera extract and polymer showed no physical changes[5].

7) STANDARD CURVE

Standard curve of Brahmi was prepared in methanol at their lambda max using UV spectrophotometer.

EVALUATION

1. Morphological Evaluation- Taste, form, color, and odor were all noticed.
2. Tablet Dimensions- Using a calibrated vernier caliper, thickness and diameter were determined. 10 formulation tablets are examined[6].
3. Hardness- The hardness of the tablet was assessed using a Monsanto hardness tester. A compressible spring is held between two plungers in a barrel that serves as the tester's main component. A zero reading was obtained by inserting the tablet into the bottom plunger. The tablet was fractured by rotating the threaded bolt until it pushed the upper plunger up against a spring. A pointer and a gauge were placed in the barrel to measure the force as the spring compressed. The zero-force data was subtracted from the fracture force before being reported. 10 formulation tablets are examined[7].
4. Friability- Roche The Friabilator is used to gauge the tablet's physical strength. The Friabilator held 20 tablets and was operated for 100 rotations. Then the tablets were reweighed and dusted.
5. Weight Variation- 20 tablets were chosen at random. Tablets were weighed, and the average weight and % deviation were also computed. Weight average: 445 mg[8]
6. Dissolution Study- The USP type-1 (Basket apparatus) was used to carry out the dissolution research. 900ml of 0.1N HCL served as the dissolving medium. The water bath used to hold the dissolving medium was thermostatically controlled and kept at a temperature of 37.0°C. The basket contained the tablet. The spin was maintained at 100 rpm. The dissolving medium was maintained constant by replacing the 5 ml of sample at regular intervals with an equivalent volume of dissolution medium. UV Spectrophotometer analysis was used to determine the drug content[9].
7. Buoyancy Time- The floating lag time was used to determine the in vitro buoyancy. 0.1 N HCl was added to a 100 ml beaker that contained the pills. The amount of time needed for the tablet to float and ascend to the surface was calculated as floating lag time[10].

**RESULT AND DISCUSSION****Table 2:- CHARACTERIZATION OF POWDER**

Srno.	Parameter	Observation
1.	Organoleptic characteristics- i. Color ii. Odor iii. Taste	Brown Pungent Bitter
2.	Angle of repose	Passable
3.	Bulk density	0.5 gm/ml
4.	Tapped density	0.66 gm/ml

Table 3:-EVALUATION OF HERBAL FLOATING TABLET

Sr. No.	Parameter	Observation
1.	Morphological evaluation	Deep brown color Slightly bitter
2.	Dimension	10mm
3.	Hardness	4 kg/cm ²
4.	Friability	Passes
5.	Weight variation	Passes
6.	Dissolution Time	8hours

Table 4:-Weight Variation

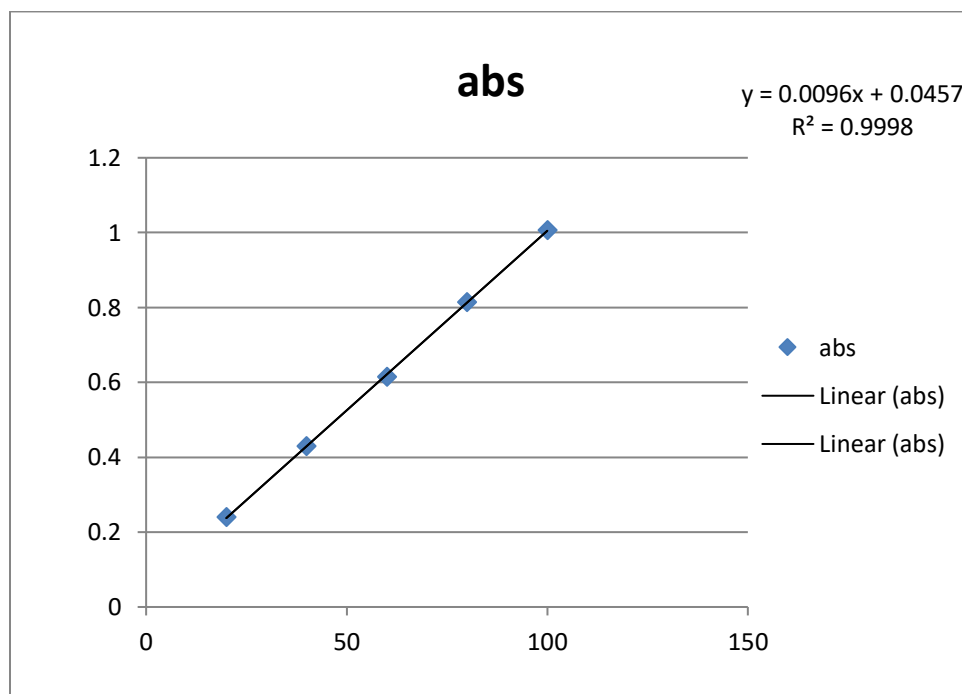
Weight(in mg) of 20 tablets						
444	443	442	444	442	444	442
445	442	444	444	445	445	442
442	443	443	443	443	444	442

Table 5:- Data of Dissolution Study

Time (t) min	Abs. (y)	Conc. (µg/ml) (x)	Conc. (mg/ml)	Conc.Dilution factor(10)	Amt. Of drug Released (mg/900ml)	Amt. Of drug released (mg/5ml)	Cumulative amt. in 900 ml	%CDR
15	0.0679	2.88	0.00288	0.0288	25.9302	0.1448	26.075	10.43%
30	0.0721	3.02	0.00302	0.0302	27.2273	0.1529	27.525	11.01%
60	0.1045	6.62	0.00667	0.0667	59.6673	0.335	60.3	24.12%
120	0.1169	7.99	0.00799	0.0799	71.9123	0.4052	72.95	29.18%
180	0.1397	10.53	0.01053	0.1053	94.8763	0.5358	96.45	38.53%
240	0.1673	13.59	0.01359	0.1359	122.3838	0.6925	124.65	49.86%
300	0.1899	16.11	0.01611	0.1611	145.060	0.8230	148.15	59.26%
360	0.2057	17.86	0.01786	0.1786	160.7953	0.9155	164.8	65.92%
420	0.2276	20.29	0.02029	0.2029	182.6533	1.042	187.7	75.08%
480	0.2410	21.78	0.02178	0.2178	196.1053	1.123	202.75	80.91%

**Table 6:-Calibration Data of Brahmi**

Sr.No	Concentrations($\mu\text{g/ml}$)	Absorbance
1	20	0.2401
2	40	0.4298
3	60	0.6147
4	80	0.8144
5	100	1.007

**Figure 1:-Calibration chart****LIST OF REFERENCES**

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FORMULATION AND EVALUATION OF HERBAL MOUTHWASH TABLET FOR ORAL INFECTION

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ABSTRACT

Goal: Create and assess a herbal mouthwash pill to treat oral infections.

Objective: Compared to pills, mouthwash, and other liquid formulations, herbal mouthwash tablets function more quickly and have a more focused effect. In contrast to liquid mouthwash, it is easier to use. choosing an appropriate drug to make a herbal mouthwash pill that can be used to treat an oral infection.

The major goal of this study was to create and assess a herbal mouthwash pill to treat oral infection using powdered *Psidium guajava* leaves, clove, and fennel. In almost every nation, indigenous communities' cultures and conceptions of health heavily rely on traditional medical study.

Rheumatism, diarrhoea, diabetes mellitus, wounds, sore throats, and coughs are all conditions that guava leaves are frequently used to cure.

KEYWORDS: Guava, formulation and evaluation, Quality control parameters, Evaluation

INTRODUCTION

Mouth Ulcer: ^[1]

“Mouth ulcer is loss or erosion of delicate lining tissue of the mouth (mucosal lining)”

Based on the length, mouth ulcers can be categorised as

- A) Acute (short-term)
- B) Chronic (prolonged)
- C) Combination

Mouth ulcer triggers include accidental bites, hard brushing, minor mouth injuries from dental work, and sports injuries.

- Mouthwashes and toothpastes with sodium lauryl sulphate in them.
- Lack of key vitamins, food sensitivities to acidic foods like strawberries, citrus, and pineapples, as well as other trigger foods like chocolate and coffee ^[2].

Periodontal Disease ^[3]

The main causes of periodontal disease are infections and inflammation of the bone and gums that support and surround the teeth. When gingivitis occurs in its early stages, the gums may swell, get red, and even bleed. Periodontitis, its more severe variant, can cause bone loss, gum tissue separation from the tooth, and eventual tooth loss. Most cases of periodontal disease occur in adulthood. The two main dangers to dental health are periodontal disease and tooth decay.

**White Sponge Nevus^[4]**

colored sponge a disorder known as nevus is characterised by the development of white tissue patches termed nevi (plural: nevus), which resemble thicker, velvety, sponge-like tissue. The oral mucosa, particularly the buccal mucosa on the inside of the cheeks, is where nevi are most frequently found.

Guava leaves^[5]

The guava (*Psidium guajava* L.) tree, belonging to the Myrtaceae family, is a very unique and traditional plant which is grown due to its diverse medicinal and nutritive properties. Guava leaves, combined with the pulp and seeds, are used to treat several gastrointestinal and respiratory conditions as well as to boost platelets in dengue fever patients. The antispasmodic, cough sedative, anti-inflammatory, anti-diarrheic, anti-hypertension, anti-obesity, and antidiabetic effects of GLs are also commonly utilized. The effectiveness of GL isolates as powerful antitumor, anticancer, and cytotoxic drugs has also been demonstrated in studies using animal models.

Chemical Structure

Guava leaves (GLs) are a great source of several macro- and micronutrients that are good for your health, as well as bioactive substances. They have 1717 mg gallic acid equivalents (GAE)/g total phenolic compounds, 103 mg ascorbic acid, 3.64% ash, 0.62% fat, 18.53% protein, and a moisture content of 82.47%.

Why Do Guava Leaves Work So Well for Mouth Illness?^[6]

Vitamin B and C, magnesium, manganese, potassium, iron, lycopene, quercetin, and other elements found in guava leaves can help prevent or lessen toothaches. Guava leaves are a treatment for oral infections because of the various tasks that these nutrients carry out. Guava leaves contain certain qualities that can be used to treat toothache reasons and keep us from seeing the dentist.

- Anti-inflammatory
- Analgesic
- Anti-Microbe
- Accessibility
- Provision of Minerals

For periodontal disease, use guava leaf^[7].

The primary cause of periodontal disease is dental plaque. If plaque is allowed to build up without treatment or oral hygiene practises, gingivitis develops, which then develops into periodontitis. To prevent and control periodontal disease, effective plaque control measures that stop or restrict bacterial adhesion and further growth on the tooth surface are crucial. In the past, people have utilised the sensitive guava leaf paste to keep their mouths clean. Gram-positive and Gram-negative bacteria are both susceptible to the antibacterial effects of guava. Guaijaverin and quercetin, two flavonoids, are principally responsible for the guava's antibacterial properties. The tannins in the bark have given the bark antimicrobial characteristics.

Clove^[8]

Cloves are the dried flower buds of *Eugenia caryophyllus*, a member of the Myrtaceae family.

Phenolic substances such as flavonoids, hydroxybenzoic acids, hydroxycinnamic acids, hydroxyphenylpropens, eugenol, phenolic acids, and gallic acid are chemical constituents. Clove essential oil also contains smaller amounts of the following volatile substances: -pinene, limonene, farnesol, benzaldehyde, 2-heptanone, and ethyl hexanoate.

Uses: Carminative, aromatic, antiseptic, stimulating, and as a flavouring ingredient.

Fennel

Fennels are a medicinal member of the Umbelliferous (Apiaceae) family, *Foeniculum vulgare*. Anethole, Fenchone, Anisole, and Estragol are its chemical components.

Uses: cytoprotective, hepatoprotective, antitumor, antibacterial, antifungal, antioxidant, hypoglycemic, and oestrogenic.



Herbal mouthwash tablet^[9]

Natural mouthwash pills are liquid-free oral care tablets that dissolve in water to produce a mouthwash solution that is simple to use. The bulky liquid mouthwash and its plastic containers were one of the reasons why mouthwash tablets were developed. It is applicable in the following scenarios:

1. Halitosis
2. Periodontal diseases
3. Mucositis
4. Gum illness
5. Hypertonia
6. To disinfect septic sockets
7. Vincent's angina
8. To prevent plaque.
9. To properly provide fluoride to prevent dental cavities.
10. To reduce discomfort.
11. Decrease irritation.

Rational

The goal of creating this type of formulation is to promote herbal pharmaceutical that have fewer side effects and provide selective site effects when it comes to human health.

Herbal medicines, derived from botanical sources, have been applied in oral infection for a long history to inhibit microorganisms, reduce inflammation, and soothe irritation, Relieve pain.

Herbal mouthwash tablets are liquid-free oral care tablets that dissolve into water, creating an easy-to-use mouthwash formula. Mouthwash tablets were made, in part, to help do away with the unnecessary bulk of liquid mouthwash and its plastic containers. When dissolved in water producer a solution which makes it uniquely desirable for use a mouthwash.

It is natural alternative free of toxic ingredient, on simply taking for a lightweight travel friendly.

Mouthwash tablet offer a great solution.

The mouthwash tablet is simple to use.

MATERIALS AND METHODS

Preformulation Study^[10,11]

Organoleptic evaluation: Colour and scent were noted as organoleptic characteristics

Angle of repose: The angle of repose was calculated using the fixed height method to estimate the flow characteristics of the polyherbal extract powder in the formulation. Over the plain, flat surface, a glass funnel with a bottom diameter of 10 mm was mounted at a height of 2 cm.

A sample of about 10 gm was fed down the funnel until the tip of the pile formed and touched the bottom. The radius of the powder cone was measured after a crude circle was drawn around the pile's base. was determined using the typical radius. The following formula can be used to determine the angle of repose:

$$\tan \theta = \frac{h}{r}$$

Bulk density: By carefully pouring 25 gm. of the sample combination through a glass funnel into a 100 ml graduated cylinder, we were able to calculate the bulk densities (BD) of the created polyherbal powder mixture. The initial volumes that the sample occupied were noted

$$\text{Bulk density} = \frac{\text{weight of granules}}{\text{volume of packing}}$$

Tap density: By carefully pouring 25 gm of the sample combination through a glass funnel into a 100 m graduated cylinder, we were able to calculate the tapped densities (TD) of the manufactured polyherbal powder mixture. To obtain a constant



volume, the cylinder was tapped from a height of 2 inches, and the average value of all formulations was then recorded. After tapping, the sample's final volume was measured, and the tapped density was determined

$$\text{Tap density} = \frac{\text{weight of granule}}{\text{tapped volume}}$$

Carr's index: An effective empirical guide is provided by Carr's compressibility. By comparing the bulk density and tapped density, it was possible to determine the compressibility of the polyherbal powder mixture.

$$\% \text{ Carr's index} = \frac{\text{tapped density} - \text{bulk density}}{\text{tapped density}} * 100$$

Hausner's ratio: It also illustrates the densification of the herbal powder mixture brought on by feed hopper vibration.

$$\text{Hausner's ratio} = \frac{\text{tapped density}}{\text{bulk density}}$$

Table 1: Tablet composition

Sr.no.	Ingredient	Quantity required
1	Guava Powder	250 mg
2	Clove Powder	160 mg
3	Fennel Powder	35 mg
4	Crosspovidone	20mg
5	Talc	5mg
6	Magnesium stearate	5mg
7	Starch paste	5%

Preparation of Tablets

Weigh 5g of starch. In a beaker, mix the weighed amount of starch powder with 100 ml of water. Separate the mixture into two equal halves. Until it reaches 50% volume, heat one half. Add the other divided volume to the 50% capacity already mentioned. The 5% starch paste needed to bind the punch is ready

Mix all the ingredients and crush it in mortar pestle to obtain fine powder. Add the starch paste solution steadily until a dough state is reached to the weight API for the tablet. Pass the dough through sieve number 10 to obtain powder granules. The granules are dried in a hot air oven or outside until they are completely dry. Pass the sieve number 40's dried granules through. There are obtained fine particles. Punching tablets is done.

Microbial Assay

Cup-Plate Method

Prepare a nutrient agar plate with the test organism inoculation at a depth of 4-5 mm, then let it firm. The nutritional agar plate should be divided into four equal pieces. Then create four cavities, one in each part, using a sterile borer. Then put antibiotic solution in three cavities and regular solution in one. For 24 hours, slowly incubate the plates at 37°C. Measure the zone of inhibition after incubation.

QC Tests for Tablets

Hardness: The hardness of the tablet was assessed using a Monsanto hardness tester. A compressible spring is held between two plungers in a barrel that serves as the tester's main component. A zero reading was obtained by inserting the tablet into the bottom plunger. By rotating a threaded bolt until the tablet breaks, the higher plunger was pressed up against a spring. A pointer and a gauge were placed in the barrel to measure the force as the spring compressed. The zero-force data was subtracted from the fracture force before being reported. 10 formulation tablets are examined.



Friability: The friability of the tablets was assessed using the Roche friabilator. Twenty previously weighed tablets were put in the friabilator, and it was turned on for 100 revolutions. After that, the tablets were powdered and weighed again.

$$\text{Friability} = \frac{W_1 - W_2}{W_1} * 100$$

Weight variations: Twenty tablets were chosen at random. The average weight of the tablets was estimated after they were weighed. After that, percent deviation was calculated.

Disintegration test: To find the disintegration time, 6 polyherbal dispersible tablets from each formulation were chosen at random. The disintegration media was an acidic buffer (pH 1.2), and the temperature was held constant at 37 0.5 °C, which is the average body temperature. Six tablets' disintegration times were recorded, and the average disintegration time was determined.

RESULT AND DISCUSSION

Preformulation Studies

Sr. no.	Parameter	Observation
1.	Organoleptic characteristics	
	i. Colour	Light brown
	ii. Odour	Aromatic
	iii. Taste	Aromatic
2.	Angle of repose	Passable
3.	Bulk density	0.5 gm/ml
4.	Tapped density	0.65 gm/ml
5.	Compressibility	18.46
6.	Hausner's ratio	0.80

Evaluation of tablets

Sr. no.	parameter	Observation
1	Microbial assay	ZOI=2cm
2	Hardness	3.9 kg/cm ²
3	Friability	0.4%
4	Weight Variation	pass
5	Disintegration time	1 minute

CONCLUSION

Natural cure is mono widely accepted because they are believed to be safer and have fewer adverse effects than synthetic drug. Herbal formulations are becoming increasingly popular on the global market. The herbal mouthwash tablet of guava leaf powder, clove, and fennel powder is a really excellent try. According to the findings of this investigation. The herbal mouthwash tablet formulation has substantial therapeutic efficacy and is a suitable vehicle for drug administration at a cheap cost yet with high potency.



The findings revealed that a novel herbal mouthwash tablet produced using a combined close form had strong antibacterial, anti-inflammatory action. Making it safe and effective for the treatment of oral infection such as mouth ulcer, periodontal disease and white sponge nerves disease

The study concluded with the invention of a herbal mouthwash tablet that is a effective in treatment of oral infection and the distinct characteristics of guava leaf, clove powder and fennel powder were found to be highly beneficial in the treatment of oral infection.

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LEGAL FORCEMENT CANCELLATION CLAUSE OF THE AGREEMENT MADE ON THE BASIS PRINCIPLE OF FREEDOM OF CONTRACT

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ABSTRACT

Agreement cancellation clauses that waive Articles 1266 and 1267 of the Civil Code are generally carried out in business agreements. The basis for considering the inclusion of an agreement cancellation clause refers to the principle of freedom of contract wherein in making the agreement the parties are free to include the things that were agreed upon. Based on these conditions, the legal issues discussed in this study are (1) What is the legal force of the clause on the cancellation of agreements made on the basis of freedom of contract?; and (2) What are the legal consequences of the waiver of Article 1266 and Article 1267 of the Civil Code on debtors? The research method used is normative legal research. The results of this study indicate that (1) The legal force of the cancellation clause of the agreement made on the basis of freedom of contract is binding for the parties if the parties trust each other and agree regarding the binding power of the agreement cancellation clause. The binding force of the cancellation clause of the agreement is effective if the party claiming the cancellation itself is not in default or does not have bad faith. In addition, the other party did not submit an exceptio non adimpleti contractus (defence to a default claim); and (2) The legal consequences of the waiver of Article 1266 and Article 1267 of the Civil Code for a debtor who is negligent in carrying out the agreement resulting in default, the creditor can cancel the agreement and the creditor has the right to claim compensation caused by the debtor.

KEYWORDS: *Cancellation of Agreements, Clauses, Principles of Freedom of Contract.*

INTRODUCTIONS

According to the provisions of Article 1338 of the Civil Code (hereinafter referred to as the Civil Code) which states that agreements made by the parties basically apply as laws for those who make them (Hasanuddin Rahman, 2007). Therefore the agreement raises the achievements of the parties to the agreement.

One example of an achievement that arises because of an agreement is the payment of debt. Debt is an obligation that arises from a contractual basis, so this obligation is referred to as a contractual obligation (Alexander Veremyev, 2013). In accordance with the principle of *pacta sunt servanda*, namely the principle which states that the parties to the agreement are bound and must carry out their achievements or obligations. However, there is always the possibility that one of the parties does not fulfill the obligations specified in the agreement. If the debtor does not carry out/fulfill his obligations, a default occurs. Events of default are often associated with cancellation conditions.

Cancellation conditions as stated in Articles 1266 and 1267 of the Civil Code are considered to always be included in reciprocal agreements, when one party does not fulfill its obligations. In such case the agreement is not null and void, but the cancellation must be asked to the judge. The request must also be made, even though the terms of cancellation regarding non-fulfillment of obligations are stated in the agreement. If the cancellation conditions are not stated in the agreement, the judge is free to, according to the defendant's request, provide a period of time to fulfill his obligations again, with a period of no more than one month.

In agreements made by business people, clauses for the cancellation of the agreement are often found which regulates that the parties have agreed to deviate from Articles 1266 and Article 1267 of the Civil Code. For example, the cancellation clause of an agreement made by business people states that both parties agree with each other that in connection with the cancellation of this agreement, the parties expressly waive the provisions in Article 1266 and Article 1267 of the Civil Code.

The fact is that almost all agreements made by business actors in Indonesia in general, the parties agree to set aside Articles 1266 and Article 1267 of the Civil Code which are included in the agreement cancellation clause. As a legal consequence of the



inclusion of this clause, when a default occurs, the agreement does not need to be requested for cancellation from the judge, but by itself it is cancelled. In this case the default is a void condition. Article 1265 of the Civil Code states that if a condition is cancelled, then the condition terminates the agreement and brings everything back to its original state, as if there had never been an agreement. In an agreement with cancellation conditions, the agreement has already spawned an agreement, only the engagement will be canceled if an event mentioned in the agreement occurs as a conditional clause (Suharnoko, 2008). Thus the giver of the agreement who has received the promised performance must pay for the achievement.

Regarding the waiver of Articles 1266 and 1267 of the Civil Code, there are two conflicting opinions, namely: first, the opinion which states that Articles 1266 and 1267 of the Civil Code are coercive rules (*dwingend recht*), so that the parties cannot deviate, and secondly, the opinion which states that Articles 1266 and 1267 of the Civil Code are rules that are complementary (*aanvullend recht*), so that they can be deviated by the parties. (Agus Yudha Harmoko, 2001)

The reasons for many parties to set aside Articles 1266 and 1267 of the Civil Code in the cancellation clause of the agreement are often the interpretation that the Contract Law adheres to an open system. The articles in it are only a complement. So, the parties may enter into other provisions, as long as they do not violate the principles of decency, custom or law (Article 1339 of the Civil Code). For those who agree with deviance, usually, they argue that the agreement applies as a law for the parties (Article 1338 of the Civil Code). In addition, another reason for the inclusion of an agreement cancellation clause is based on the principle of freedom of contract. The principle of freedom of contract as implied in Article 1338 paragraph (1) of the Civil Code is a principle related to the form and content of agreements. The meaning of freedom of contract is that each person is free to determine with whom he will enter into an agreement, free to determine the form and content of the agreement and free to make a choice of law. Based on this principle of contractual freedom, the parties feel free to determine the contents of the agreement, including the cancellation clause of the agreement in the agreement they made. (Raharjo Handri, 2009)

Based on the description above, the legal issues that deserve to be studied in this regard, as stated above, are two opinions on Articles 1266 and 1267 of the Civil Code. The first opinion states that the provisions contained in Articles 1266 and 1267 of the Civil Code are interpreted as rules that are coercive (*dwingend recht*) and therefore the parties must not deviate through the agreement clause. The judge's decision in this case is constitutive, meaning that the breakup and termination of the agreement is caused by the judge's decision, not declarative in nature (the agreement is broken due to default, while the judge's decision simply states that the agreement has been broken). Meanwhile, the second opinion states that Articles 1266 and 1267 of the Civil Code are complementary regulations (*aanvullend recht*) so that they can be set aside by the parties making the agreement.

Departing from the existence of a conflict norm between the provisions in Article 1266 and Article 1267 of the Civil Code with the principle of freedom of contract as stipulated in Article 1338 of the Civil Code which gives freedom to the parties to determine the contents of the agreement including a cancellation clause of the agreement that contradicts Articles 1266 and Article 1267 of the Civil Code which states that the cancellation of the agreement can only be done through a judge's decision cannot be done based on the will of the parties even though it has been stated in the agreement.

Based on the background of the problems described above, the formulation of the problem in this research can be put forward in the research questions are (1) How is the legal force of the agreement cancellation clause made on the basis principle of freedom of contract? and (2) What are the legal consequences of the waiver of Article 1266 and Article 1267 of the Civil Code on debtors?

Research Methodology

The research method used in this research is normative legal research. Normative legal research is research conducted by examining the laws and regulations that apply or apply to a particular legal issue. Normative legal research examines law from an internal perspective with the object of research being legal norms (I Made Pasek Diantha, 2017). Normative research is often referred to as doctrinal research, namely research whose object of study is documents of laws and regulations and library materials (Peter Mahmud Marzuki, 2011). Normative legal research is also called research that is focused on examining the application of rules or norms in positive law (Johnny Ibrahim, 2012). According to I Made Pasek Diantha, normative legal research has a role in defending the critical aspects of his legal science as a normative science. (I Made Pasek Diantha, 2017)

DISCUSSION

Power of Law Cancellation Clause of Agreement Made on The Basis Of Freedom of Contract

Basically, agreements made for business purposes contain void clauses, namely the parties agree to cancel and terminate the agreement when the conditions stated in the cancellation terms are met. In this sub-chapter, examples of cancellation clauses from agreements in the business world are first presented, after which they are analyzed in the final section. To explain the cancellation clause of the agreement as a condition for this cancellation, researchers have collected several agreements in the business world. Agreements in the business world put forward always include a clause for canceling the agreement by setting aside Articles 1266 and Article 1267 of the Civil Code. The reasons for including clauses for canceling agreements with the waiver of Article 1266 and Article 1267 of the Civil Code from each agreement are described as follows:

In the agreement cancellation clause by setting aside Article 1266 and Article 1267 of the Civil Code in this agreement so that agreements involving fraudulent contractors, KKN and forgery can be canceled first, to avoid further losses, without having to wait



for a judge's decision. Meanwhile, acts of KKN, fraud and forgery which are classified as criminal acts are further processed in the Criminal Court. So, in this agreement, the cancellation of the agreement is not canceled by the judge in accordance with the provisions of Articles 1266 and 1267 of the Civil Code, but is canceled according to the clause on the cancellation of the agreement as stated in the agreement.

Inclusion of an agreement cancellation clause with the exclusion of Article 1266 and Article 1267 of the Civil Code in the cancellation terms of the Construction Agreement between PT. Jaya Ancol Development Tbk. with PT. Jaya Real Property Tbk. regarding the Development and Development of the West Ancol Area with the practical reason of terminating the agreement when one of the parties defaults, without having to wait for a judge's decision. This is done so that the development project for the West Ancol area can be continued by other contractors without having to go through a court of law, which of course will take a long time and be complicated.

Likewise in the Ship Repair Agreement at PT. Sinbat Procast Teknindo's waiver of Article 1266 and Article 1267 of the Civil Code is also mentioned in the cancellation clause of the agreement. This is because the termination or cancellation of the contract is only done with the consent of both parties regardless of the intervention of the court. Contract cancellation can be done by one of the parties if the other party defaults. It is also clearly stated in the clause on the cancellation of the agreement that one of the consequences of default is the cancellation of the agreement and this cancellation without going through the courts. This is based on the principle *exceptio non adimpleti contractus*, which states that a contract can be terminated by one of the parties (without court intervention) if the other party defaults.

The reason underlying the inclusion of the clause canceling the agreement by setting aside Article 1266 and Article 1267 of the Civil Code is that the parties uphold the principle of freedom of contract and consider that the agreement applies as a law for the parties who make it (*Pacta Sunt Servanda*).

The reason the parties are free to determine the contents of the agreement based on the principle of freedom of contract and the agreement applies as a law for the parties who make it (the principle of *Pacta Sunt Servanda*) is also stated in the Cooperation Agreement Between PT. Putra Raditama with PT. Riamas Housing Propertindo City regarding Cilegon City Hotel Management; Cooperation Agreement between PT. Unirental Daya Pratama with Djoesman Badu regarding Coal Mining Cooperation; The Cooperation Agreement between the Regent of Sampang and PT. Surabaya Inn Bestari regarding Management of Camplong Tourist Attractions; and Lease Agreement, with the example of Lease Agreement between PT. Indonesian Railways with PT. Hosseldy Rabel regarding the Perumka Land Lease, to include a cancellation clause of the agreement by setting aside Article 1266 and Article 1267 of the Civil Code, besides that the parties to the agreements also want certainty to terminate or cancel the agreement, without going through a convoluted and time-consuming court process long.

As previously stated in relation to Article 1266 of the Civil Code, there are two contradictory opinions, namely: first, the opinion which states that Article 1266 of the Civil Code is a mandatory rule (*dwingend recht*), so it cannot be deviated by the parties, and secondly, the opinion stating that Article 1266 of the Civil Code is a rule that is complementary (*aanvullend recht*), so that it can be deviated by the parties. (Agus Yudha Harmoko, 2001)

According to Gunawan Widjaja and Kartini Muljadi, the formulation of Article 1266 of the Civil Code was made to protect the interests of one of the parties in a reciprocal agreement. In such an engagement, each party is bound to carry out the achievements of one another. It can happen that the achievements made by one of the parties in a reciprocal engagement are carried out prior to the achievements of the other party or in other words, these reciprocal achievements may not be carried out simultaneously. For this reason, in order to protect the interests of parties with good intentions in a reciprocal agreement, the Civil Code for the sake of law stipulates that null and void conditions must always be deemed to exist. (Gunawan Widjaja dan Kartini Muljadi, 2003)

The legislators have given the arrangement for the cancellation of the agreement tacitly which rests almost entirely on fiction because most of the parties who will enter into an agreement simply do not know there is an opportunity to rely on conditions like that when the legislators have used legal fiction by arranging the cancellation of the agreement secretly. (Gr. Van der Burght, 2012)

This is in accordance with the characteristics of the *naturalia* element because the *naturalia* element is an element that is attached to the agreement where an element that is not specifically agreed upon in the agreement, is secretly considered to exist in the agreement because it is already an element attached to the agreement (Sudikno Mertokusumo, 2010). The natural element of this business agreement is regulatory, which means that the parties are free to regulate it themselves, even if the provisions are not coercive, free to deviate from them. Conversely, if the parties do not regulate it themselves in the agreement, the statutory provisions regarding the agreement will apply (Herlien Budiono, 2011). Furthermore, Article 1266 of the Civil Code is also classified as a complementary law (*aanvullend recht*), so that in principle the parties can exclude material working power and retroactive power. (Gr. Van der Burght, 2012)

The parties agreed to the cancellation clause of the agreement with the waiver of Article 1266 of the Civil Code and Article 1267 of the Civil Code where the waiver of Article 1266 of the Civil Code and Article 1267 of the Civil Code that has been agreed upon is considered law for the parties and may not be interfered with by a third party, namely the judge. The agreement applies as a law for the parties who make it (*pacta sunt servanda* principle) as long as it does not violate the terms of the validity of the agreement as regulated in Article 1320 of the Civil Code. As a consequence of the *pacta sunt servanda* principle, the judge may not interfere with the contents of the agreement made by the parties. (O.C. Kaligis, 2009)



In practice, the view is accepted that if the parties agree to waiver of Article 1266 of the Civil Code and Article 1267 of the Civil Code, then cancellation without the need for the mediation of a judge's decision because the cancellation will be canceled without the mediation of a judge in the event of default. Because there is still an opportunity for the parties to set aside Article 1266 paragraphs (2), (3) and (4) of the Civil Code, the parties must expressly state that the rights owned by the parties based on the provisions of the article have been expressly released (Herlien Budiono, 2010). According to Herlien Budiono, the parties who commit themselves to waive Article 1266 of the Civil Code and Article 1267 of the Civil Code made in the agreement should obey and fulfill what they have agreed on (Herlien Budiono, 2006). Furthermore, trust between the parties is an important element in the binding force of the agreement cancellation clause which overrides Articles 1266 and 1267 of the Civil Code where the binding power of the agreement must be sought in the trust raised by the opposing party. (Elly Erawati dan Herlien Budiono, 2010)

According to Solene Rowan, provisions regarding agreements that can only be canceled by a court can only be overridden by the use of a proper agreement cancellation clause. This clause is implemented in a way that does not require the aggrieved party to ask the court to give a decision to terminate the agreement. He can end (terminate) as soon as possible (Solene Rowan, 2012) As a comparison with French law where the interpretation of the agreement cancellation clause is broad, the French court asked for this right to be exercised in good faith. (Solene Rowan, 2012)

The legal force of the waiver of Article 1266 of the Civil Code and Article 1267 of the Civil Code is effective if the party claiming the cancellation itself is not in default or has no bad intentions (Nili Cohen dan Ewan McKendrick, 2005). In addition, the other party does not submit *exceptio non adimpleti contractus* (Herlien Budiono, 2010). According to Sutan Remy Sjahdeini, the cancellation clause of this agreement is an important clause for protecting the interests of business actors such as banks because business actors in this case will be very reluctant to provide credit if the cancellation of the agreement can only occur based on a court decision or through a long and lengthy litigation process (Sutan Remy Sjahdeini, 2009). The cancellation clause of the agreement is actually more practical. (Dwi Agus Prianto, 2010)

Daniel Friedmann believes that termination is done to avoid bad bargains (Jack Beatson dan Daniel Friedmann, 1995). According to P.S. Atiyah and Stephen A. Smith, the cancellation clause of this agreement is vulnerable since the parties can and often do request the right to cancel even the most trivial thing to cancel and termination of the agreement can be established normally without proving guilt. (P.S. Atiyah dan Stephen A. Smith, 2006)

Legal Consequences of Waiver of Article 1266 and Article 1267 of The Civil Code on Debtors

Wirjono Prodjodikoro said that default is the absence of an achievement in contract law, meaning something that must be implemented as the contents of an agreement. Perhaps in Indonesian can be used the term "implementation of promises for achievement and non-performance of promises for default" (Wirjono Prodjodikoro, 1999). R. Subekti stated that "default" is negligence or negligence which can be of 4 types, namely: (R. Subekti, 1979)

- a. Not doing what he promised to do.
- b. Carry out what has been promised, but not as promised.
- c. Did what was promised but too late.
- d. Doing an act that according to the agreement cannot be done.

Mariam Darus Badruzaman said that if the debtor "because of his mistake" does not carry out what was agreed upon, then the debtor is in default or default. The word because the mistake is very important, because the debtor does not carry out the promised performance is not at all because of his fault (R. Subekti, 1979) According to J Satrio, default is a situation where the debtor does not fulfill his promise or does not fulfill it as he should and all of this can be blamed on him (J. Satrio, 2005). Yahya Harahap defines default as the implementation of obligations that are not timely or done improperly. (M. Yahya Harahap, 2006)

The existence of a default creates an obligation for the debtor to provide or pay compensation (*schadevergoeding*), or with a default by one party, the other party can demand cancellation of the agreement. This results in if one of the parties does not fulfill or does not carry out the contents of the agreement that they have agreed on or that they have made, then those who have violated the contents of the agreement have committed a breach of contract. From the description above, it can be seen the intent of the default, namely the notion that says that a person is said to have committed a default if "does not provide achievement at all, is late in providing achievement, performs not according to the provisions stipulated in the agreement".

The time factor in an agreement is very important, because it can be said that in general in an agreement both parties want the terms of the agreement to be carried out as quickly as possible because the determination of the time for the implementation of the agreement is very important to know when the time has come for those who are obliged to keep their promises or carry out an agreement that has been agreed upon. Thus that in every performance agreement is something that must be fulfilled by the debtor in every agreement. Achievement is the content of an agreement, if the debtor does not fulfill the achievements as specified in the agreement, it is said to be in default.

The occurrence of default can cancel the agreement. This is regulated in Article 1266 of the Civil Code which stipulates "Cancel conditions are considered to always be included in reciprocal agreements, when one party does not fulfill its obligations". In such case the agreement is not null and void, but the cancellation must be requested to the judge. This request must also be made,



even though the terms of cancellation regarding non-fulfillment of obligations are stated in the agreement. If the cancellation conditions are not stated in the agreement, the Judge is at liberty to, according to the circumstances, at the request of the defendant, provide a period of time to still fulfill his obligations, which period however cannot exceed one month.

Article 1266 of the Civil Code explains that legally default is always considered a void condition in an agreement so that a party who feels disadvantaged because the other party defaults can demand cancellation of the agreement through the court, either because the default is stated as a condition void in the agreement or not included in the agreement. If the cancellation conditions are not included in the agreement, the judge can give the default party the opportunity to continue to fulfill the agreement by giving a grace period of not more than one month. (Ahmadi Miru dan Sakka Pati, 2008)

Since when can a debtor be said to have deliberately or negligently failed to fulfill his achievements, this really needs to be questioned, because such default has consequences or legal consequences for the debtor. In order to find out since when the debtor was in a state of default, it is necessary to pay attention to whether or not the grace period for fulfilling the achievement was determined in the agreed agreement. In the agreement to give something or to do something, the parties determine and may also not determine the deadline for the implementation of the achievement by the debtor (Abdulkadir Muhammad, 2010). In the event that the grace period for the fulfillment of achievements is not specified, it is deemed necessary to warn the debtor to fulfill these achievements.

Everything about default has been regulated in the Civil Code, as already stated that all kinds of losses that occur due to default can be subject to compensation. Compensation can be in the form of costs incurred, losses suffered and interest agreed by the parties. All default arrangements and settlement methods have been regulated clearly and in detail, it only remains to be resolved by the authorized law enforcers. For example, in the application of default cases in the field of fiduciary and consumer financing, all kinds of rules can be found in the governing laws. In a reciprocal (bilateral) agreement, the default of one party gives the other party the right to cancel or terminate the agreement through a judge's decision. This can be seen in Article 1266 of the Civil Code.

Article 1266 of the Civil Code stipulates "Terms of cancellation are considered always included in reciprocal agreements, when one party does not fulfill its obligations". Based on this, the agreement is not null and void, but the cancellation must be asked to the judge. This request must also be made, even though the terms of cancellation regarding non-fulfillment of obligations are stated in the agreement (Yulia Vera Momuat, 2014). It is undeniable that the formulation of Article 1266 paragraph (1) of the Civil Code contains contradictions and gives the impression that because the debtor is in default, the agreement is automatically canceled due to law, even though the cancellation of the agreement must be requested to the judge, Article 1266 paragraph (2). In fact, this article is intended to provide protection to creditors against losses as a result of defaults on debtors, where the intent becomes clearer when we read Article 1266 paragraph (3) where the article states that if the cancellation conditions are expressly stated in the agreement, but a cancellation request must be made or the cancellation must be demanded. In fact, Article 1266 paragraph (4) stipulates that at the request of the defendant, the judge, taking into account the circumstances, is free to determine the time period as long as it does not exceed 1 month. (J. Satrio, 2005)

A loss can be blamed on the debtor, if there is an element of intent or negligence in the event. The debtor can be said to be intentional if the intention and will of the loss occurs, while the debtor is said to have committed negligence, if the debtor should have known or should have suspected that the result of his actions or attitude caused a loss to the creditor. It is necessary to suspect or know that the debtor is a normal person, so that he can predict all possible losses, thus it can be said that the error (*schuld*) is related to the problem of "being able to avoid" by acting or behaving differently and "can predict" a loss will occur. (J. Satrio, 1999)

CONCLUSION

Based on the discussion that has been described above, it can be concluded the following matters

1. The legal force of the agreement cancellation clause made on the basis of freedom of contract is binding for the parties if the parties trust each other and agree on the binding force of the agreement cancellation clause which overrides Article 1266 and Article 1267 of the Civil Code. The binding force of the cancellation clause of the agreement is effective if the party claiming the cancellation itself is not in default or does not have bad faith. In addition, the other party did not submit an *exceptio non adimpleti contractus* (defence to a default claim).
2. Due to the legal consequences of the waiver of Article 1266 and Article 1267 of the Civil Code for debtors who are negligent in carrying out the agreement, causing a default, the creditor can cancel the agreement and the creditor has the right to claim compensation caused by the debtor.

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THE PARENTS' PARTICIPATION AND STUDENTS' BEHAVIOR IN MODULAR DISTANCE LEARNING TOWARDS THE ACADEMIC PERFORMANCE OF THE STUDENTS OF PAG-ASA NATIONAL HIGH SCHOOL

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ABSTRACT

This study aimed to identify the level of the parents' participation and level of the students' behavior in accomplishing the Learning Activity Sheets and/or Modules of the modular distance learning students of Pag-asa National High School. Predominantly, this study is focused on the identified characteristics or roles of the parents and the behaviors of the students during the modular distance learning to modify the process of the school in garnering bigger percentage of Learning Activity Sheets to be retrieved from the students. The identified behavior of the modular distance learning students was also correlated to the students' academic performance to improve and develop learning materials such as the Learning Activity Sheets and the Modules. The study utilized the descriptive-survey type of research to determine the level of the parents' participation and students' behavior in modular distance learning. The results of the study revealed that the level of the parents' participation in accomplishing the Learning Activity Sheets has a verbal interpretation of Great Extent and the given situations are often done by the parents. On the other hand, the behavior of the students in accomplishing the Learning Activity Sheets, has a verbal interpretation of Great Extent and the given behavioral situations are considered often done by the learners. This study focused and limited only on the level of the parents' participation and students' behavior based on the perception of the learners from Grade 10 Modular Distance Learning section one (MDL 1) and to assess the relationship of the students' behavior to their performance during the first year of the implementation of the modular distance learning. This action research will guide the parents in assisting their children to accomplish their Learning Activity sheets considering the different behaviors of their children during the time of pandemic. The results of this study will also serve as an initial move to work with the parents and other members of the schools and the community to help the learners in improving their behavior and study skills.

INTRODUCTION

The COVID-19 pandemic has brought a chaos in every aspect of the education system not only in the Philippines but also in the whole world. DepEd Order No. 018, series of 2020, the Policy Guidelines for the provision of Learning Resources in the Implementation of the Basic Education Learning Continuity Plan, reiterates that education must be innovative and resourceful in delivering quality, accessible, relevant, and liberating education and ensuring that learning opportunities are safely provided to the learners through different learning delivery. Through this, the City Schools Division of Dasmariñas selected Modular Distance Learning as one of the learning modalities to be given to the learners in the entire city.

Modular distance learning in the Philippines is one of the learning modalities being offered to the Filipino students in the public schools in the Department of Education. In the first year of the implementation of the Basic Education Learning Continuity Plan of the Department of Education, everyone was stunned on the new process of delivering education to the learners. To fully accomplish the Learning Activity Sheets, the students need to read, search on the internet, and make any other ways just to learn based on the given Learning Activity Sheets and/or Modules. The help of the parents and other members of the family who are capable of providing the educational needs of the learners as well as the behavior of the learners are facets to successfully accomplish the Learning Activity Sheets and/or Modules.



During the first year of implementation of the modular distance learning, the teachers observed a low number of parents passing the Learning Activity Sheets of their children. The students were having difficulties in accomplishing the activities from the Learning Activity Sheets and/or Modules Ysthr Rave Pe Dangle et al. (2020). As a result, the MDL learners had a low academic performance during the school year 2020-2021. The perceptions of the students and the behavior of the learners in accomplishing the Learning Activity Sheets and/or Modules are big contributors to the performance of the learners that is why this actions research is developed. "In a distance learning approach, parents would have to play an active role in the learning process. They would be the one to facilitate and guide their children through the modular lessons that would be sent to students while doing remote learning. The modular approach situates Filipino students to learn in the comfort of their homes. Limited contact with teachers will place parents or guardians as the learners' model. Parents are their first teachers, and they have a key role in shaping up their character. A balance of education at home and school molds a student's actual learning. Parental encouragement had played a crucial role in successful students. Their role is not limited to home but involvement in school activities too (Lebaste, 2020)."

In the study of Ysthr Rave Pe Dangle et al. (2020), on the implementation of modular distance learning in the Philippine secondary public schools, most students cannot study independently. 70% of them cannot easily follow instructions in the modules. Some learners cannot finish their modules on time because they mostly spend their study time teaching their siblings with their modules and helping their parents. The teachers think that students' answers in their modules have no validity, and most probably, mastery of the lessons is impossible to attain. Parents lack knowledge to assist their child/children.

Parents have the biggest roles in assisting the educational needs of the students in this time of pandemic. However, most students were not able to pass their learning activity sheets on time during the first year of implementing the modular distance learning. To address this concern, Pag-asa National High School conducted this study to identify the parents' roles and students' behavior in accomplishing the Learning Activity Sheets to assist the parents to be better in supporting their children in accomplishing the Learning Activity Sheets and/or Modules.

This study aimed to use the identified parents' roles and student' behavior in accomplishing the Learning Activity Sheets and/or Modules. The results of the study will guide the parents in assisting their children to accomplish their Learning Activity Sheets considering the different behaviors of their children during this period of pandemic. The result of this study will also serve as an initial move to work with the parents and other members of the schools and the community to support the learners in improving their behavior and study skills.

MATERIAL AND METHODS

This study aimed to identify the level of the parents' participation and the students' behavior of Grade 10 MDL 1 as well as the relationship of the students' performance and students' behavior during the first year implementation of modular distance learning. It sought to answer the following questions:

1. What is the level of the parents' participation in accomplishing the Learning Activity Sheets?
2. What is the level of the students' behavior in accomplishing the Learning Activity Sheets?
3. What is the level of achievement of the students during the school year 2020-2021?
4. Is there a significant relationship of the students' behavior and the students' academic performance during the school year 2020-2021?

This study focused and limited only on the level of the parents' participation and students' behavior based on the perception of the learners from Grade 10 Modular Distance Learning section one (MDL 1) and the relationship of the students' behavior and students' performance during the first year implementation of the modular distance learning as well as the level of achievement of the students. The identified parents' characteristics or roles and students' behavior in accomplishing the Learning Activity Sheets can be used for seminars for the parents and students during general assemblies before a school year starts.

Purposive sampling technique was used in this study because all the Grade 10 MDL 1 learners were taken as participants. A purposive sample is a non-probability sample that is selected based on the characteristics of a population and the objective of the study. Purposive sampling is also known as judgmental, selective, or subjective sampling. This type of sampling can be advantageous. This design is based on choosing individuals as samples according to the situations when you need to reach a targeted sample quickly and where sampling to proportionality is not the primary concern. There are 52 respondents involved in this study.

In gathering the data, permission to conduct the research to the MDL 1 was asked to the school head and when it was approved, the researchers prepared a self-made questionnaire for the respondents.

The questionnaire, as a research instrument, required the respondent to write answers to questions about the topic. The answer form was usually structured. There were fixed choices, or the state may be open. The keyword in questionnaire construction was relevance (Zulueta and Perez, 2010).



The descriptive survey was used as an instrument to gather data in this study. According to Mc Combes (2019), descriptive survey research uses surveys to collect data about varying subjects. This data aims to know the extent to which different conditions can be obtained among these subjects. The questions were constructed by the researchers and restored in the google form, and the link was sent to the respondents through Facebook Messenger. The questionnaires were retrieved through the use of google forms and the data were transferred in a Microsoft Excel.

Once the measuring instruments had been retrieved, the researchers processed the raw data into quantitative forms. Data processing involved input. This involved the responses to the measuring apparatus of the subjects of the study.

The frequency distribution was employed in the study to describe variables after the data were coded, tabulated, and analyzed. A frequency distribution is a list, table or graph that displays the frequency of various outcomes in a sample. Each entry in the table contains the frequency or count of the occurrences of values within a particular group or interval, and in this way, the table summarizes the distribution of importance in the sample.

Furthermore, Mean can be considered the center of the gravity of the distribution and is the most appropriate measure of central tendency when the data are in the interval ratio or ratio scale.

In addition, descriptive analysis on the parents' participation, students' behavior and the students' performance during the school year 2020-2021 was interpreted.

Lastly, a correlational analysis was also used to describe the relationship of the students' behavior and students' performance during the first year implementation of the modular distance learning.

RESULTS AND DISCUSSION

Research Question1: What is the level of the parents' participation in accomplishing the Learning Activity Sheets?

Table 1: The Level of Parents' Participation in Modular Distance Learning

My parents...	Mean	SD	Verbal Interpretation
1. guide me in reading articles or reading materials from the LAS/Modules	3.23	1.42	Moderate Extent
2. guide me in understanding the directions of every activity	3.38	1.27	Moderate Extent
3. provide example answers in the activities I am working with if I do not understand	3.04	1.41	Moderate Extent
4. guide me searching on the internet the topics I do not understand	3.08	1.45	Moderate Extent
5. provide me mobile load for my internet consumptions / pay the internet bills for my internet consumptions	4.19	1.12	Great Extent
6. give me time to play and watch (either online or on television)	3.92	1.17	Great Extent
7. check my activity sheets before passing them in school	4.23	1.38	Very Great Extent
8. pass my activity sheets on time based on the schedule of our school	4.37	1.03	Very Great Extent
9. remind me every day to work on my LAS	4.33	1.04	Very Great Extent
10. communicate with my teachers all the time regarding my performance	3.50	1.32	Great Extent
11. attend school meetings either face to face or virtual	3.44	1.50	Great Extent
12. ask my feelings before and after I answer my LAS	3.27	1.51	Moderate Extent
13. give me rewards if I finish may LAS on time	2.63	1.47	Moderate Extent
14. remind me to keep updated on the announcement and reminders posted in GC.	4.25	1.15	Very Great Extent
15. encourage me to watch the video lesson prepared by the subject teachers to understand the lesson better	4.13	1.22	Great Extent
Weighted Mean: SD	3.67:1.41		
Verbal Interpretation	Great Extent		



<i>Legend</i>	<i>Remarks</i>	<i>Verbal Interpretation</i>
4.20-5.00	Always	Very Great Extent
3.40-4.19	Often	Great Extent
2.60-3.39	Sometimes	Moderate Extent
1.80-2.59	Rarely	Low Extent
1.00-1.79	Never	Very Low Extent

Table 1 presents the level of parents' participation in Modular Distance Learning based on the perception of the modular distance learning students of MDL 1.

The results showed that the perception of the students to the parents' participation during the modular distance learning is verbally interpreted from Moderate Extent to Very Great Extent with supported Weighted Mean of 3.67, Standard Deviation of 1.41 and an overall Verbal Interpretation of Great Extent. This means as whole, the given situations are often done by the parents.

As shown in the table, with a verbal interpretation of Moderate Extent, parents were guiding their children in reading articles from the Learning Activity Sheets and/or Modules with a Mean of 3.23 and Standard Deviation of 1.42. The parents were also noted by the learners that they were helping them in understanding and following the given directions in the Learning Activity Sheets or Modules with a Mean of 3.38 and Standard Deviation of 1.27. Parents were also recognized in helping their children by providing examples to the activities they do not understand with a Mean of 3.04 and Standard Deviation of 1.41. With a Mean of 3.08 and Standard Deviation of 1.45, the parents guided their children in searching the topics if they do not understand during their modular distance learning. It is also verbally interpreted to Moderate Extent that the parents were giving the learners a reward whenever they finished their Learning Activity Sheets on time. The mentioned situations are sometimes performed by the parents in helping the learners to accomplish their Learning Activity Sheets.

The next situations are perceived by the learners with a verbal interpretation of Great Extent. The parents provided the learners mobile load or paid their internet consumptions with a Mean of 4.19 and Standard Deviation of 1.12. The learners also recognized that their parents were allowing them to play and watch either on television or online with a Mean of 3.92 and Standard Deviation of 1.17. The parents were also communicating with their children's teachers with a Mean of 3.50 and Standard Deviation of 1.32. Through the Mean of 3.44 and Standard Deviation of 1.5, the parents were also attending meetings either online or face-to-face. It has also a verbal interpretation of Great Extent and Mean of 4.13 and Standard Deviation of 1.22, the parents encouraged their children to watch the videos prepared by the teachers for them to understand more the lessons. The data revealed that the given situations were often performed by the parents to support the learners to accomplish the Learning Activity Sheets.

The last situations garnered the highest mean with a verbal interpretation of Very Great Extent. The parents checked the activity sheets of their children before they pass them on the given schedule with a Mean of 4.23 and Standard Deviation of 1.38 as well as, the parents passed the activity sheets on time in the school with a Mean of 4.37 and Standard Deviation of 1.03. It is noted also by the learners that their parents reminded them every day to work on their Learning Activity Sheets or Modules supported by a Mean of 4.33 and Standard Deviation of 1.04. It was also taken note by the learners that their parents reminded them to keep updated on the announcements and reminders on their Facebook Group Chat with a Mean of 4.25 and Standard Deviation of 1.15. The result shows that the mentioned situations were always executed by the parents to help the learners in accomplishing the Learning Activity Sheets or Modules.

In the study of Lase et al. (2020), "For parents, the learning approach implemented during the Covid-19 pandemic emergency must be lived and supported in the absence of other options. Although parents do not have negative perceptions, distance learning has increased the burden on parents or families economically, psychologically, and socially. The lack of parental involvement and support in children's learning process at home is generally due to the lack of time and the inability of parents to become teachers for their children at home. Actions to accompany and support the learning process of children at home are carried out to provide internet packages, help children master the material, and participate in completing assignments or tests given by the teacher."

Parents are really playing an important role in helping the learners to accomplish their learning activities either online or modular distance learning. Aside from their work of providing the needs of the family, the responsibility of monitoring their children during their class hours or accomplishing the Learning Activity Sheets or Modules adds a burden on their part as parents. The parents need to check the activities of their children before they pass the answer sheets in the school. It is noted also that parents are having tough time to help their children in accomplishing the Learning Activity Sheets or Modules because they were not used to do it in the past years.

The phenomenon of parental involvement in the remote learning of children amid the current challenging period presents a timely need to capture history through the lived experience at the present moment. It is important that parents keep a positive response to the challenges. A recent study by Morelli et al. (2020) showed that the confidence of the parents of their abilities mediated the



influence of psychological distress and regulatory emotional efficacy of parents on the emotional regulation and negativity of the children, Cahapay (2021).

Research Question 2: What is the level of the students' behavior in accomplishing the Learning Activity Sheets?

Table 2. The Level of Students' Behavior in Modular Distance Learning

In studying during the pandemic l...	Mean	SD	Verbal Interpretation
1. search on the internet if I do not understand a topic	4.25	0.97	Very Great Extent
2. ask my parents, guardians, older siblings, others to help me if I do not understand a lesson	3.33	1.42	Moderate Extent
3. use dictionary if I do not understand a word	3.67	1.28	Great Extent
4. follow my schedules in every subject in answering my LAS	3.08	1.01	Moderate Extent
5. ask my teachers in our group chat if I do not understand a lesson or personal message them to ask questions	3.75	1.08	Great Extent
6. finish my LAS in advance	3.38	1.07	Moderate Extent
7. ask my teachers to provide feedbacks on my works	2.54	1.32	Low Extent
8. used cellphone applications to help me answer may activities	3.46	1.36	Great Extent
9. watch Youtube to search information about my lessons	3.92	0.99	Great Extent
10. ask my classmates in the group chat about our lessons	2.6	1.18	Moderate Extent
11. check our group chats for announcement from my teachers and classmates	4.75	0.71	Very Great Extent
12. attend class meetings virtually with my teachers	3.5	1.13	Great Extent
13. follow the schedule as indicated in the WHLP in answering the task	4.21	0.94	Very Great Extent
14. watch the video lessons posted by my teacher in the GC	4.6	0.77	Very Great Extent
15. I watch DepEd TV and use DepEd Commons and other educational resources provided by DepEd	3.21	1.32	Moderate Extent
Weighted Mean: SD	3.42:0.97		
Verbal Interpretation	Great Extent		

Legend

4.20-5.00

3.40-4.19

2.60-3.39

1.80-2.59

1.00-1.79

Remarks

Always

Often

Sometimes

Rarely

Never

Verbal Interpretation

Very Great Extent

Great Extent

Moderate Extent

Low Extent

Very Low Extent

Table 2 presents the level of perception of the students' behavior during the modular distance learning of the students from Grade 10 Modular Distance Learning section one (MDL 1).

The verbal interpretation of the given behavioral situations is perceived by the learners from Low Extent to Very Great Extent.

Based on the table, the learners perceived to a Moderate Extent with a Mean of 3.33 and Standard Deviation of 1.42, they asked their parents, guardians, and older siblings a help whenever they do not understand the lessons. The learners also used dictionary whenever they do not understand a word with a Mean of 3.67 and Standard Deviation of 1.01. The students worked on their Learning Activity Sheets (LAS) in advance with 3.38 as supporting mean and Standard Deviation of 1.07, while they followed the given schedules in answering the LAS with a Mean of 3.08 and Standard Deviation of 1.28. The learners noted also that they moderately asked their classmates in their Facebook Group Chat about their lessons with a Mean of 2.6 and Standard Deviation of 1.18. The learners even taken note that they watched the DepEd TV and used DepEd Commons and other educational resources provided by the Department of



Education with a support of 3.21 Mean and Standard Deviation of 1.32. The mentioned behavioral situations are sometimes exhibited by the learners during their modular distance learning.

Furthermore, the MDL 1 learners perceived to a Great Extent that they used a dictionary whenever they do not understand a word with a Mean of 3.67 and Standard Deviation of 1.28. To a Great Extent, they asked their teachers on their Facebook Group Chats or Personal Message them when they do not understand the lessons with a mean of 3.75 and Standard Deviation of 1.08. With a Mean of 3.46 and Standard Deviation of 1.36, the learners perceived to a Great Extent that they used cellphone applications to help them answer their LAS while they watched Youtube to search the information about their lessons with a Mean of 3.92 and Standard Deviation of 0.99. The learners also perceived that they attended class meetings virtually with their teachers with a Mean of 3.5 and Standard Deviation of 1.13. Thus, the mentioned behavioral situations are often portrayed by the learners during their modular distance learning.

In addition, the learners perceived to a Very Great Extent that they searched on the internet the topic whenever they do not understand with a Mean of 4.25 and Standard Deviation of 0.97. The learners were also checking their Facebook Group Chats for the announcements from their teachers with a Mean of 4.75 and Standard Deviation of 0.71. It is highly noted also that the learners followed that Weekly Home Learning Plan (WLHP) with a Mean of 4.21 and Standard Deviation of 0.94 and they watched video lessons posted by their teachers with a supported Mean of 4.6 and Standard Deviation of 0.77. All these behavioral situations were performed by the learners during their modular distance learning.

It is very evident also from the table that the MDL Learners were not asking any feedback from their teachers to the activities they had accomplished with a Mean of 2.54, Standard Deviation of 1.33 and verbally interpreted as Low Extent. This means that the learners rarely asked their teachers about the results of their Learning Activity Sheets.

As a whole, Table 2 has a Weighted Mean of 3.42 and Standard Deviation of 1.27. The MDL learners perceived the given behavioral situations to a Great Extent. This means that the learners often do the given behavioral situations during their modular distance learning to accomplish their Learning Activity Sheets or Modules.

The result of this table shows that the learners are not fully performing the given situations. To fully accomplish the Learning Activity Sheets, the learners need a guidance from their parents or guardians and siblings. Dangle et al., (2020) mentioned that students struggle with self-studying. The learners in the first year of the implementation of modular distance is really struggling on how to finish their learning activity sheets and pass them on time. The support of any members of the family to help them regarding their lessons or topics would give confidence to finish the activities.

Since education is no longer held within the school, parents serve as partners of teachers in education. Parents play a vital role as home facilitators. Their primary role in modular learning is to establish a connection and guide the child. (Flip Science, 2020). This is the reason why parents need to communicate with the teachers of their children.

Research Question 3: What is the level of achievement of the students during the school year 2020-2021?

Table 3. Students' Achievement in Modular Distance Learning

Lowest Grade	Highest Grade	Mean	SD	Verbal Interpretation
75	92	82.50	4.88	Satisfactory

Legend:

Scale

90% - 100%

85% - 89%

80% - 84%

75% - 79%

Below 75%

Verbal Interpretation

Outstanding

Very Satisfactory

Satisfactory

Fairly Satisfactory

Did not meet Expectation

Table 3 shows the performance of the MDL 1 learners during the school year 2020-2021.

The highest grade was 92 and the lowest was 75. The mean of the final grades of the learners is 82.50 and the Standard Deviation is 4.88. This means that the performance of the learners in the school year 2020-2021 is Satisfactory.

To look closely to the mean of the final grades of the learners, 82.50, it shows that the learners were not performing well during the first year of accomplishing the Learning Activity Sheets or Modules. This means that the parents, students, teachers, and other stakeholders of the school need to give more efforts to support the academic performance of the learners.

Research Question 4: Is there a significant relationship of the students' behavior and the students' academic performance in the school year 2020-2021?

**Table 4. The Relationship of the Students' Behavior and Students' Performance**

r-value	p- value	Degree of Correlation	Analysis
0.158	0.262	Very low correlation	Not significant

Legend

Scale	Degree of Correlation
± 0.00	<i>no correlation, no relationship</i>
$\pm 0.01 - \pm 0.20$	<i>very low correlation, almost negligible relationship</i>
$\pm 0.21 - \pm 0.40$	<i>slight correlation, definite but small relationship</i>
$\pm 0.41 - \pm 0.70$	<i>moderate correlation, substantial relationship</i>
$\pm 0.71 - \pm 0.90$	<i>high correlation, marked relationship</i>
$\pm 0.91 - \pm 0.99$	<i>very high correlation, very dependable relationship</i>
± 1.00	<i>perfect correlation, perfect relationship</i>

The degree of correlation of the students' behavior and the students' performance shows a very low correlation but not a substantial relationship and has an analysis of significance at 0.262 level which is greater than 0.05. This means that there is no significant relationship of the students' behavior and the students' performance during the modular distance learning in the school year 2020-2021.

Since there is no significant relationship of the students' behavior to the performance of the learners during the modular distance learning, it is then vital to identify more aspects that could help the learners to cope with the different struggles they had encountered in answering the Learning Activity Sheets or Modules to achieve higher performance in the next coming year using the modular distance learning modality.

CONCLUSION

The level of parents' participation in Modular Distance Learning in accomplishing the learning Activity Sheet as a whole had a weighted mean of 3.67. This means that the given situations are only often done by the parents or guardians during the modular distance learning of the learners from MDL 1.

It is very impressive to note that the parent or guardians always remind their children in working on the LAS/Modules every day, check the activity sheets, and pass in the school on time. This means that the parents are aware about the LAS that their children need to accomplish for the week.

Additionally, the parents or guardians often provide load for internet usage of the learners, give the learners a time to play and watch either online or on television, communicate with the teachers regarding the performance of the learners, and encourage the learners to watch the video lessons prepared by the teachers.

It is significant to note that these last five situations got the lowest mean in the perception of the learners wherein the parents or guardians sometimes guide them in reading the LAS/Modules, in understanding directions, in searching on the internet, in asking the feelings of the learners, and in giving the learners a reward whenever they finished the LAS.

The level of the students' behavior in accomplishing the LAS during the Modular Distance Learning as whole had a weighted mean of 3.42 and verbally interpreted to a great extent. This means that the given behavioral situations are often done by the learners during their modular distance learning.

It is notable that to a very great extent, the learners were always searching on the internet if they do not understand the topics, they always check their Facebook Group Chat for announcements from their teachers, and they always follow schedule indicated in the Weekly Home Learning Plan.

To a great extent, the learners often use dictionary, ask their teachers in the Facebook Group Chat if they do not understand the lessons, use cellphone applications to help them understand the lessons, watch Youtube to search information, and attend class meetings online.

In a moderate extent, the learners sometimes ask their parents, guardians, siblings and others to help them, finish the LAS in advance, ask their classmates in the Facebook Group Chat, and sometimes watch the watch DepEd TV and use DepEd Commons and other educational resources provided by DepEd.

Even though the overall result of the level of the students' behavior in modular distance learning is interpreted to a great extent which means the behavioral situations given are often done by the learners, it is imperative to note that the learners rarely ask the teachers to provide feedbacks about the learners' works or answers on the LAS.



The performance of the learners based on their final grades during the school year 2020-2021 is interpreted as satisfactory. It is then very valuable to consider the result of this study to improve the academic performance of the students. Through the given behaviors of the students and the perception of the learners on the parents' participation in the modular distance learning, it is conceivable to present them to the parents, students, teachers, and other school stakeholders during general assemblies or seminars before a school year starts to improve not only the percentage of the Learning Activity Sheets being retrieved but also the academic habits and performance of the learners.

Lastly, there is no significant relationship of the students' behavior and the students' performance during the first year implementation of the modular distance learning. It is essential to the parents and the school to help the learners to cope with the struggles they had experienced during the first implementation of the modular distance learning.

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THE LONG - TERM EFFECTS OF UNTREATED CALCIUM DEFICIENCY IN CHILDREN, INCLUDING IT'S EFFECT ON BONE HEALTH AND OVERALL GROWTH

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ABSTRACT

Calcium deficiency is a prevalent problem in children that can have long-term consequences for their bone health and overall development. Untreated calcium deficiency can have severe consequences, including frail and fragile bones, an increased risk of fractures and other bone injuries, and even rickets. Calcium is also necessary for numerous physiological processes, including muscle function, nerve transmission, and hormone secretion. Without sufficient calcium, these processes may be disrupted, resulting in a variety of health issues. This effect can be especially pronounced in adolescents experiencing rapid growth and development. Fortunately, parents and caregivers can take measures to prevent and treat calcium deficiency in children, including providing a balanced diet that includes calcium-rich foods and, in some cases, the use of supplements. By taking measures to prevent and treat calcium deficiency, we can ensure that children develop healthily and robustly.

OVERVIEW OF CHILDHOOD CALCIUM DEFICIENCY

Calcium is an essential mineral that plays an important role in the development and maintenance of robust bones and teeth. During childhood, when bones are rapidly growing and developing, calcium is especially essential for children. Unfortunately, calcium deficiency is a common issue in children, and if left untreated, it can have long-term negative effects on their bone health and overall development. Untreated calcium deficiency can have severe consequences, including frail and fragile bones, an increased risk of fractures and other bone injuries, and even rickets. Calcium is also necessary for numerous physiological processes, including muscle function, nerve transmission, and hormone secretion. Without sufficient calcium, these processes may be disrupted, resulting in a variety of health issues. This effect can be especially pronounced in adolescents experiencing rapid growth and development. This article examines the long-term effects of unresolved calcium deficiency in children, including its effect on bone health and overall development. Also discussed will be methods for preventing and treating calcium deficiency in children, thereby ensuring that they grow up healthy and robust.

THE SIGNIFICANCE OF CALCIUM FOR BONE HEALTH AND DEVELOPMENT

Calcium is an essential mineral that is essential for the development and maintenance of healthy bones and teeth. During infancy, adolescence, and early adulthood, when bones are rapidly growing and maturing, this is of particular importance. Calcium is crucial not only for bone health, but for overall development and health as well. Calcium is required for the effective functioning of numerous physiological processes, including muscle function, nerve transmission, and hormone secretion. It is essential for the contraction and relaxation of muscles, including that of the heart, and helps regulate blood pressure. Calcium also plays a role in the transmission of nerve impulses, which allows the brain to communicate with the rest of the body. Additionally, calcium is essential for hormone secretion, including insulin, which controls blood sugar levels. Calcium is a crucial component of bone tissue for maintaining healthy bones. Bones undergo constant remodeling, with old bone tissue being degraded and replaced by new bone tissue. Calcium is necessary for the development and maintenance of robust bones and teeth, and in its absence, bones can become brittle and fragile. This can result in an increased risk of bone fractures and other bone injuries. Calcium is essential for growth and development in general. During



childhood and adolescence, the body requires a substantial quantity of calcium to facilitate bone growth and development. Without adequate calcium, bones may not grow and develop normally, resulting in a variety of long-term health issues.

THE FREQUENCY AND CAUSES OF CHILDHOOD CALCIUM DEFICIENCY

Calcium deficiency is a widespread concern among children, particularly in developing nations. Depending on the population and region, the prevalence of calcium deficiency varies. According to the World Health Organization (WHO), the prevalence of calcium deficiency in infants under the age of five in developing countries is estimated to be around 50 percent. There are a variety of factors that can contribute to calcium deficiency in infants. Included are: Insufficient calcium intake: Children who do not consume enough calcium-rich diets are susceptible to calcium deficiency. This can be caused by a poor diet, a lack of access to calcium-rich foods, or picky dining. Vitamin D deficiency: Calcium absorption is dependent on vitamin D. Calcium deficiency is possible in children who do not receive sufficient vitamin D from sunlight, diet, or supplements. Certain medical conditions, including celiac disease, kidney disease, and certain genetic disorders, can inhibit calcium absorption and contribute to deficiency. Some medications, such as anticonvulsants and corticosteroids, can interfere with calcium assimilation and increase calcium excretion from the body. Lifestyle factors, including insufficient physical activity, smoking, and excessive alcohol consumption, can increase the risk of calcium deficiency in children. It is essential to determine the root cause of calcium deficiency in minors in order to provide appropriate treatment and prevent long-term consequences. Consult a healthcare professional for a thorough diagnosis and treatment if you suspect that your child may have calcium deficiency.

THE IMPACT OF CALCIUM DEFICIENCY ON BONE HEALTH, INCLUDING THE RISK OF FRACTURES AND OTHER BONE INJURIES

Calcium is an essential mineral for bone development and maintenance. When the body does not get enough calcium, it can lead to a condition called calcium deficiency. This can have a significant impact on bone health, increasing the risk of fractures and other bone injuries. Calcium deficiency can cause bones to become weak and brittle, making them more susceptible to fractures. This is particularly true for older adults, who may already have weaker bones due to age-related bone loss. In severe cases, calcium deficiency can lead to osteoporosis, a condition in which bones become extremely fragile and prone to fractures. In addition to fractures, calcium deficiency can also increase the risk of other bone injuries, such as stress fractures and bone deformities. It can also lead to dental problems, such as weak and brittle teeth. To prevent calcium deficiency and maintain good bone health, it is important to consume a diet rich in calcium. Good sources of calcium include dairy products, leafy green vegetables, fortified cereals, and calcium supplements. Regular exercise, particularly weight-bearing activities like walking and jogging, can also help to strengthen bones and reduce the risk of fractures.

THE LONG-TERM CONSEQUENCES OF UNTREATED CALCIUM DEFICIENCY, INCLUDING THE DEVELOPMENT OF CONDITIONS SUCH AS RICKETS

Untreated calcium deficiency can have several long-term consequences, including the development of conditions such as rickets. Rickets is a rare disease that occurs in children who have severe calcium and vitamin D deficiency. It can lead to soft and weak bones, skeletal deformities, and delayed growth and development. If left untreated, rickets can cause permanent deformities in the bones, such as bowlegs, knock-knees, and a curved spine. It can also lead to dental problems, muscle weakness, and an increased risk of fractures. In adults, untreated calcium deficiency can lead to osteomalacia, a condition in which bones become soft and weak. Calcium is an essential mineral for bone development and maintenance. In addition to rickets and osteomalacia, untreated calcium deficiency can also increase the risk of other health problems, such as high blood pressure, heart disease, and certain types of cancer. To prevent these long-term consequences, it is important to identify and treat calcium deficiency early on. This may involve increasing calcium intake through diet or supplements, as well as getting enough vitamin D to help the body absorb calcium. Regular exercise and maintaining a healthy weight can also help to improve bone health and reduce the risk of fractures.

THE IMPACT OF CALCIUM DEFICIENCY ON OVERALL DEVELOPMENT, INCLUDING MUSCLE FUNCTION, NERVE TRANSMISSION, AND HORMONE SECRETION

Calcium is not only important for bone health, but also for overall development and function of the body. Calcium plays a crucial role in muscle function, nerve transmission, and hormone secretion. Therefore, calcium deficiency can have a significant impact on these processes. Calcium is an essential mineral for bone development and maintenance. When calcium levels are low, muscle function can be impaired, leading to muscle weakness and cramps. Nerve transmission: Calcium is also important for nerve transmission, allowing signals to be sent between the brain and the rest of the body. When calcium levels are low, nerve function can be affected, leading to symptoms such as tingling and numbness. Hormone secretion: Calcium is involved in the secretion of several hormones, including



insulin, which regulates blood sugar levels, and parathyroid hormone, which regulates calcium levels in the body. When calcium levels are low, hormone secretion can be affected, leading to imbalances and potential health problems. In addition to these specific functions, calcium deficiency can also have a more general impact on overall development. Children who do not get enough calcium may have delayed growth and development, as well as an increased risk of developing conditions such as rickets. To prevent the impact of calcium deficiency on overall development, it is important to consume a diet rich in calcium and vitamin D. This can include dairy products, leafy green vegetables, fortified cereals, and calcium supplements. Regular exercise can also help to improve muscle function and overall development. If you suspect that you may have calcium deficiency, it is important to speak with a healthcare professional for proper diagnosis and treatment.

THE IMPORTANCE OF EARLY INTERVENTION AND TREATMENT FOR CALCIUM DEFICIENCY IN CHILDREN

Early intervention and treatment for calcium deficiency is crucial, particularly in children. Calcium is essential for the growth and development of strong bones, and children who do not get enough calcium may be at risk for delayed growth and development, as well as other health problems. If left untreated, calcium deficiency can lead to conditions such as rickets, which can cause permanent bone deformities and impair overall development. Additionally, children with calcium deficiency may be at increased risk for fractures and other bone injuries. Fortunately, calcium deficiency can be easily diagnosed with a blood test, and treatment typically involves increasing calcium intake through diet or supplements. In some cases, vitamin D supplements may also be recommended to help the body absorb calcium. To prevent calcium deficiency in children, it is important to ensure that they are getting enough calcium and vitamin D through a balanced diet. Dairy products, verdant green vegetables, and fortified cereals are all rich in calcium. Exposure to sunlight can also aid in vitamin D production. If you suspect that your child may have calcium deficiency, it is important to speak with a healthcare professional for proper diagnosis and treatment. Early intervention can help to prevent long-term consequences and ensure that your child develops strong and healthy bones.

STRATEGIES FOR PREVENTING CALCIUM DEFICIENCY IN CHILDREN, INCLUDING DIETARY CHANGES AND SUPPLEMENTS

Preventing calcium deficiency in children is important for their overall growth and development. Here are some strategies for preventing calcium deficiency in children: Encourage a calcium-rich diet: Children should consume foods that are rich in calcium such as dairy products (milk, cheese, and yogurt), leafy green vegetables (kale, broccoli, and spinach), and calcium-fortified foods such as cereals and orange juice. Vitamin D: Vitamin D is essential for good absorption of Calcium. Children should get adequate amounts of vitamin D through exposure to sunlight, fortified foods, and supplements. Limit soda and caffeine intake: Soda and caffeine can interfere with the absorption of calcium and increase calcium excretion from the body. Encourage children to drink water, milk, and other calcium-fortified beverages instead. Regular exercise: Weight-bearing exercise can help to build strong bones and prevent calcium deficiency. Encourage children to engage in activities such as walking, running, and jumping. Calcium supplements: In some cases, calcium supplements may be necessary to ensure that children are getting enough calcium. However, it is important to speak with a healthcare professional before giving your child any supplements. By following these strategies, you can help to prevent calcium deficiency in children and ensure that they develop strong and healthy bones. If you have concerns about your child's calcium intake, speak with a healthcare professional for guidance and recommendations.

CONCLUSIONS

In conclusion, calcium deficiency is a serious issue in children that can have long-term consequences on their bone health and overall development. The impact of untreated calcium deficiency can be severe, including weak and brittle bones, an increased risk of fractures and other bone injuries, and even conditions such as rickets. Calcium is also essential for many bodily functions, and without enough calcium, these processes can be disrupted, leading to a range of health problems. It is crucial for parents and caregivers to take steps to prevent and treat calcium deficiency in children, including providing a balanced diet that includes calcium-rich foods and, in some cases, the use of supplements. By taking action to prevent and treat calcium deficiency, we can help to ensure that children grow up healthy and strong, with strong bones and a healthy overall development. It is essential to prioritize the calcium needs of children, as it can have a significant impact on their long-term health and wellbeing.



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ADVANCE SAFETY SYSTEM WITH ANTI SLEEP ALARM

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ABSTRACT

In Advance times, owing to hectic schedules it becomes very difficult to remain active all the time when you drive vehicle. Imagine a situation where a person is driving home from work, dead tired after facing all the challenging work of the day. He/She Drive Vehicle and his hands are on the steering wheel and foot on the pedal but suddenly he starts feeling tired, his eyes start shutting and his vision blurs and before he knows it, he's starts asleep. Falling asleep on the steering wheel can lead to serious incident, there may be accidents and people may even lose their lives. This situation is much more commonly occurs then we notice and hence, it is very serious issue to counter this problem. So this issue, we have come up with advance safety with anti-sleep alarm Device. This system alerts the user if he/she falls asleep at the steering wheel thereby, avoiding accidents and saving lives of driver, passengers and strangers. This system is beneficial especially for people who travel long distances travels and people who are driving late at night. The circuit is built around infrared module when driver closes the eyes then sensor generate the signal after 5 second relay automatic start the sound and driver listen that sound and open his eyes and if he is in deep sleep and he did not open eyes then automatic after 8 second vehicle running stop, so this idea save more accident and it is amazing idea and I make this idea is very low-price and this is the best point of my project.

KEYWORDS: IR Sensor Module, Battery, Relay

INTRODUCTION

Road traffic injuries and deaths have a terrible impact on individuals, communities, and countries. They involve massive amount of costs too often overburdened health care systems occupy more hospital beds consume resources and result in significant losses of productivity, prosperity with deep social and economic losses. According to the 2016 report of WHO, 1.24 million road traffic deaths occur every year. This makes it the number one cause of death among those aged 15-29 years. This number is predicted to increase to around 1.9 million by 2030 and to become the seventh leading cause of death if no action is to be taken. The Advance Safety System With Anti Sleep Alarm for people doing all night drives as well as security guards and others we have to sit in one place for long periods of time without any stimulating interaction. The newest high-tech way to stay awake is good whether you ever have to drive back home after an exhausting day at work or just need to get something done and sleep is not an option. This ASSWA sleep alarm will keep you at full alert and is always ready to help if your head dozes off. This has the potential to save lives on the road. Long-distance lorry drivers can fall asleep by driving too long hours due to the pressures put on them to get the goods to their destination at certain times. This item has the potential to keep them awake or at least to tell them when they are overtired and need to stop driving.

This study intends to develop a device or a system that will help the driver in minimizing road accidents. And increase life.

PROBLEM DEFINITION

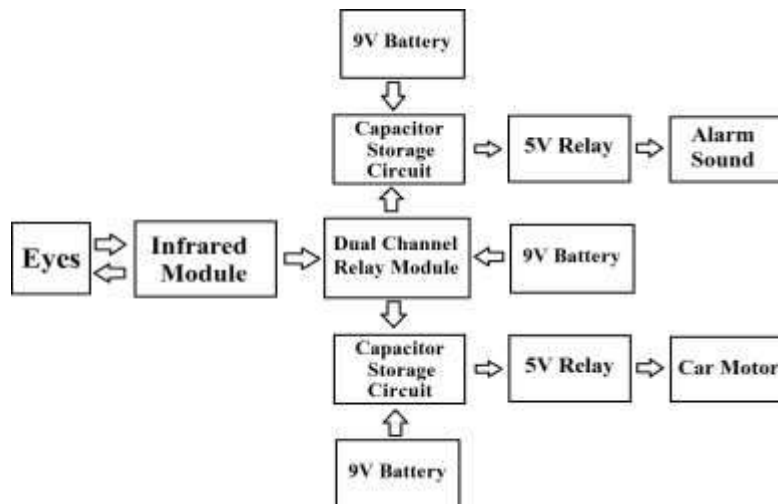
Driver exhaustion is a significant variable in an expansive number of vehicle accidents. Late in sights assess that yearly 1,200 deaths and 76,000 injuries can be credited to weariness-related accidents. Less attention leads the driver to be distracted and the likelihood of a street accident goes high. Drowsiness-related accidents have all the earmarks of being more serious, because of the higher speeds involved distraction and the driver being not able to take any avoiding activity, or even brake, before the accident. The improvement of innovations for recognizing or preventing tiredness of the driver is a significant test in the field of an accident preventing systems. Because of the danger that that drowsiness presents on the road, strategies need to be created for checking its influences. Loss of awareness because of tiredness causes a few changes in the human body and activities. These side effects and parameters empower us to effectively measure the drowsiness level. Every year, 1.25 million people around the world die due to road crashes – a global problem that the World Health Organization (WHO) says is both predictable and preventable.



SYSTEM DESIGN

In This paper For We Use First Infrared Module and we give connected to Infrared module to relay module and we give to power by one 9v battery to both module and this module working is when driver close eyes that time sense the eyes and trigger the relay switch and we use two more simple relay in this project for on off sound and car so we connect both simple relay to relay module and give different battery for two simple relay for given power and every relay to we connected capacitor (capacitor decide after power cut how much second relay on by capacitor power) and that simple relay decide when car stop and alarm on and when alarm off car on and this is basic details of this block diagram

Figure Block Diagram



Circuit Diagram

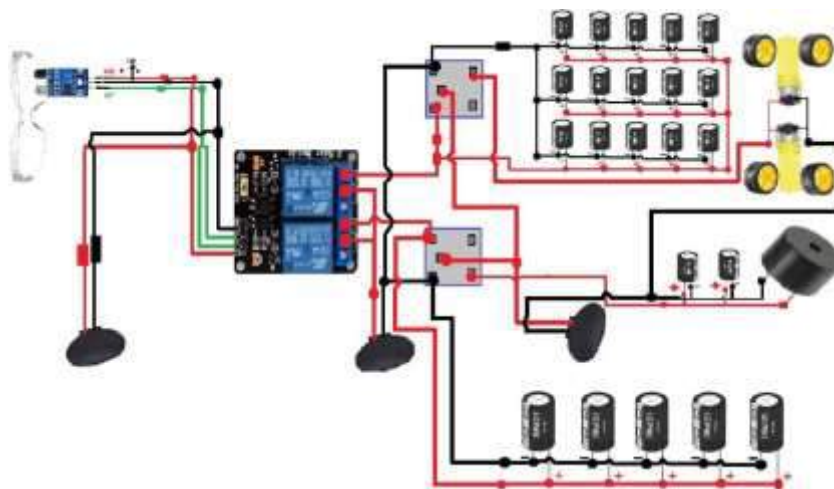


Figure Circuit Diagram.

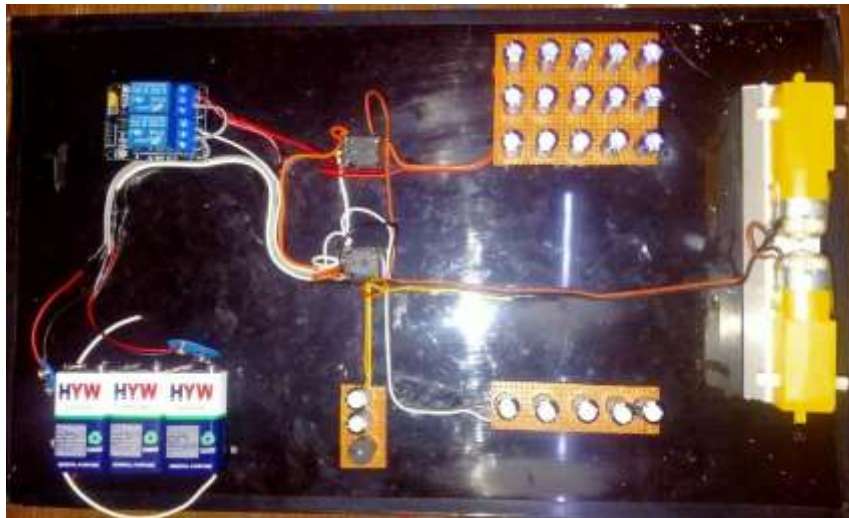


Figure Final Model.

An Infrared sensor module works by applying a voltage to a pair of IR light-emitting diodes (LEDs) which in turn, emit infrared light. This light propagates through the air and once it hits an object it is reflected towards the sensor.

COMPONENTS USED

1. Infrared Module / IR Sensor Module

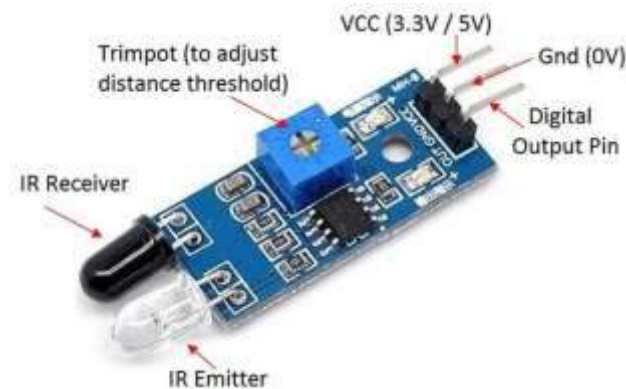


Figure Infrared Module / IR Sensor Module

IR Sensor module has the great adaptive capability of ambient light, having a pair of infrared transmitter with the receiver tube, the infrared emitting tube to emit a certain frequency, encounters an obstacle detection direction (reflecting surface), infrared reflected back when to the receiver tube receiving, after the comparator circuit processing, the green LED lights up bright, while the signal output will output digital signal (a low-level signal), through the potentiometer knob to adjust the detection distance, the effective distance range 1cm to 10cm working voltage of 3.3V-5V. The detection range of the sensor can be adjusted by the potentiometer as per requirement, with little interference, easy to assemble, easy to use features, can be widely used robot obstacle avoidance, obstacle avoidance car assembly line count and black-and-white line tracking and many other occasions.



Features of IR Sensor Module:-

When the module detects obstacles in front of the signal glass, the circuit board green indicator light level, while the OUT port continuous output low-level signals and sound, the module detects a distance of 1cm to 10cm, detection angle 35°, the detection distance can be potential adjustment with adjustment potentiometer clockwise and anticlockwise, the increase in detection distance; counterclockwise adjustment potentiometer, the detection distance decreased.

2.5V Dual-Channel Relay Module

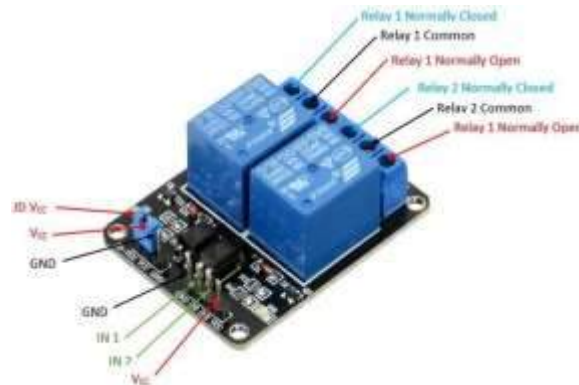


Figure 5v Dual-Channel Relay Module

The dual-channel relay module is more or less the same as a single-channel relay module, but with some extra features like optical isolation. The dual-channel relay module can be used to switch mains powered loads from the pins of a microcontroller.

5V Relay Pin Configuration

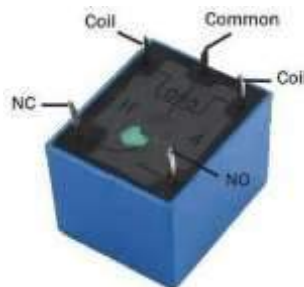


Figure 5V Relay

A 5v relay is an automatic switch that is commonly used in an automatic control circuit and to control a high-current using a low-current signal. The input voltage of the relay signal ranges from 0 to 5V. The pin configuration of the 5V relay is shown below. This relay includes 5-pins where each pin and its functionality are shown below. Pin1 (End 1): It is used to activate the relay; usually this pin one end is connected to 5Volts whereas another end is connected to the ground. Pin2 (End 2): This pin is used to activate the Relay. Pin3 (Common (COM)): This pin is connected to the main terminal of the Load to make it active. Pin4 (Normally Closed (NC)): This second terminal of the load is connected to either NC/ NO pins. If this pin is connected to the load then it will be ON before the switch. Pin5 (Normally Open (NO)): If the second terminal of the load is allied to the NO pin, then the load will be turned off before the switch.



3.25V/1000uf Capacitor

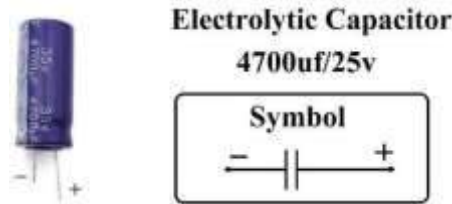


Figure 25V/1000uf Capacitor

Electrolytic capacitors are widely used in electronic circuits due to their high capacitance values and compact size. Their primary applications include filtering and smoothing in power supplies, decoupling to maintain stable voltage for components, coupling in audio and communication circuits to transfer signals, and creating time-delay circuits for timing or oscillation purposes. Additionally, they can be employed for temporary energy storage in devices such as camera flashes.

This specific capacitor boasts a capacitance value of 1000uF and a voltage rating of 25V, making it suitable for a wide range of electronic applications. With its radial lead configuration and compact size, the ECA- 1EM102 is designed for easy integration into various circuit designs. These capacitors are polarized and should not be hooked up backwards. The negative is denoted by a white line down the side of the capacitor with a negative symbol.

4. 9v Battery



Figure 9v Battery

Hi-Waote 9V Battery is the most commonly used and portable 9V battery. It is non-rechargeable and is a high capacity and low-cost solution for many electronic devices. It is based on Zinc Carbon Chemistry and can be used easily replaced if discharged just like any standard AA and AAA batteries. The battery can be used to power LEDs, Toys, Flashlight and Torch, electronic equipment like multimeter, wall clocks, or other devices with a 9V system. A battery snap connector is generally used to connect it with a breadboard.

5. Battery Connector

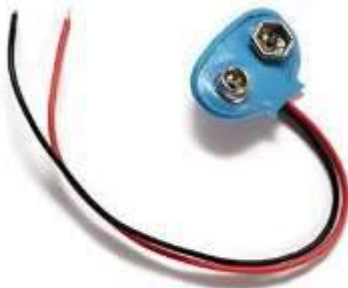


Figure Battery Connector



Plastic i-type connector 14 cm stripped and tinned leads, 1 red and 1 black for easy identification soldering snap-on terminal connector for 9-volt battery or for diy projects.

6.Sound Buzzer / Alarm



Figure Sound Buzzer / Alarm

These buzzers were invented by manufacturers of Japanese & fixed into a broad range of devices during the period of 1970s – 1980s. So, this development primarily came due to cooperative efforts through the manufacturing companies of Japanese. In the year 1951, they recognized the Application Research Committee of Barium Titanate that allows the corporations to be cooperative competitively & bring about numerous piezoelectric creations.

7.Gear Motor 60 RPM



Figure Gear Motor 60 RPM

The BO Series1 60RPM DC Motor Plastic Gear Motor – BO series straight motor gives good torque and rpm at lower operating voltages, which is the biggest advantage of these motors. Small shaft with matching wheels gives an optimized design for your application or robot. Mounting holes on the body & light weight makes it suitable for in-circuit placement. This motor can be used with 69mm Diameter Wheel for Plastic Gear Motors and 87mm Diameter Multipurpose Wheel for Plastic Gear Motors. Low-cost geared DC Motor. It is an alternative to our metal gear DC motors. It comes with an operating voltage of 3-12V and is perfect for building small and medium robots. Available with 60 RPM. Low density: lightweight, low inertia. Capability to absorb shock and vibration as a result of elastic compliance. Ability to operate with minimum or no lubrication, due to inherent lubricity. The relatively low coefficient of friction.



8.Jumper Wire



Figure Jumper Wire

Generally, jumpers are tiny metal connectors used to close or open a circuit part. They have two or more connection points, which regulate an electrical circuit board. Their function is to configure the settings for computer peripherals, like the motherboard. Suppose your motherboard supported intrusion detection. A jumper can be set to enable or disable it. Jumper wires are electrical wires with connector pins at each end. They are used to connect two points in a circuit without soldering. You can use jumper wires to modify a circuit or diagnose problems in a circuit. Further, they are best used to bypass a part of the circuit that does not contain a resistor and is suspected to be bad. This includes a stretch of wire or a switch. Suppose all the fuses are good and the component is not receiving power; find the circuit switch. Then, bypass the switch with the jumper wire.

ADVANTAGES, LIMITATIONS

Advantages

We can stop many accident by drive sleep
We can make my project idea in very low budget so any drive can afford
This is Live working Project Idea

Limitations

This Project Perfect work in night Time if driver try to sleep , day time this project performance not best .

RESULT AND CONCLUSION

Anti-sleep alarms can be a helpful tool for preventing accidents caused by drowsy driving, but they should be used in conjunction with other strategies to promote safe driving practices. It is ultimately the responsibility of the driver to ensure that they are well-rested and alert when behind the wheel.

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TRIBOLOGICAL BEHAVIOUR OF NANOCOATED PISTON RING

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ABSTRACT

The nanoparticle material coating can help to improve performance and life of Internal combustion automobile engines by reducing the frictional wear and friction between IC engine components. In this research study tribological properties of titanium dioxide (TiO₂) nanocoatings for piston ring application are investigated. Nanocoating Samples were prepared by sol-gel process of varying dipping and drying process cycles (40, 50, 60 and 70). In this research study of frictional wear have carried out on Pin on Disc Tribometer and the tests were taken in varying load and speed. The obtained results shows that TiO₂ Nanocoating exhibits good friction reduction and anti-wear properties and also decreased the coefficient of friction by 4% and 8% at 60 and 70 dipping-drying process cycles respectively, as compared with conventional chromium plating. In addition, the topography of worn surfaces was analyzed by using Scanning Electron Microscopy (SEM).

KEYWORDS- TiO₂ nanocoating, tribological properties, friction coefficient

I. INTRODUCTION

The subject tribology generally deals with the technology provision of lubrication, friction control and wears prevention of surfaces having relative motion under load. Tribology indicates that the subject is truly multi-disciplinary in nature. Therefore, it is really difficult for an individual to master the subject. A lubrication Engineer may not know much about the areas, like the bearing design and friction and Wear of metals. Similarly, people who are given much attention on the principle of Lubrication or lubrication bearings. The efforts of all the workers which include chemists, the physicists, the mathematicians, the material scientists and mechanical engineers are directed towards the methods to control friction and minimize wear of machinery by Adopting new lubrication technology, developing new lubricants and finding new wear resistant materials. The development of the subject is possible if there is a close Interrelation ship between tribological design principles and practices.

II. LITERATURE REVIEW

Peter J. Blaub et al. [1] have been studied review on various tribological aspects of automobile power train system including the engine, transmission, driveline, and other automobile components. They have been studied integration of lubrication and surface engineering concepts into a unified automotive power train system. They had used lightweight materials such as a non-ferrous material (Al, Mg) for engine and drive train material to replace the current heavy-weight cast iron blocks.

F. Gonzalez et al. [2] have been studied on Nano crystalline materials and test result shown that the decrease of grain size and their significant volume fraction of grain boundaries and triple junctions. They also studied many unusual mechanical, physical, chemical and electrochemical properties compared with conventional polycrystalline amorphous materials. The yield strength, and toughness of polycrystalline materials are commonly improved with reduction grain size, which is additionally suitable for nanostructure coatings.

Narendra B. Dahotre et al. [3] studied a review on engineering coating of engine applications. In this examination dimensional stability, tribological properties on the coating material to improve wear resistance, lubrication, coefficient of friction and hot hardness, amenability for coated honing cylinder wall, surface roughness and topography, residual stress, adherence, Coatings for engine and other automotive power systems, Laser induced reaction nano composite coating suitable for automotive engine applications damage tolerance and resistance, pores density and conditions and cost performance are talked.

P. Hariharan et al. [4] have examined tribological behaviour and surface interface characterization of Fe based alloy coating. The result shows Powder particles were in the size range of 40 to 80µm which were deposited by HVOF thermal spray under



the controlled condition and produce coating layer 400µm and Microstructure and the micro abrasive wear performance of the coating were characterized by Optical microscopic, Video Measuring system and Non-contact surface roughness testing analysis methods were used. Evaluation of coating was done by Micro hardness test, Micro abrasion wear test, Surface Roughness test etc. Experimental results show that coating provides high surface hardness with excellent wear resistance.

M. Josephson et al. [5] have been studied developing production process of WC-Co Wolfram – Carbide cobalt alloy coating to decrease the grain size in the material structure to nano domain and minimizing non-WC-Co phases in the material can increase the hardness. Result shows Comparison between the microstructure of nano-structured WC-Co coating and the conventional microstructure of WC-Co coating that the mechanical properties such as hardness value is double then the conventional micro-grained WC-Co and also improved wear resistance and cutting performance observed.

Jeremy (Zheng) Li [6] examined anti-corrosive material performances based on computational simulation, to study the fundamental anti-corrosive behaviour in several different coating materials. The applied model in this computational simulation can be potentially used in future research to analyze different coated material properties and performances. The experiments have been performed to check the coating performances and compare the experiments with computational simulation

S.Prabhu et al.[9] have been studied the coating of CrN deposition on the piston ring and Piston head, as result reduction in friction and increase its wear properties using PVD machine. The uses of deposition technology increased advantages of the hard coatings. In this investigation and study experimental test conducted on Spark Ignition engine and measured its performance analysis. The power output of the S.I engine is increased by 0.76% and torque produced by the S.I engine is increased by 0.67%. The surface roughness is reduced by more than 63%

Simon C. Tung et al.[7] studied comprehensive review of various tribological aspects on automobile power train system. These systems consist of engine, transmission, driveline, and other driving components. They have shown that the integration of lubrication and surface Engineering concepts into a unified automotive power train system. The application of Tribological principles is required for their performance and efficiency of the motor vehicle and in the area of power train technology has led to enormous advances in the field of tribology.

Rajiv Asthana et al.[8] have investigated nonmaterial's are an emerging family of novel Materials that have designed for specific properties. These materials will probably Bring about significant shifts in the manner of design, develop, and use materials. For example, nonmaterial's those are 1000 times stronger than steel, and 10 times lighter than paper, are cited as a possibility. The following properties can be presumably be tailored resistance to deformation and fracture, ductility, stiffness, strength, wear, friction, corrosion resistance, thermal and chemical stability, and electrical properties.

Andrzej Adamkiewicz et al.[12] studied the working evaluation of piston ring Wearing in large marine internal combustion CI engines based on inspection through cylinder liner scavenge ports. In this study a description of verification methods of piston rings based on visual inspections, clearance measurement of piston rings in piston grooves and piston rings gap measurement. The results shows that piston ring gap measurements can lead to an evaluation of piston ring wear and by calculating into running hours can be treated as a reference parameter at next inspections and a parameter determining wear trends.

Kenneth Holmberg et al.[11] have been studied simulated and modeled friction and wear of coated surfaces. They shown the basic of friction and wear mechanisms, scale effects and parameters influencing the friction and wear of surfaces coated with diamond like carbon thin films. This forms the basis for surface optimization by modeling, stress simulation and surface fracture calculations. The scale effects in a tribological contact have illustrated by explaining typical surface roughness related tribological mechanisms for diamond and DLC coated surfaces

M.Shunmuga Priyan et al.[10] have been studied tribology and surface interface Characterization of Fe based alloy coating Powder particles were in the size range of 40 to 80µm which were deposited by HVOF thermal spray. Experimental Evaluation of coating done by Micro hardness test, Micro abrasion wear test, Surface Roughness test etc. Results indicated that coating provides high surface hardness with excellent wear resistance.

According to the Literature Survey, the nanocoating can results in better tribological properties. The following outcomes can be drawn from the literature review of the nanocoating

1. Successful implementation of Nanocoating is done in various areas such as hydrophobic nanocoating as a water replant coating for mobile phones, hydrophilic etc.
2. Besides DLC and TBC, not much work has been reported in the field of nanocoating in engine applications.

3. Nanocoating exhibits good friction reduction and anti-wear behavior therefore successfully implementation of nanocoating in engine application is possible.
4. Simulation of wear prediction Is possible by Archard's wear theory which is based on Contact pressure distribution

III. EXPERIMENTAL

A. Fabrication of TiO_2 Nanocoating by Sol-gel Technique

In materials science, the sol-gel process is a method for producing solid materials from small molecules. The method is used for the fabrication of metal oxides mostly. Fig. 2. shows procedure for sol gel technique for TiO_2 deposition. The process involves conversion of monomers into a colloidal solution (*sol*) that acts as the precursor. A coating sol was prepared by keeping the molar ratio of $\text{C}_{16}\text{H}_{36}\text{O}_4\text{Ti}$: EOH: H_2O constant at 1: 5.63: 1.58 and stirred for 30 min at room temperature then (0.5 M) HNO_3 as a catalyst was added in solution. The cleaned metal substrates were dipped for 1min in the sol and taken out for drying. Dipping and drying process repeated for various cycle (40, 50, 60, 70). These cycles ensures uniform deposition of TiO_2 . Further, these substrates were annealed at 450°C for 45 min to remove residual solvent and cooled for 24 hours.

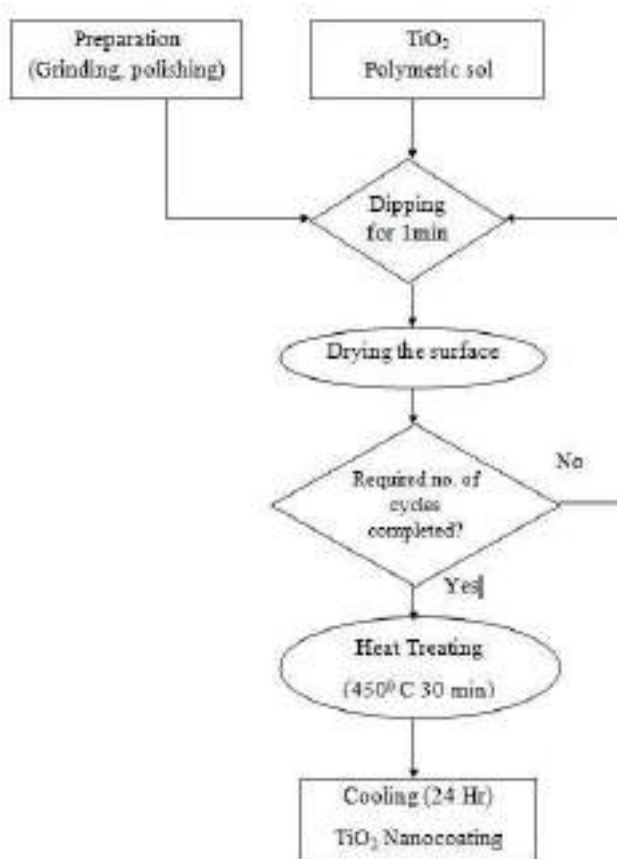


Fig.2 Sol gel technique for TiO_2 Deposition

B. Materials

The materials for tribological testing are selected according to real material configuration. Steel SAE 8620 (Piston ring material) is selected for Pin with various coating and for disk, Gray Cast Iron that of cylinder bore material is selected. Table 1 shows that material of Pin and Disk specimen which were used in pin on disk Tribometer for wear and friction testing.

**Table 1: Specimens**

Specimens	Material	
Disks	Grey Cast Iron, hardness=130-180BHN, d=165 mm, t=8mm, E=66-157GPa, $\nu=0.26$	
Pins	A	Steel SAE 8620 without any coating
	B	Steel SAE 8620 with conventional chromium plating
	C	Steel SAE 8620 with TiO ₂ nanocoating (with 40 deposition Cycle)
	D	Steel SAE 8620 with TiO ₂ nanocoating (with 50 deposition Cycle)
	E	Steel SAE 8620 with TiO ₂ nanocoating (with 60 deposition Cycle)
	F	Steel SAE 8620 with TiO ₂ nanocoating (with 70 deposition Cycle)

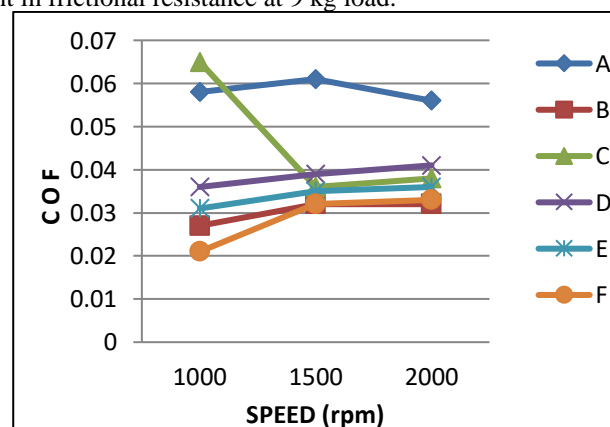
C. Tribometer Test Procedure

The Pin on Disc Friction & Wear Testing Machine designed and developed by Ducom Instruments, which is used to conduct trials. The friction and wear testing machine was set for pure sliding contact, with a pin-on-disk configuration. The manufactured test pins were run against a counter face of the manufactured disk. All tests were carried out at loading condition 9kg, 15kg and 20kg. The disk was rotated at speed of 1000, 1500 and 2000 rpm at room temperature for 10 minute time with continuous supply of 15W40 lubricating oil. The coefficient of friction and wear rate was recorded using strain gauge in tribotester. Wear surfaces on pin were characterized using Scanning Electron Microscopy (SEM).

IV. RESULTS AND DISCUSSION

A. Anti-friction Properties

In order to confirm the repeatability of experimental data, the coefficient of friction was measured using the pin on disk tribotester under 9kg, 15kg and 20kg load conditions for 10 minute at 1000, 1500 and 2000 rpm speed condition with continuous supply of 15W40 lubricating oil. The coefficient of friction at various speeds at 9 kg load is as shown in Fig. 3. The x-coordinate shows speed of disk in rpm whereas y-coordinate shows coefficient of friction. Coefficient of friction for uncoated pin A is always higher than coated pin. The pin F, TiO₂ (70 cycles) nanocoating exhibits better results than conventional chromium plated pin B. The pin C, D, E exhibits poor frictional resistance than the pin B and pin F. TiO₂ (70cycle) sample possess near about 8% improvement in frictional resistance at 9 kg load.

**Fig. 3 Coefficient of friction at 9Kg load**

The coefficient of friction at various speeds at 15 kg load is as shown in Fig.4. The pin E and F exhibits better results than chromium plated pin B. Overall from 3 test set we see that TiO₂ (60 and 70) possesses better frictional resistance properties than Cr plated pin. Pin E exhibits average 4% better results than the pin B and pin F exhibits 8% better frictional performance than pin B.

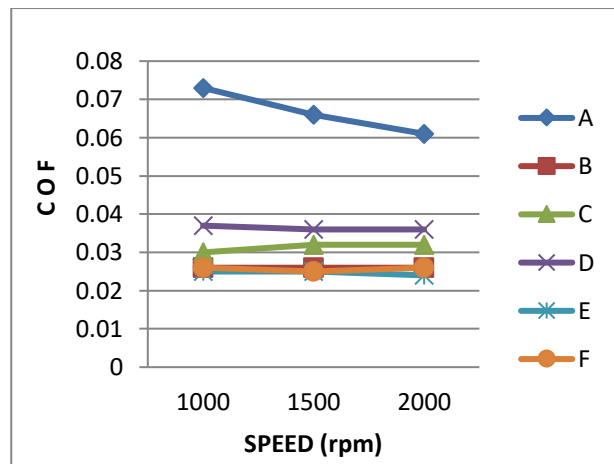


Fig. 4 Coefficient of friction at 15Kg load

The coefficient of friction at various speed sat 20kg load is as shown in Fig.5. The pin A (uncoated) exhibits poor results. The pin E and F exhibits better results than Chromium plated pin B. Over all from test results we see that TiO₂ (60and70) posses Better frictional resistance properties than Cr plated pin.

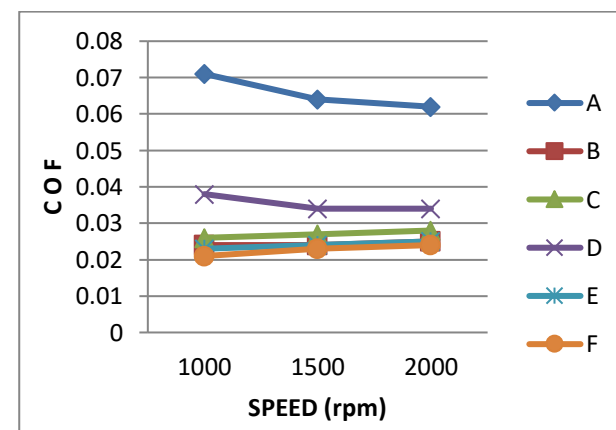


Fig. 5 Coefficient of friction at 20Kg load

B. Anti-wear Properties

Anti-wear properties were examined in Tribometer by two ways. Collecting information regarding wear depth of pin from load cell sensor we can compute wear rate of particular pin. Other method is very simple in which weights of pins were noted down before and after test with the help of weighting machine. The weights of pins before and after Tribometer test are as shown in Table 2. There is no such wear difference between chromium coated pins and TiO₂ nanocoated pins. The tests were conducted at room temperature but in actual I C engine the inlet temperature is in range of 500⁰ C to 700⁰ C. Temperature plays important role in wear properties. In modern tribometer there is provision for separate individual temperature set up both for disk and pin.

Table 2 Weights of pins

Sample	Weight before test	Weight after test
A	25.834 gm	25.821 gm
B	26.248 gm	25.845 gm
C	25.625 gm	25. 621 gm
D	25.694 gm	25.692 gm
E	25.638 gm	25.636 gm
F	25.614 gm	25.612 gm



C. Analysis of Specimen surfaces

The SEM morphology was employed to investigate the worn surface of the specimens with and without any coating. By observing Fig.6 and Fig. 7 the surfaces appears to have many thick and deep furrows and pits or spalls because of contact fatigue and adhesive fatigue. Also gradual removal process of metals fibers is observed, normally occurring in the sequence of fiber thinning, fiber fracture and final removal of broken fiber pieces.

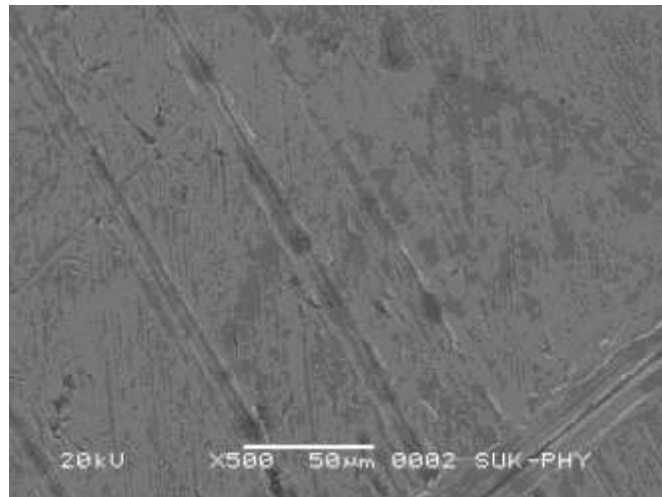


Fig. 6 SEM image of worn surface of uncoated pin

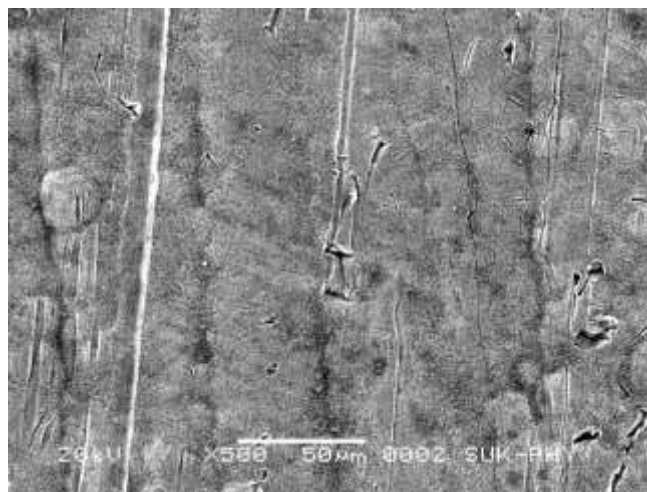


Fig. 7 SEM image of worn surface of chromium coated pin

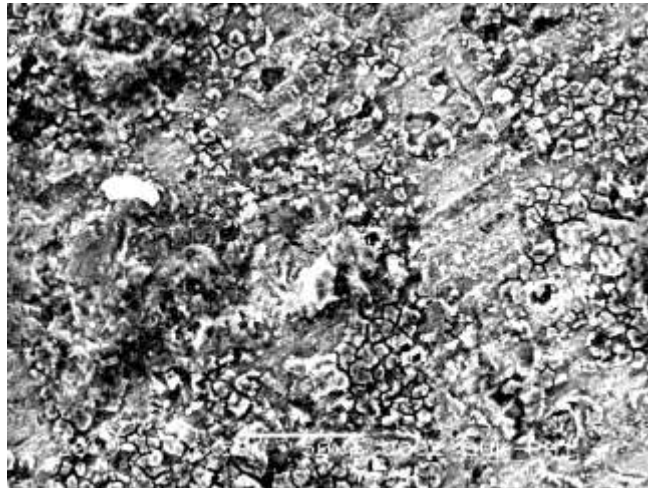


Fig. 8 SEM image of worn surface of TiO₂ Cycle 60 (Pin E) nanocoated pin

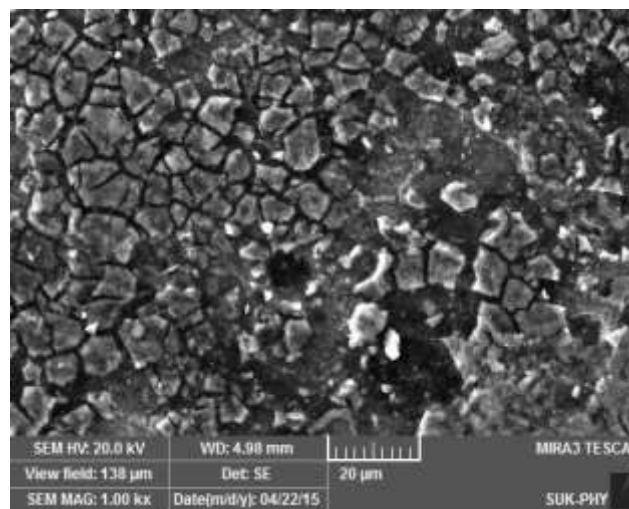


Fig. 9 SEM image of worn surface of TiO₂ Cycle 70 (Pin F) nanocoated pin

TiO₂ nanocoatings were shown by small wear depth comparing with chromium plating. As shown in Fig 8 and Fig. 9 worn surfaces appear much smoother without severe scuffing. The fiber removal was gradually and fully contributed to the wear resistance of the composites. As the result, the specific wear of the material was much more stable, and load carrying capacity of the material was significantly improved. In this study an interesting result was obtained from the wear surface analysis that with increase in the number of cycles of deposition, friction resistance properties of engine oil improved. As speed of disk increases the thickness of lubrication film increases which enhance wear resistance but cause more frictional forces. As load on pin increases thickness of film lubrication decrease. Adequate film thickness provides minimum frictional losses. This means that systematic investigation of all the relevant characteristics and properties of nanoparticles is still a matter of further research.

CONCLUSIONS

The following conclusions have been drawn from the conducted research work:

Titanium dioxide nanocoating has successful deposited by sol-gel technique for Piston ring application with minimum 60cycles of deposition process. Experimental as Well as numerical analysis indicates that both anti-wear and anti friction properties of Titanium dioxide are slightly better than conventional chromium coating. Thus chromium coating can be replaced by titanium dioxide nanocoating with adequate coating thickness.

- A. The coefficient of friction exhibits by TiO₂ nanocoating with 70 deposition cycles is 8% less than conventional chromium plating. ThusTiO₂ results in lower Frictional losses.
- B. The deposition of nanocoating on the worn surface can decrease the shearing stress, and hence reduce friction and wear.



- C. Antiwear properties of TiO₂ nanocoatings were found as good as chromium plating. The dimensional wear coefficient of TiO₂ found equal to 9.5555×10^{-8}
- D. As load on pin increases thickness of film lubrication decrease.

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A DRUG UTILIZATION STUDY OF ANTIMICROBIAL DRUGS AT TERTIARY CARE HOSPITAL SOUTHERN RAJASTHAN

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ABSTRACT

Background: Irrational usage and higher utilization of antimicrobial agents has become a major problem in all health care facilities all over the world, further give rise to “antimicrobial resistance”. Inappropriate use of antibacterial drugs may result in increased adverse drug reaction and also increase cost of treatment. The aim of the study was to evaluate and study drug utilization or drug distribution pattern of antimicrobial drugs. The objective of the study was to determine the average number of antibiotics prescribed per prescription, to evaluate the prescribing pattern and frequency, and to determine the most commonly prescribed antibiotic. **Method:** The present study was a prospective study done in general medicine ward of tertiary care teaching hospital to evaluate the utilization pattern of antibiotics. A total number of 208 patients were included in the study. **Results:** The ratio of male population is more as compared to females and most of the patients were in the age group of (61-70) years. The study report shows that most common class of antibiotics prescribed were cephalosporin (45.01%) followed by penicillin (14.74%), quinolones (13.94%), macrolides (7.56%), tetracycline's (4.38%). Study reports shows that (40.23%) of the prescription were prescribed with ceftriaxone (monocef). **Conclusion:** In this study maximum number of prescription had prescribed only one antibiotic as per W.H.O. A strict protocol for prescriber is now at utmost requirement to promote safe and rational use of antibiotic. **KEYWORDS:** Antimicrobial resistance, drug utilization evaluation, rational use, prescribing pattern, drug utilization review

INTRODUCTION

Drug utilization research has been defined by the WHO in 1977 as the study of marketing, distribution, prescription, and use of drugs in society with special emphasis on the resulting medical, economic and social consequences. Drug utilization research may provide insights into a different aspects of drug use and drug prescribing, such as a pattern of use. Drug utilization study forms an important component of many research studies which aim to examine the clinical as well as economic effects of pharmacotherapy.¹ Drug utilization review also referred to be as drug utilization pattern (DUP) and drug utilization evaluation (DUE). It is defined as an ongoing, authorized, and systemic quality improvement process. . DUP involves a comprehensive review of patients' prescription and medication data before, during, and after dispensing to ensure appropriate medication decision-making and positive patient outcomes. Drug utilization patterns play a significant role in helping the health care system to understand, explain and improve the prescribing administration of the use of medications the ultimate goal is to achieve rational and effective pharmaceutical care for the general department patients.²

- **Benefits of the drug utilization review**
 - DUR helps the health care system to understand, explain and improve the prescribing.
 - DUR plays a significant role in achieve rational and effective pharmaceutical care.
 - Ensuring appropriate medication decision making.
- **Need for the drug utilization review**
 - To identify and solve adverse drug reactions.
 - To evaluate poly pharmacy.
 - Large number of medication used within a same therapeutic range.
 - Use of high cost medicines where less expensive alternatives exist.
- **Objectives of a drug utilization review**
 - For promoting optimal medication therapy.



- DUR will help in creating criteria for appropriate medicine use.
- It plays an important role in controlling pharmaceutical costs.
- To provide assurance that the pharmaceutical therapy meets current standards of care.

MATERIALS AND METHODOLOGY

STUDY SETTING: This study was conducted in the general medicine indoor patient department and outdoor patient department of a tertiary care teaching hospital in southern Rajasthan at the Ananta institute of medical sciences and research centre, Rajsamand, Rajasthan.

STUDY DESIGN: The study was planned as a prospective and observational study.

STUDY DURATION: This was a 12-week study from February 2022 to April 2022.

SAMPLE SIZE: A total of 208 patients were included in this study.

Inclusion Criteria

- ✓ Patients of all age groups (new born to 80 years)
- ✓ Patients of both gender (male and female)
- ✓ Patient who attends outpatient department
- ✓ Patients admitted to the inpatient department who will be prescribed antibiotics will be included in the study.
- ✓ Patients with any kind of infectious disease.

Exclusion criteria

- ✓ Patients in which the antibiotic is not prescribed.
- ✓ Patients with critical illness or admitted to the ICU.
- ✓ Pregnant women will be excluded from the study.

DATA COLLECTION: These following element was included in data collection -

- A brief discussion of the current illness.
- Data regarding current diagnosis and Presenting complaints.
- Demographic details about patients.
- Medical history and Investigation did previously.
- Antimicrobial doses.
- Frequency and route of drug given.
- Duration of antimicrobial use

STUDY PROCEDURE

STAGE-1

- ❖ Obtaining consent from hospital authorities.
- ❖ Obtaining clearance from ethical committee.
- ❖ Design of data collection form.
- ❖ The demographic, clinical, and therapeutic data were collected by reviewing the case notes, prescriptions of the patients, and treatment charts of the patients.
- ❖ All patients were monitored from the day of admission till the day of discharge.

STAGE-2

- ❖ During the treatment of antibiotics, the patients were evaluated clinically every day to assess the clinical outcome.
- ❖ To evaluate the rationality of antimicrobials.
- ❖ To check the most commonly used antimicrobials.
- ❖ To check most frequently used route of administration.
- ❖ After data collection all data were entered in Microsoft excel, where they will be further cleaned and imported to SPSS version 25.0 for analysis.

RESULTS AND DISCUSSION

GENDER: The data were collected prospectively for 208 patients, who were having at least one antibiotic on their prescription while visiting the outpatient and inpatient department, and drug utilization evaluation was done. In the current study, demographic data showed that male population (51%) were more affected and prescribed with antibiotics when compared to female population (49%).

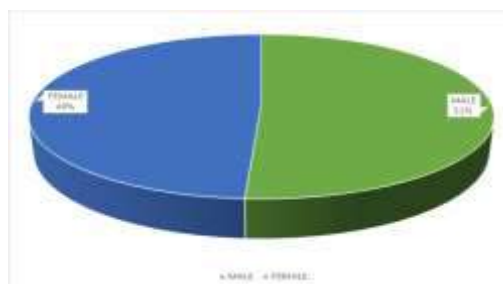
This is similar to a study conducted by **Meher et.al.**, who concluded that the overall study population was predominantly male population. (51%) male population was prescribed antibiotics and (49%) females were prescribed with antibiotics.



TABLE 1: Gender wise distribution of patients

S.NO.	GENDER	NO. OF PATIENT	PERCENTAGE (%)
1.	MALE	106	51%
2.	FEMALE	102	49%

FIGURE 1: Gender Wise Distribution of Patients



AGE WISE DISTRIBUTION: Maximum number of patients who were prescribed antibiotics were between the age group of 61-70 years (20.19%), followed by the age group 51-60 years (19.23%). A Similar study was conducted by **Maryam et.al, (2020)** in the medicine department and showed nearly about 20% of patients were in the age group of 60 years. This was due to the older population being more easily catching infectious diseases compared to other age groups.⁴

TABLE 2: Age wise distribution of patients

S. NO.	AGE (YEARS)	NUMBER OF PATIENTS	PERCENTAGE (%)
1	0-10	1	0.40%
2	11-20	13	6.25%
3	21-30	27	12.98%
4	31-40	33	15.86%
5	41-50	38	18.26%
6	51-60	40	19.23%
7	61-70	42	20.19%
8	71-80	13	6.25%
9	81-90	1	0.40%

FIGURE 2: Age wise distribution of patients:

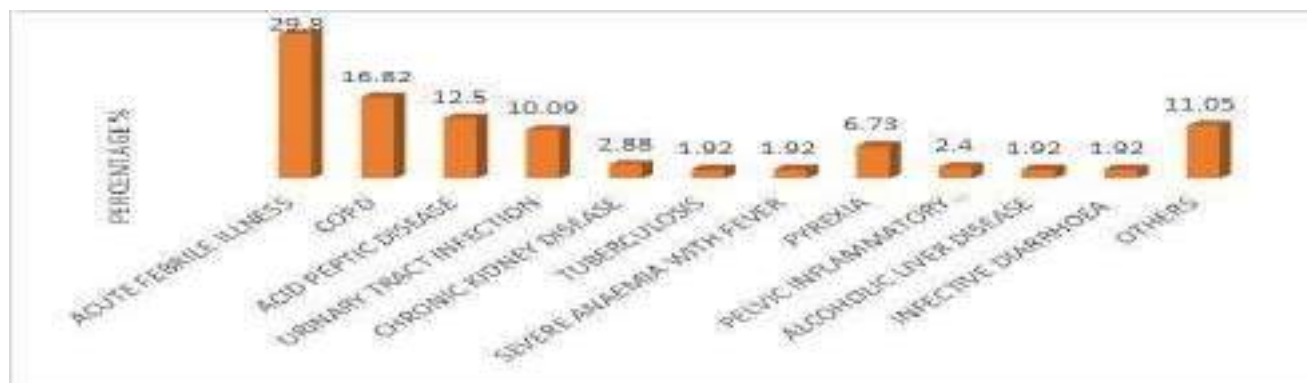


DISEASE WISE DISTRIBUTION

In this study, the disease-wise distribution of patients was analysed, and found that out of 208 patients, majority of the patients prescribed antibiotics were affected by acute febrile illness 62 (29.80%) and chronic obstructive pulmonary disease 35 (16.82%), which was similar to a study conducted by **Shankar et.al.**, who reported that majority of the patients have the chronic obstructive pulmonary disorder.⁵

**Table 3: Disease Wise Distribution of Patients**

S.NO.	DISEASE	NO. OF PATIENT	PERCENTAGE (%)
1	ACUTE FEBRILE ILLNESS	62	29.80%
2	COPD	35	16.82%
3	ACID PEPTIC DISEASE	26	12.50%
4	URINARY TRACT INFECTION	21	10.09%
5	CHRONIC KIDNEY DISEASE	6	2.88%
6	TUBERCULOSIS	4	1.92%
7	SEVERE ANEMIA WITH FEVER	4	1.92%
8	PYREXIA	14	6.73%
9	PELVICINFLAMATORYDISEASE	5	2.40%
10	ALCOHOLIC LIVER DISEASE	4	1.92%
11	INFECTIVE DIARRHEA	4	1.92%
12	OTHERS	23	11.05%

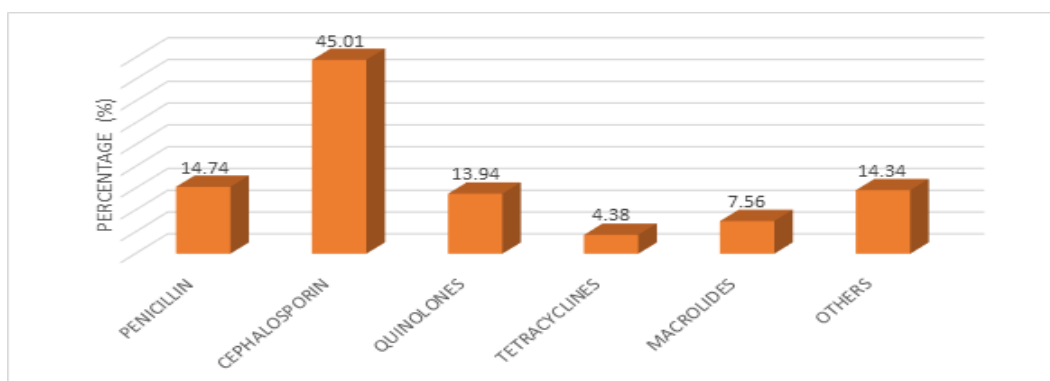
Figure 3: Disease Wise Distribution of Patients

CLASS WISE DRUG UTILIZATION OF ANTI-MICROBIAL

The reports on the class-wise distribution of antibiotics prescribed were analyzed and found the most commonly prescribed antibiotic class was cephalosporin (45.01%), followed by penicillin (14.74%) and quinolones (13.94%). This is because of their broad spectrum activity and convenient dosage regimen. A similar result was found in the study of **Ahmad et.al., (2014)** in the medicine department and state cephalosporin's was the most prescribed class of antibiotic (62.5%) followed by fluoroquinolones and penicillin.6

Table 4: Class-Wise Distribution of Antibiotics Prescribed

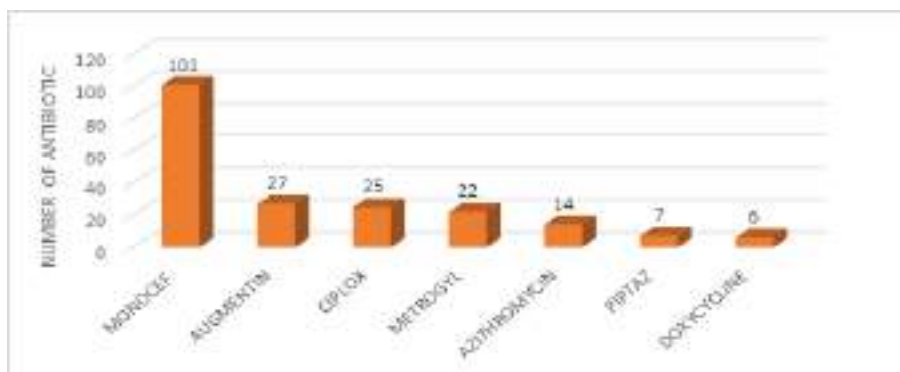
S.NO.	ANTIBIOTIC CLASS	NO. OF PATIENTS	PERCENTAGE(%)
1	CEPHALOSPORINS	113	45.01%
2	PENICILLIN	37	14.74%
3	QUINOLONES	35	13.94%
4	MACROLID	19	7.56%
5	TETRACYCLINE	11	4.38%
6	OTHERS	36	14.34%

**Figure 4: Class Wise Distribution of Antibiotics Prescribed****ANTIBIOTICS WISE DISTRIBUTION**

In a total of 208 patients, 251 antibiotics were prescribed. The profile of antibiotics prescribed is shown in table 5. Among which 40.23% of the prescriptions were prescribed with Monocef, 10.75% were prescribed with Augmentin, 9.96% with Ciplox, 8.76% with metrogyl, 5.57% with Azithromycin, 2.78% with piptaz and 2.39% with doxycycline. Similar study results were found in the study conducted by **Marupaka et.al., (2020)** that monocef was the most frequently used antibiotic in the medicine department.⁷

Table 5: List of Commonly Antibiotics Prescribed

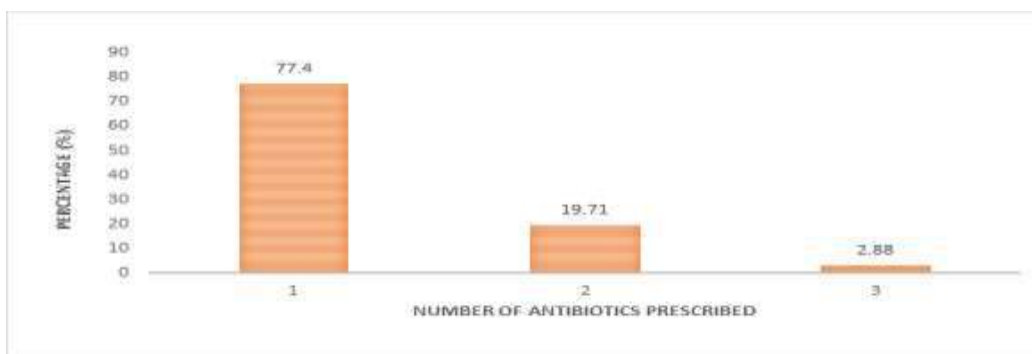
S.NO.	ANTIBIOTICS	PERCENTAGE (%)
1	MONOCEF	101 (40.23%)
2	AUGMENTIN	27 (10.75%)
3	CIPLOX	25 (9.96%)
4	METROGYL	22 (8.76%)
5	AZITHROMYCIN	14 (5.57%)
6	PIPTAZ	7 (2.78%)
7	DOXYCYCLINE	6 (2.39%)
8	DOXY	5 (1.99%)
9	CEFIXIME	5 (1.99%)
10	RIFAGUT	5 (1.99%)
11	METRONIDAZOLE	4 (1.59%)
12	CLARITHROMYCIN	3 (1.19%)
13	AMOXICLAV	3 (1.19%)
14	OFLOXACIN	2 (0.79%)
15	ZANFLOX	2 (0.79%)
16	LEVOFLOX	2 (0.79%)
17	AZIWOK	2 (0.79%)
18	OFLORA	1 (0.39%)
19	LOXOF	1 (0.39%)
20	NOFLOX	1 (0.39%)
21	CEPROFLOXA	1 (0.39%)
22	ORNIDAZOLE-OF	1 (0.39%)
23	NIFTY-SR	1 (0.39%)
24	TAZAR	1 (0.39%)
25	AZOM	1 (0.39%)
26	SULFONAMIDE	1 (0.39%)
27	CEPODEM	1(0.39%)
28	MEGNA-SB	1(0.39%)
29	CEFTRIAXONE	1(0.39%)
30	CEFI-O	1(0.39%)
31	MEGNACEF	1(0.39%)
32	CEFALOB	1(0.39%)

**Figure 5: List of Seven Commonly Prescribed Antibiotics****FREQUENCY OF ANTIBIOTIC PRESCRIBED**

The study report shows during the hospital stay, most of the patients were prescribed only 1 antibiotic (Mono-therapy), 161 (77.40%), followed by 41 (19.71%) patients prescribed with 2 antibiotics, only 6 (2.88%) patients were prescribed with 3 antibiotics. This was similar to a study conducted by **Chem et.al., (2018)** who concluded that prescription with mono-therapy (87.42%) was found to be higher than prescription with combination therapy.⁸

Table 6: Number of Antibiotics Prescribed

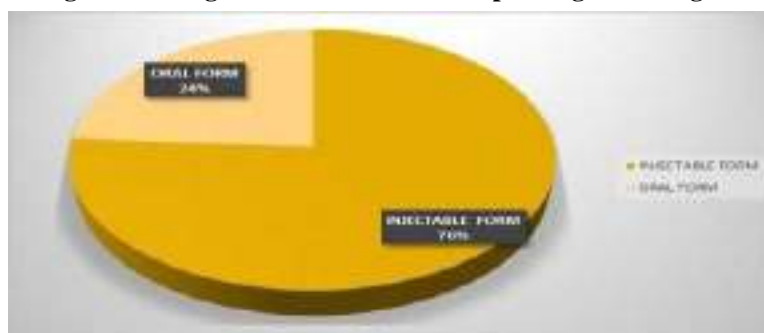
S.NO.	NO. OF ANTIBIOTICS	NO. OF PATIENTS	PERCENTAGE (%)
1	1	161	77.40%
2	2	41	19.71%
3	3	6	2.88%

Figure 6: Number of Antibiotics Prescribed**ROUTE OF ADMINISTRATION**

Out of 251 antimicrobials, 191 (76%) were in injectable form and 60 (24%) were oral antimicrobials. This is due to intravenous route is more convenient and it has maximum bio-availability. This is in similar with the work done by **Maryam et.al.**, that injection (80.2%) was most commonly preferred drug formulation.⁴

Table 7: Categorization of Patients Depending On Dosage Form

S. NO.	DOSAGE FORM	NUMBER OF PATIENTS	PERCENTAGE (%)
1	INJECTABLE FORM	191	76%
2	ORAL FORM	60	24%

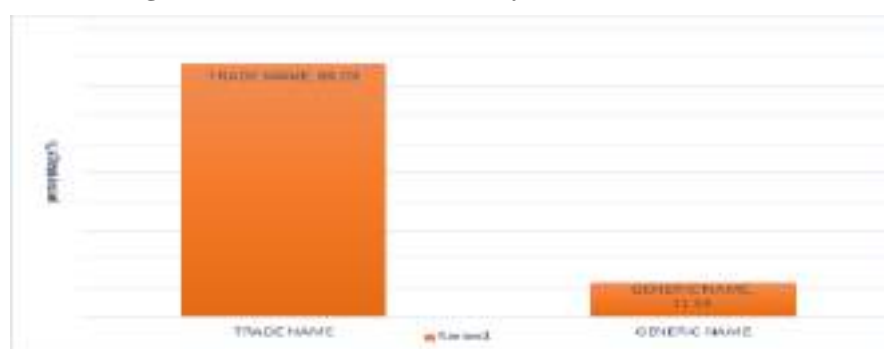
**Figure 7: Categorization Of Patients Depending On Dosage Form**

GENERIC AND TRADE NAME

In the present study, patients' prescriptions with the antibiotic agents were collected and analyzed on the basis of generic and trade names and found that the maximum percentage of drugs prescribed with trade names was (88.05%), a similar study conducted by Solanki et.al., (2019) reports that 78% of the drug prescribed by their brand name and 22% by their generic name.⁹

Table 8: Antibiotics Prescribed By Generic And Trade Name

S.NO.	ANTIBIOTIC PRESCRIBED	NO. OF PRESCRIPTION	PERCENTAGE (%)
1	TRADE NAME	221	88.05%
2	GENERIC NAME	30	11.95%

Figure 8: Antibiotics Prescribed By Generic Name And Trade Name

Limitation of our study

- This study was not performed in a specific period when viral illnesses such as dengue, and swine flu are common; due to this results of this study may not represent the drug prescribing pattern in such periods.
- Our study was not able to include all patients who reported in the outpatient department of general medicine after 2 p.m.

CONCLUSION

The current study could assess the prescribing pattern/drug utilization of antibiotics, the most commonly prescribed antibiotic in the study population was Monocef followed by Augmentin. the most preferable class of antibiotics was cephalosporins and penicillin. In our study, 11.95 % of drugs were prescribed by generic names. In the present study maximum number of prescriptions had prescribed only 1 antibiotic as per W.H.O. the average number of antibiotics must be kept within the limit. no serious drug interactions were found during the study period. Clinical pharmacists, physicians, and nursing staff need to play an important role in reducing antibiotic misuse and overuse by conducting continual awareness programs concerning prescribing guidelines in the hospital, minimizing resistance development in the antibiotics, and also preserving the antibiotics we use currently.

A strict protocol for prescribers is now an utmost requirement to promote the safe and rational use of antibiotics which will help prevent antibiotic resistance but also reduce the treatment cost.



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CHALLENGES AND COPING MECHANISMS OF SINGLE MOTHERS IN PAGSANJAN, LAGUNA AND STATUS OF WOMEN EMPOWERMENT: AN INPUT IN PROPOSED MODIFIED FRAMEWORK

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Local Government of Pagsanjan, Laguna, Philippines

ABSTRACT

There were many cases of single mother in the Philippines rather than single father. It was because there were many females who were left behind while bearing the child which result to discrimination among society and lack of support emotionally and economically. Raising the child alone were a big responsibility since acted as resource provider to the needs of the child for education and daily living were essential.

This descriptive-correlation study utilized 30 single mothers residing in Pagsanjan, Laguna. A researcher-made questionnaire was employed as an instrument to gather data and information necessary in this study. The statistical tools used were mean, standard deviation and regression analysis which was used to test the hypothesis. The findings of the study highlighted that single mother moderately encountered challenges in terms of financial support ($M=3.25$), work-life balance ($M=3.17$), emotional struggle ($M=2.17$) and decision making ($M=3.01$). Also, single mothers were involved in coping mechanism such as: physical ($M=3.13$), mental ($M=3.26$) and social ($M=3.14$). More so, women were highly empowered in terms of political ($M=3.29$), social ($M=3.28$) and health ($M=3.25$) while moderately empowered in terms of economic ($M=3.19$). From the data results of regression analysis, challenges encountered by single mother significantly predict women empowerment and coping mechanism of single parent significantly predict women empowerment having the p -value greater than .05 interpreted leads to the rejection of alternative hypothesis. Therefore, it is recommended for the collaboration and participation of different group of individual namely local government, department of social welfare and development, and other agencies with active participation from the women of community following the suggested framework by the researcher.

KEYWORDS: *Empowerment, Single Mother, Coping Mechanism, Challenges*

INTRODUCTION

Child development began at home from the parent. They transferred culture and moral values to the child which aided the child to socialize and harmonize with other. With this, the parents identified as the first teacher of their child regarding their attitudes, cognitive interest, and life skills acquisition. But there were some situations that the mother independently raised the child alone and acted as the father who earns money for living while taking care of the child welfare at the same time.

Although it was in the culture and tradition of the Philippines to be family centered, with the integration of foreign culture and media, people's behavior and values towards importance of family linkage and involvement change. From the traditional extended family who shared common culture from grandparents to grandchildren, broken family cases in different community arose due to different reasons.

Raising the child alone is a big responsibility since acted as resource provider to the needs of the child for education and daily living were essential. More so, they also provided quality time as they gave attention to the child's needs of moral development and socialization to cope up and learn from the environment. It is acting two responsibilities which create challenges among single parent.

Tuazon et al. (2022) proved on their study that there were various perspectives on the difficulties faced by single parents, how those around them influenced them, and the situations they viewed as the most difficult.

With the current situation of single mother, the researcher developed a study that would determine the challenges encountered by single mother, the coping mechanism and status of women empowerment in community as an input on developed programs and women empowerment projects.

OBJECTIVE OF THE STUDY

Parenting was one of the rewarding tasks as everyone perceived yet partnered with different challenges from the responsibility of raising the child and affecting their development. It required plan and preparation of both partners on having the child and preparing the future path for them. It included emotional, physical, mental and social preparation.



The Republic Act 8972 which aimed to assure the protection of solo parents from the government. With this, it provided greater chances among solo parents in the offices to have opportunity to their task in the work field and perform their duties as parents. While in June 2022, Republic Act 11861 or the Expanded Solo Parent Welfare Act was enacted and approved. Which mandated the Department of Social Welfare and Development, partner Agencies, Offices and the LGUs to assure the implementation of the said policy. The continuity and extension of the rights of every single parent in their offices to enjoy both earning money and taking responsibility to the child with lesser burden and support from the offices where they work.

More so, not only the work-related problems and the parenting provided stress among single parent in the Philippines but as well as the acceptance and support of the community. More than this, not only the single parent's psychological well-being was affected by the treatment of society and their economic status but also the child. It can be observed that the child clearly affected by the support and acceptance of the family and friend of their parent.

This study focused on how to strengthen single parent through identified challenges encountered, the support system they received and its effect to their coping mechanism and status of women empowerment in the community. The researcher hoped to suggest a solution to proposed women empowerment programs for single mothers.

MATERIALS AND METHODS

This study used descriptive-correlation research design which described the degree of significant relationship of independent and dependent variables and establish description of relationship. (McBurney & White, 2009).

According to Gall et al. (2007), descriptive research described the characteristics of how and why phenomenon occur through qualitative observation and survey tool interpreted quantitatively and analyze to describe relationship.

Descriptive statistics referred to data collecting and processing that describe group characteristic method. As reported by Kim and Boyd, (2017) descriptive research was about collecting information through data reviews, surveys, interviews, or observation. It involved either description of the characteristics of a phenomenon or explored possible associations about two or more phenomena.

Descriptive method of research was appropriate whenever the objects of any class vary among themselves and one knows the extent to which condition altering among the subject. A descriptive survey type of research was utilized in this study as it was widely accepted as a fact-finding study which involved precise and adequate interpretation of results.

This study aimed to determine challenges encountered by single mother, coping mechanism as determinants of women empowerment in the community.

In connection to this, the researcher made questionnaires to collect data and necessary information. It underwent validation with the department head/s of the College of Business Administration – Laguna State Polytechnic University Sta. Cruz and dialogue with the Municipal Social Welfare and Development Officer of the Municipality before it was distributed to the respondents.

Population And Sampling Technique

The research carried out to 30 Single Parents from different barangay of Pagsanjan in the province of Laguna. The respondents selected based on marital status and List of registered Solo Parent in the Municipal Social Welfare and Development Office (MSWDO) of Pagsanjan, Laguna. The data provided by the Local Government will be utilized in selected the subject of the study.

Purposive sampling technique referred to the strategy used by researcher in conducting study which involved choosing respondents of the study based on the characteristics of set criteria known as subjective sampling (Crossman 2018),

Depending on the study design, purposive sampling method could be included into a variety of scenarios. Each study was clearly positioned in terms of its suitability for data collection and analysis based on the sampling procedures. Each case's chosen purposive sampling strategy fitted with the research methodology, goals, and objectives, fulfilling all of the rigor requirements.

Campbell et al. (2020) proved that purposive sampling technique for participant sampling explicit improved research quality as measured by the four pillars of reliability. The examples given showed how rigor can be handled in qualitative research, which is helpful for beginning researchers.

Data Collection Procedure

Upon approval by the faculty of Laguna State Polytechnic University - Sta. Cruz Main Campus, the researcher asked for the consent from the Municipal Mayor's office through formal letter and attention to the Municipal Social Welfare and Development Office, signed by the researcher and the adviser.

In administration of the questionnaire, the researcher personally went to each Offices/Barangay to orient the respondents on the objectives of the study in order to gather complete data which are needed in the research paper work. The questionnaire was validated by the experts and multiplied based on the number of respondents.

The researcher asked them to take time answering the remaining questions and will be back after a week to collect the papers. After collecting the papers answered by the respondents, the data based on the information that were gathered will be tabulated, analyzed and interpreted by the researcher.

**RESULTS AND DISCUSSION****Level of Challenges Encounter by Solo Parents**

In this study, challenges encounter by solo parents includes financial support, work-life balance, emotional struggle and decision making.

The table 1 shows the challenges encountered by solo parents in terms of financial. The solo parents *highly encountered* difficulty in purchasing food for the family ($M= 3.47$, $SD= 0.63$) as well as budgeting limited resources ($M= 3.47$, $SD= 0.63$). They *moderately encountered* difficulty in supporting educational needs of the students ($M= 3.20$, $SD= 0.76$), looking for groups providing financial assistance ($M= 3.03$, $SD= 0.89$) and difficulty in asking family members for lending money ($M= 3.07$, $SD= 0.74$).

The overall mean of 3.25 indicates that the solo parents *moderately encounter* challenges in terms of financial support. Entails that solo parents have more thing to look after, from finances to the house and kids, do multi-tasking to provide the needs of the children.

Lopez & San Juan (2019) proved that 67% of solo parents are from low income and average income of 7,500 which causes the challenges among single parent of the community to struggle financially which requires the local government to provide livelihood training.

Families who are experiencing poverty may affect the child safety assurance, education quality, and racism/prejudice according to Beasley et al. (2018).

Table 1. Level of Challenges Encountered by Solo Parent in Terms of Financial Support

Statements	Mean	SD	Verbal Interpretation
I encountered difficulty in... (<i>Nahihirapan ako sa....</i>)			
1. purchasing food for the family. (<i>pagbili ng pagkain para sa pamilya.</i>)	3.47	0.63	Highly Encountered
2. supporting educational needs of the students. (<i>pagsuporta sa pangangilangang pang-edukasyon ng mga mag-aaral.</i>)	3.20	0.76	Moderately Encountered
3. looking for groups providing financial assistance. (<i>humanap ng grupong nagbibigay ng tulong pinansyal.</i>)	3.03	0.89	Moderately Encountered
4. budgeting limited resources. (<i>pagbabadyet ng limitadong pinagkukunan.</i>)	3.47	0.63	Highly Encountered
5. asking family members for lending money. (<i>magtanong sa miyembro ng pamilya para sa mahihiraman ng pera.</i>)	3.07	0.74	Moderately Encountered
Overall Mean	3.25		Moderately Encountered

Legend: 3.26-4.00 (Highly Encounter), 2.51-3.25 (Moderately Encounter),
1.76- 2.50 (Less Encounter), 1.00- 1.75 (Not Encounter)

Table 2 shows the challenges encountered by single mothers in terms of work life balance. It can be gleaned that single parents *moderately encountered* difficulty in attending the children's school needs during work hours ($M= 3.23$, $SD= 0.68$). Also, single mothers *moderately encountered* difficulty spending time with kids while doing work related matters ($M= 3.20$, $SD= 0.76$), resting on time while working and taking care of the child ($M= 3.17$, $SD= 0.83$), taking care of the children and doing household chores ($M= 3.13$, $SD= 0.86$), and monitoring child's growth while earning money ($M= 3.10$, $SD= 0.66$).

Table 2 shows the overall mean of 3.17 which denotes that single mother *moderately encountered* difficulty in work-life balance. It denotes that single mother had difficulty attending the duties demanded by profession or work to sustain their daily living same with the duties and responsibilities of attending the needs of raising child from their well-being, activities in school and bonding time unable for them to rest.

Van Gasse & Mortelmans (2020). Concluded that single mother perception on philosophy of workplace affects their flexibility to adjust in the situation and experiences to manage work-life challenges.

Regardless of the type of family, when the parents received higher level of stress it transcends to the child affecting their adjustment on different problems they may encounter at home or at school leading to child's fixation problems, Jones et al (2021) stated.

Anttila & Oinas (2018) proved that work-life of single mother may be balance according to their coping mechanism and strategies to manage time which affects their level of flexibility.

**Table 2. Level of Challenges Encountered by Solo Parent in Terms of Work-life balance**

Statements	Mean	SD	Verbal Interpretation
I encountered problem in times like... (<i>Nakatagpo ako ng problema sa mga panahong tulad ng.....</i>)			
1. taking care of the children and doing household chores. (<i>pag-aalaga ng mga bata at paggawa ng mga gawaing bahay.</i>)	3.13	0.86	Moderately Encountered
2. attending the children's school needs during work hours. (<i>pagdalo sa mga pangangailangan ng mga bata sa paaralan sa oras ng trabaho.</i>)	3.23	0.68	Moderately Encountered
3. spending time with kids while doing work related matters. (<i>paggugol ng oras sa mga bata habang gumagawa ng mga bagay na may kaugnayan sa trabaho.</i>)	3.20	0.76	Moderately Encountered
4. monitoring child's growth while earning money. (<i>pagsubaybay sa paglaki ng bata habang kumikita ng pera.</i>)	3.10	0.66	Moderately Encountered
5. resting on time while working and taking care of the child. (<i>pagpapahinga sa oras habang nagtatrabaho at nag-aalaga ng bata.</i>)	3.17	0.83	Moderately Encountered
Overall Mean	3.17		Moderately Encountered

Legend: 3.26-4.00 (Highly Encounter), 2.51-3.25 (Moderately Encounter),
1.76- 2.50 (Less Encounter), 1.00-1.75 (Not Encounter)

Table 3 shows the challenges encountered by single mothers in terms of Emotional struggle. It entails that single mother *moderately encountered* difficulty in failure to meet family expectations ($M= 3.10$, $SD= 0.76$), thinking of pressure in dealing daily duties ($M= 3.07$, $SD= 0.74$), Community preference about situation ($M= 3.00$, $SD= 0.79$), There is no one to give advice ($M= 2.97$, $SD= 0.93$), and lack of consideration in workplace ($M= 2.70$, $SD= 0.79$).

The overall mean of 2.97 which denotes that single mother *moderately encountered* difficulty in emotional struggle. This revealed that single mothers moderately experiencing struggles in meeting the expectations of community, work and family while accomplishing different duties and responsibilities since there is no one who gives advice and suggestion in dealing with situation leading to emotional stress among single parents.

Table 3. Level of Challenges Encountered by Solo Parent in Terms of Emotional Struggle

Statements	Mean	SD	Verbal Interpretation
I encountered difficulty if... (<i>Nahihirapan ako kung...</i>)			
1. there is no one to give advice. (<i>walang magbigay ng payo.</i>)	2.97	0.93	Moderately Encountered
2. thinking of pressure in dealing daily duties. (<i>malalim na pag-iisip sa paghanap ng mga pang-araw-araw na gawain.</i>)	3.07	0.74	Moderately Encountered
3. failure to meet family expectations. (<i>pagkabigong matugunan ang mga inaasahan ng pamilya.</i>)	3.10	0.76	Moderately Encountered
4. community preference about my situation. (<i>kagustuhan ng komunidad tungkol sa aking sitwasyon.</i>)	3.00	0.79	Moderately Encountered
5. lack of consideration in work place. (<i>kakulangan ng konsiderasyon sa lugar ng trabaho.</i>)	2.70	0.79	Moderately Encountered
Overall Mean	2.97		Moderately Encountered



Legend: 3.26-4.00 (Highly Encounter), 2.51-3.25 (Moderately Encounter),
1.76- 2.50 (Less Encounter), 1.00- 1.75 (Not Encounter)

Jain & Mahmoodi (2022) proved that single parents experience bad outcomes across cultures, which may be a result of social stigma and financial constraints. This was shown to apply to lone mothers more so than to fathers. It also had an effect on how well children developed academically, physically, and psychologically.

Theodoritsi et. al (2018) stated that single mother affects mental health problems among their children which result to inability to continue education and poor mental health. Most of the single parents admitted they felt lonely as they are alone in facing challenges of being both the mother and the father in the family leading them to unavailable in attending social events, change personality and poor habits according to Kotwal & Prabhakar (2019).

Table 4 shows the challenges encountered by single mothers in terms of decision making. It can be gleaned that single mothers *highly encountered* difficulty in selecting priorities ($M= 3.27$, $SD= 0.74$). Meanwhile single mothers *moderately encountered* challenges in performing household management ($M= 3.03$, $SD= 0.56$), choosing job opportunities to engage ($M= 2.93$, $SD= 0.74$), imposing type of parenting style for child ($M= 2.93$, $SD= 0.58$), and executing a plan for daily activity ($M= 2.87$, $SD= 0.57$).

Table 4. Level of Challenges Encountered by Solo Parent in Terms of Decision Making

Statements	Mean	SD	Verbal Interpretation
I encountered difficulty in... (<i>Nahihirapan ako sa...</i>)			
1. executing a plan for daily activity. (<i>pagpapatupad ng plano para sa pang-araw-araw na aktibidad.</i>)	2.87	0.57	Moderately Encountered
2. selecting priorities. (<i>pagpili ng mga priyoridad.</i>)	3.27	0.74	Highly Encountered
3. performing Household management. (<i>pagsasagawa ng pamamahala ng sambayanan.</i>)	3.03	0.56	Moderately Encountered
4. imposing type of parenting style for child. (<i>pagpataw ng uri ng istilo ng pagiging magulang sa bata.</i>)	2.93	0.58	Moderately Encountered
5. choosing job opportunities to engage. (<i>pagpili ng mga trabahong sasalihan/sasamahan.</i>)	2.93	0.74	Moderately Encountered
Overall Mean	3.01		Moderately Encountered

Legend: 3.26- 4.00 (Highly Encounter), 2.51- 3.25 (Moderately Encounter),
1.76- 2.50 (Less Encounter), 1.00- 1.75 (Not Encounter)

The overall mean of 3.01 indicates that the solo parents *moderately encounter* challenges in terms of decision making. It shows that single mothers struggle in setting priorities in different activities as part of their responsibility at home and at work including household management, parenting style, listed daily task and job opportunities to engage as there are different task to accomplish leading to confusion.

According to El Nokali (2017) that parents who are aware and planned social function and behavioral responsibility affects child adjustment and demonstration of behavior. Parents who are totally involved in their child through experiences exposing them to possibilities leads the child to formation of morality and emotional independence from childhood to adulthood, according to Esmaeili et al. (2021).

Indrayanti et al. (2018) stated that single mother encountered difficulty as they are taking care of her children's needs during her free time and managing her finances in addition to working full-time.

Level of Coping Mechanism of Single Mother

In this study coping mechanism of single parents is described based in terms of physical, mental and emotional.

Table 5 shows the coping mechanism of single mothers in terms of Physical. It can be gleaned that single mothers *moderately high* engage in going to places exposing in nature ($M= 3.23$, $SD= 0.57$), cleaning the house to be distracted ($M= 3.20$, $SD= 0.48$), partake in community activities for entertainment ($M= 3.17$, $SD= 0.46$), maintaining busy by engaging in livelihood training ($M= 2.93$, $SD= 0.58$), and engaging exercises to forget problems ($M= 2.87$, $SD= 0.57$).

The overall mean of 3.13 indicates that single mothers were *moderately high* involved in physical activity to cope with stress. Meaning that single mother often performs different physical activities to forget problems in work and at home by engaging in different livelihood training and exercises that enhance their knowledge and physical well-being. More so, single mother also engages in different socialization and events in the community to entertain themselves. Being expose themselves in places exhibiting the beauty of nature



and performing household chores are one of the coping mechanisms that make a single parent forget their problems.

Table 5. Level of Coping Mechanism of Single Mother in Terms of Physical

Statements	Mean	SD	Verbal Interpretation
I usually engage in... (<i>Karaniwan akong nakikisali sa...</i>)			
1. going to places exposing in nature. (<i>pagpunta sa mga lugar na kinalaman sa kalikasan.</i>)	3.23	0.57	Moderately High
2. making myself busy in livelihood training. (<i>ginagawang abala ang aking sarili sa pagsasanay sa kabuhayan.</i>)	3.07	0.64	Moderately High
3. exercises to forget problems. (<i>pag-ebersisyo para makalimutan ang mga problema.</i>)	3.00	0.64	Moderately High
4. cleaning the house to make myself distracted. (<i>paglilinis ng bahay para manatiling busy.</i>)	3.20	0.48	Moderately High
5. community activities for entertainment. (<i>aktibidad sa komunidad bilang libangan.</i>)	3.17	0.46	Moderately High
Overall Mean	3.13		Moderately High

Legend: 3.26-4.00 (Very High), 2.51-3.25 (Moderately High),
1.76- 2.50 (Low), 1.00- 1.75 (Very Low)

Moeller (2020) exercise integration and constant practice assist individual to cope up with stress and lessen it level and effects. Mind training and optimism increase coping styles and enjoyment through problem orientation among individual that reduce mental health problems such as anxiety and avoidance (Zandi et al. 2021).

Table 6 shows the coping mechanism of single mothers in terms of Mental. It can be gleaned that single mothers *very high* engage in thinking positive and realistic ($M= 3.53$, $SD= 0.63$), evaluate reasons of stress to counter ($M= 3.47$, $SD= 0.57$), and plans career for children ($M= 3.43$, $SD= 0.65$) as coping mechanism for stress and challenges encountered. Meanwhile, single mother *moderately high* engage consulting professional to counter stress ($M= 3.03$, $SD= 0.67$), and doing meditation when stress ($M= 2.83$, $SD= 0.65$).

The overall mean of 3.26 indicates that single mothers were *very high* engage in mental coping mechanism to relive from stresses and challenges encountered as single parent. It can be observed that single mother shows optimism which she thinks the positive side of every situation by looking in realistic approach to counter the challenges. Also, the single mother evaluates the reason of the encountered challenges to assess the root cost and deal with appropriate solution and focus on the future of the children rather than the problem itself.

Meanwhile it can be observed that single mother least prioritizes mediation to cope up stress because it takes much time to perform and quiet places which is not advisable most of the time due to several duties and responsibilities. Also, they tend to skip consulting professional advice since there are afraid of the result from diagnosis due to several connotation of mental disorder if consulting to professionals.

Table 6. Level of Coping Mechanism of Single Mother in Terms of Mental

Statements	Mean	SD	Verbal Interpretation
I usually... (<i>Madalas akong...</i>)			
1. do meditation when stress. (<i>mag-meditation kapag stress.</i>)	2.83	0.65	Moderately High
2. plans career of my children. (<i>magplano ng karera ng aking mga anak.</i>)	3.43	0.68	Very High
3. evaluate reasons of stress to counter it. (<i>suriin ang mga dahilan ng stress upang labananan ito.</i>)	3.47	0.57	Very High
4. consult professional to counter stress. (<i>kumonsulta sa propesyonal upang labananan ang stress.</i>)	3.03	0.67	Moderately High
5. think positive and be realistic (<i>mag-isip ng positibo at maging makatotohanan.</i>)	3.53	0.63	Very High
Overall Mean	3.26		Very High



Legend: 3.26-4.00 (Very High), 2.51-3.25 (Moderately High),
1.76- 2.50 (Low), 1.00- 1.75 (Very Low)

Positive thinking training is efficient method in reducing mental health issues like, depression, anxiety and loneliness through increasing happiness (Pourdavaran et al. 2021). Anticipation of future events aids individual to prepare emotions for experiences creating positive mindset during challenges, short comings and similar chronic stressors, Leslie et al. (2021).

Table 7 shows the coping mechanism of single mothers in terms of social. It can be observed that single mothers *very high* engage in bonding with family members through communications ($M= 3.53$, $SD= 0.65$). Furthermore, single mother *moderately high* engage in seek advice from professionals. ($M= 3.17$, $SD= 0.65$), take help from my seniors ($M= 3.13$, $SD= 0.57$), share with my colleagues ($M= 3.03$, $SD= 0.67$), and keep away from others to avoid conflicts ($M= 2.83$, $SD= 0.65$).

Table 7. Level of Coping Mechanism of Single Mother in Terms of Social

Statements	Mean	SD	Verbal Interpretation
When I am stressed I... (<i>Pag stressed ako...</i>)			
1. share with my colleagues. (<i>ibinabahagi ko sa aking mga kasamahan.</i>)	2.93	0.74	Moderately High
2. take help from my seniors. (<i>humihingi ng tulong sa mga nakatatanda.</i>)	3.13	0.57	Moderately High
3. seek advice from professionals. (<i>humingi ng payo mula sa mga propesyonal.</i>)	3.17	0.65	Moderately High
4. bond with family members through communications (<i>makipag-ugnayan sa mga miyembro ng pamilya sa pamamagitan ng komunikasyon.</i>)	3.53	0.57	Very High
5. keep away from others to avoid conflicts. (<i>lumayo sa iba upang maiwasan ang salungatan.</i>)	2.93	0.91	Moderately High
Overall Mean	3.14		Moderately High

Legend: 3.26-4.00 (Very High), 2.51-3.25 (Moderately High),
1.76- 2.50 (Low), 1.00- 1.75 (Very Low)

The overall mean of 3.14 indicates that single mothers were *moderately high* engage in social coping mechanism to relive from stresses and challenges encountered as single parent. It denotes that single mother tend to share problems and expend leisure time with family member to relive from the problems encountered.

Also, single mothers seek advice from senior and professionals who have the same experience or knowledge in the problems they encountered as socializing with them will help them to gain insight on proper approach to deal with the challenge encountered. Meanwhile, they tend to share experiences and problems with colleagues in time of uncertainty so they received encouragement and lean on the shoulder of other but there are times that they distant themselves when they are distracted to avoid misunderstanding with others.

Zuo & Taylor (2022) states that friend support was strong or sufficient, family support could supplement friends' beneficial effects on the mental health of single mothers.

Babicka-Wirkus et. al (2021) proved that the poor coping mechanisms requires social support from their friends.

Status of Women Empowerment

In this study, the status of women empowerment is described with respect to political, social, economic and health.

Table 8 shows the status of women empowerment with respect to political. It showed that there is *highly empowered* women participation in political activities such as proposal of women activities for development ($M= 3.37$, $SD= 0.61$), women practice of self-expression in any medium to influence ($M= 3.30$, $SD= 0.60$), and participation of women in decision making for the community ($M= 3.30$, $SD= 0.60$). More so, there are *moderately empowered* political activities of women in terms of participate in imposing rules and regulations in the community ($M= 3.23$, $SD= 0.57$), and women engagement in leadership ($M= 3.23$, $SD= 0.50$).

**Table 8. Status of Women Empowerment with Respect to Political**

Statements	Mean	SD	Verbal Interpretation
The community allows... (<i>Pinapayagan ng komunidad...</i>)			
1. the participation of women in decision making for the community. (<i>ang partisipasyon ng kababaihan sa paggawa ng desisyon para sa komunidad.</i>)	3.30	0.60	Highly Empowered
2. women engagement in leadership. (<i>ang pakikilahok ng kababaihan sa pamumuno.</i>)	3.23	0.50	Moderately Empowered
3. women practice of self-expression in any medium to influence. (<i>pagsasanay ng kababaihan sa pagpapahayag ng sarili sa anumang daluyan upang makaimpluwensya.</i>)	3.30	0.60	Highly Empowered
4. proposal of women activities for development. (<i>pagpapanukala ng mga aktibidad ng kababaihan para sa pag-unlad.</i>)	3.37	0.61	Highly Empowered
5. participate in imposing rules and regulations in the community. (<i>pakikilahok sa pagpapataw ng mga tuntunin at regulasyon sa komunidad.</i>)	3.23	0.57	Moderately Empowered
Overall Mean	3.29		Highly Empowered

Legend: 3.26-4.00 (Highly Empowered), 2.51-3.25 (Moderately Empowered),
1.76- 2.50 (Less Empowered), 1.00- 1.75 (Not Empowered)

The overall mean of 3.29 indicates that there is *highly empowered* status of women engagement in political activities. It indicates that communities allowed the women to practice their influence through expression, policy making and decision making that leads the community to better status. Also, there is the practice of practice of leadership among women and their participation imposing rules and regulations.

Besnier (2020) proved that it is important to draw attention to the beneficial relationship between women's political empowerment and certain child health outcomes as it affects the nutrition and immunization.

Hughes & Dubrow (2018) proved that intersectionality enables us to face the fact that different women have different political experiences, therefore equality for some may not necessarily imply equality for all.

Table 9 shows the status of women empowerment with respect to social. It showed that there is *highly empowered* women participation in social activities such as activity where single mother can share their experiences and ideas with their peer assisted by DSWD ($M= 3.33$, $SD= 0.66$), counsel from professionals for problem in raising children ($M= 3.30$, $SD= 0.65$), seminar for household planning and management. ($M= 3.27$, $SD= 0.52$) and volunteer works of Samahan ng Kababaihan in clean up drive ($M= 3.27$, $SD= 0.45$). Moreso, there is *moderately empowered* social activities of women in terms of recreational activities provided for *Samahan ng Kababaihan* ($M= 3.23$, $SD= 0.57$).

**Table 9. Status of Women Empowerment with Respect to Social**

Statements	Mean	SD	Verbal Interpretation
In the community, There is the... (<i>Sa komunidad, nariyan ang...</i>)			
1. counsel from professionals for problem in raising children. (<i>mga propesyonal para sa mga payo para sa problema sa pagpapalaki ng mga bata.</i>)	3.30	0.65	Highly Empowered
2. seminar for household planning and management. (<i>seminar para sa pagpapalano at pamamahala ng sambahayan.</i>)	3.27	0.52	Highly Empowered
3. activity where single mother can share their experiences and ideas with their peer assisted by DSWD. (<i>aktibidad kung saan maibabahagi ng Solo Mother ang kanilang mga karanasan at ideya sa kanilang kasamahan sa tulong ng DSWD.</i>)	3.33	0.66	Highly Empowered
4. recreational activities provided for Samahan ng Kababaihan. (<i>mga gawaing panlibangan na ibinigay para sa Samahan ng Kababaihan.</i>)	3.23	0.57	Moderately Empowered
5. volunteer works of Samahan ng Kababaihan in clean up drive. (<i>boluntaryong gawain ng Samahan ng Kababaihan tulad ng clean-up drive.</i>)	3.27	0.45	Highly Empowered
Overall Mean	3.28		Highly Empowered

Legend: 3.26-4.00 (Highly Empowered), 2.51-3.25 (Moderately Empowered),
1.76- 2.50 (Less Empowered), 1.00- 1.75 (Not Empowered)

The overall mean of 3.28 indicates that there is *highly empowered* status of women engagement in social activities. It indicates that there are several seminars in the community regarding household management to aid the single parents and women of the community in the involvement on household activities.

Also, the DSWD and professional conduct counseling to single parents to aid them in the problems they encountered in raising their children, household management and work-related problems leading to better decision making and approach to the challenges.

Moreso, there are activities that allows the women of community to participate in the activities spearheaded by Samahan ng Kababaihan like clean-up drive and recreational activities namely zumba, women's night, etc.

Parents engagement in emotional socialization improves emotion among individual and emotional functions through adaptation of different coping strategies depending on the gender of individual according to Guo et al. (2019).

Collaboration is significant socialization in identification of the needs and providing common knowledge on the different demands of involve individual in physical activity (Cozett & Roman 2022).

Table 10 shows the status of women empowerment with respect to Economic. It showed that there is *highly empowered* women participation in economic activities such as equal job opportunities for men and women ($M= 3.30$, $SD= 0.60$). Meanwhile, there are *moderately empowered* economic activities job fair for female member of the community ($M= 3.20$, $SD= 0.55$), cooperative group for female member of the community ($M= 3.20$, $SD= 0.55$), financial literacy program and assistance ($M= 3.13$, $SD= 0.73$), and equal job opportunities for men and women ($M= 3.10$, $SD= 0.55$).

The overall mean of 3.19 indicates that there is *moderately empowered* status of women engagement in Economic activities. This indicates that the community offers opportunities for women member of the community to economic activities by offering job fair, upskilling of competencies, financial literacy program and cooperative.

**Table 10. Status of Women Empowerment with Respect to Economic**

Statements	Mean	SD	Verbal Interpretation
In the community, There is the.... (<i>Sa komunidad, nariyan ang...</i>)			
1. Equal job opportunities for men and women. (<i>Pantay na oportunidad sa trabaho para sa kalalakihan at kababaihan.</i>)	3.30	0.60	Highly Empowered
2. Upskill women with competencies need by the industries. (<i>Ang mga babaeng may mataas na kasanayan na may mga kakayahan na kailangan ng mga industriya.</i>)	3.10	0.55	Moderately Empowered
3. Job fair for female member of the community. (<i>Job fair para sa babaeng miyembro ng komunidad.</i>)	3.20	0.55	Moderately Empowered
4. Cooperative group for female member of the community. (<i>Grupo ng Kooperatiba para sa babaeng miyembro ng komunidad.</i>)	3.20	0.55	Moderately Empowered
5. Financial literacy program and assistance. (<i>Programa at tulong ng financial literacy.</i>)	3.13	0.73	Moderately Empowered
Overall Mean	3.19		Moderately Empowered

Legend: 3.26-4.00 (Highly Empowered), 2.51-3.25 (Moderately Empowered),
1.76- 2.50 (Less Empowered), 1.00- 1.75 (Not Empowered)

Wei et. al (2021) discovered that government initiative in women's empowerment has a significant impact on the decline of multidimensional and income poverty in society.

Buvinic, Mayra & O'Donnel, Megan (2019) stated that financial services and training programs are not gender-neutral and some design elements can help women overcome gender-related obstacles to produce more favorable economic outcomes.

Table 11 shows the status of women empowerment with respect to Health. It showed that there is *highly empowered* women participation in health focus activities such as promoting relaxation and its importance in mental health ($M= 3.43$, $SD= 0.57$), mentoring the female members regarding proper self-care and hygiene ($M= 3.43$, $SD= 0.57$), promotion of importance of exercises and its practice ($M= 3.33$, $SD= 0.55$), free monthly check-up every month for every woman of the community ($M= 3.30$, $SD= 0.53$), assigned Counselor for Psychological First Aid for women ($M= 3.27$, $SD= 0.52$).

The overall mean of 3.35 indicates that there is *highly empowered* status of women engagement in Health activities. It indicates that the community prioritize the health of every woman in the community by providing psychological first aid, monthly check-up counseling for hygiene, and exercises leading to better health.

Tsai et al. (2018) proved that a health literacy program helped immigrant women obtain healthcare more easily and led to fewer ER visits and hospital stays. The study's cognitive and psychological outcomes showed greater resistance to change.

Lin et al. (2019). Suggested that incorporating community-based participatory design is helpful in enhancing some health behaviors and empowering older individuals' health over a short period of time. To improve women's perceptions of empowerment toward getting healthcare, health policy makers and healthcare professionals are advised to tailor and execute interventions (Sabouri et al. 2020).

**Table 11. Status of Women Empowerment with Respect to Health**

Statements	Mean	SD	Verbal Interpretation
In the community, There is the.... (<i>Sa komunidad, nariyan ang....</i>)			
1. assigned Counselor for Psychological First Aid for women. (<i>nakatalagang tagapayo para sa Psychological First Aid para sa mga kababaihan.</i>)	3.27	0.52	Highly Empowered
2. mentoring the female members regarding proper self-care and hygiene. (<i>pagtuturo sa mga kababaihan tungkol sa wastong pangangalaga sa sarili at kalinisan.</i>)	3.43	0.57	Highly Empowered
3. promotion of importance of exercises and its practice. (<i>pagsusulong ng kahalagahan ng mga pagsasanay nito.</i>)	3.33	0.55	Highly Empowered
4. promoting relaxation and its importance in mental health. (<i>pagsusulong ng pagpapahinga at ng kahalagahan nito sa kalusugan ng isip.</i>)	3.43	0.57	Highly Empowered
5. free monthly check-up every month for every woman of the community. (<i>libreng buwanang check-up bawat buwan para sa bawat babae ng komunidad.</i>)	3.30	0.53	Highly Empowered
Overall Mean	3.35		Highly Empowered

Legend: 3.26-4.00 (Highly Empowered), 2.51-3.25 (Moderately Empowered),
1.76-2.50 (Less Empowered), 1.00- 1.75 (Not Empowered)

Table 12 reveals the prediction on challenges encounter by single mother to women empowerment. Challenges encounter by single mother in terms of financial support, work- life balance, emotional struggle and decision making are not significant predictors of political empowerment of women. The same with challenges encounter to social empowerment of women. However, challenges encounter in terms of work-life, emotional struggle and decision making have influence in social women empowerment. The beta coefficient of 0.552, 0.36 and 0.339 indicates that for every standard deviation unit increase in their work-life balance, emotional struggle, and decision making there is a corresponding 0.552, 0.36 and 0.339 increase in the social empowerment of a single mother. The t- value of 3.198 and p-value .045 for work life balance, t-value of 5.01 and p-value of .022, for emotional struggle t-value of 2.089 and p- value of .026 for decision making. The adjusted R- square indicates that 22.7% of the variation in single women social empowerment is explained by challenges encountered in terms of work life balance, emotional struggle and decision making. The F-value of 4.055 is significant at 0.017.

On the other hand, challenges encounter in terms of financial support, emotional struggle and decision-making influence in single woman economic empowerment. The beta coefficient of 0.347 for financial support, 0.523 for emotional struggle, and 0.261 for decision making indicates that for every standard deviation unit increase in the challenges encounter there is a corresponding unit increase in the economic empowerment of single mother. The t-value of 2.814 and p-value of .033 for financial support, t-value of 5.081 and p-value of .036 for emotional struggle, t-value of 3.94 and p-value of .035 for decision making. The adjusted R squares indicates that 40.6% of the variation in single women economic empowerment is explained by challenges encounter in terms of financial support, emotional struggle and decision making. The F value of 6.304 is significant at 0.037.

**Table 12. Regression Analysis on the Prediction of Challenges Encountered by Single Mother to Women Empowerment**

Challenges Encountered	Political				Social			
	Beta	t-value	p-value	Analysis	Beta	t-value	p-value	Analysis
Financial Support	0.236	1.116	0.275	NS	0.216	1.095	0.284	NS
Work-life Balance	-0.105	-0.376	0.710	NS	0.552	3.198	0.045	S
Emotional Struggle	0.287	1.039	0.309	NS	0.36	5.01	0.022	S
Decision Making	-0.338	-1.282	0.212	NS	0.399	2.809	0.026	S
	<i>Adjusted R-Square</i>		-0.002		<i>Adjusted R-Square</i>		0.227	
	<i>F- Value</i>		0.987		<i>F- Value</i>		4.055	
	<i>Sig.</i>		0.433		<i>Sig.</i>		0.017	
Challenges Encountered	Economic				Health			
	Beta	t-value	p-value	Analysis	Beta	t-value	p-value	Analysis
Financial Support	0.347	2.814	0.033	S	0.276	2.718	0.048	S
Work-life Balance	0.244	0.833	0.413	NS	-0.084	-0.397	0.695	NS
Emotional Struggle	0.523	5.081	0.036	S	0.403	3.918	0.047	S
Decision Making	0.261	3.942	0.035	S	0.581	4.399	0.017	S
	<i>Adjusted R-Square</i>		0.406		<i>Adjusted R-Square</i>		0.419	
	<i>F- Value</i>		6.304		<i>F- Value</i>		6.234	
	<i>Sig.</i>		0.037		<i>Sig.</i>		0.001	

The same also with the women empowerment with respect to health. The beta coefficient of 0.276 for financial support, 0.403 for emotional struggle and 0.581 for decision making indicates that for every standard deviation unit increase in the challenges encounter there is a corresponding unit increase in the health economic empowerment of single mother. The t- value of 2.718 and p- value of .048 for financial support, t-value of 3.918 p-value of .047 for emotional struggle and t-value of 4.399 and p-value of .017 for decision making. The adjuster R square indicates that 41.9% of the variation in single women health empowerment is explain by the challenges encounter. The f- value of 6.234 is significant at 0.001. While work life balance is not a predictor of single women health empowerment.

Community social empowerment programs, including the capacity building, collaboration, and upskilling activities, can be carried out in stages and boost the effectiveness (Senapati & Kalpana 2019).

Youssef (2020) showed that women in all the chosen organizations are given equal opportunity regardless of their gender, nationality, marital status, education, age, or place of employment. Through interacting with the outside world and building a sustainable society, the students will be able to assert their learning and contribute to social empowerment (Singh et al. 2022).

Table 13 reveals the prediction on coping mechanism of single mother to women empowerment. Coping mechanism by single mother in terms of social is not significant predictors of political empowerment of women. However, coping mechanism in terms of Physical and mental coping mechanism have influence in social women empowerment. The beta coefficient of 0.462 and 0.369 indicates that for every standard deviation unit increase in their physical and mental coping mechanism there is a corresponding 0.462 and 0.369 increase in the political empowerment of a single mother. The t- value of 2.632 and p-value .014 for physical, t value of 7.91 and p-value of .037, for mental coping mechanism. The adjusted R- square indicates that 20.3% of the variation in single women political empowerment is explained by challenges encountered in mental and social coping mechanism. The F-value of 3.469 is significant at 0.030.

More so, Coping mechanism in terms of Physical and social to have no significant influence on social empowerment of women. While only mental coping mechanism affects social empowerment of women in the community. The beta coefficient of 0.453 that for every standard deviation unit increase in their mental coping mechanism there is a corresponding 0.453 increase in the social empowerment of a women in the community. The t- value of 2.868 and p-value .008 for mental and adjusted R- square indicates that 27 % of the variation in single women social empowerment is explained by challenges encountered in mental and social coping mechanism.



The F-value of 3.98 is significant at 0.019.

In terms of women empowerment with respect to economic, the beta coefficient of 0.418 for metal coping mechanism and 0.451 for social coping mechanism indicates that for every standard deviation unit increase in the coping mechanism there is a corresponding unit increase in the economic empowerment of women in the community. The t-value of 2.814 and p-value of .038 for mental, and t-value of 6.384 and p-value of .017 for social coping mechanism. The adjusted R squares indicates that 34.8% of the variation in single women economic empowerment is explained by challenges encounter in terms of mental and social coping mechanism. The F value of 6.682 is significant at 0.008.

Table 13. Regression Analysis on the Prediction of Coping Mechanisms of Single Mother to Women Empowerment

Coping Mechanism	Political				Social			
	Beta	t-value	p-value	Analysis	Beta	t-value	p-value	Analysis
Physical	0.462	2.632	0.014	S	0.197	1.099	0.282	NS
Mental	0.369	7.91	0.037	S	0.453	4.865	0.043	S
Social	-0.106	-0.602	0.553	NS	0.125	0.699	0.491	NS
<i>Adjusted R-Square</i>			0.203		<i>Adjusted R-Square</i>			0.27
<i>F- Value</i>			3.469		<i>F- Value</i>			3.98
<i>Sig.</i>			0.030		<i>Sig.</i>			0.040
Coping Mechanism	Economic				Health			
	Beta	t-value	p-value	Analysis	Beta	t-value	p-value	Analysis
Physical	0.165	0.911	0.371	NS	0.652	3.886	0.038	S
Mental	0.418	2.181	0.038	S	0.521	2.868	0.008	S
Social	0.451	6.384	0.017	S	-0.15	-0.872	0.391	NS
<i>Adjusted R-Square</i>			0.348		<i>Adjusted R-Square</i>			0.235
<i>F- Value</i>			8.682		<i>F- Value</i>			3.976
<i>Sig.</i>			0.008		<i>Sig.</i>			0.019

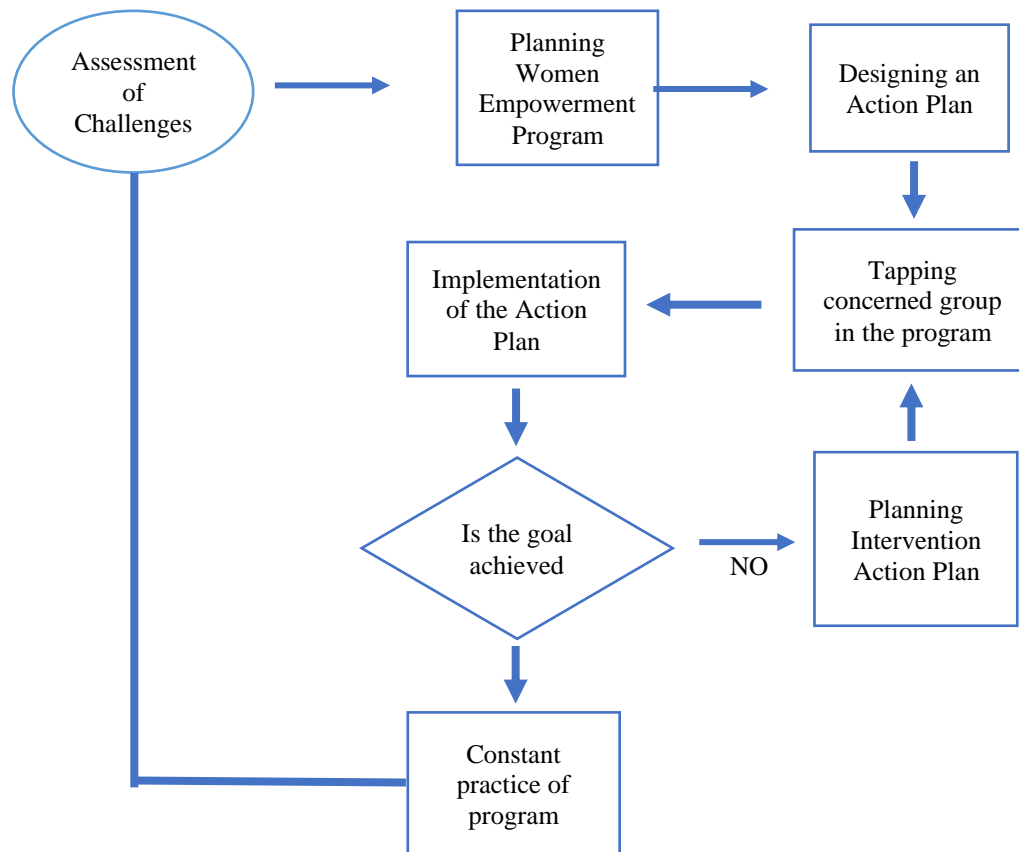
Furthermore, in terms of women empowerment with respect to health, the beta coefficient of 0.652 for physical coping mechanism and 0.521 for mental coping mechanism indicates that for every standard deviation unit increase in the coping mechanism there is a corresponding unit increase in the health empowerment of women in the community. The t-value of 3.886 and p-value of .038 for physical, and t-value of 2.868 and p-value of .008 for mental coping mechanism. The adjusted R squares indicates that 23.5% of the variation in single women health empowerment is explained by challenges encounter in terms of physical and mental coping mechanism. The F value of 3.976 is significant at 0.019.

Gil Arroyo et al. (2019) demonstrated that agritourism helps women feel more empowered in four different ways: psychologically, socially, politically, and economically. García et al. (2019) proved that women's empowerment is essential to achieving sustainable economic development, thus inclusive economic growth in terms of gender inclusion was discussed.

Women participation is crucial as they provide insight on formulation of rules and regulation as well plans for the betterment of society and economy considering their perceptions and possible contribution (Al-Qahtani et al., 2020). Women engagement and empowerment in participation in leadership through practicing political rights improves the child welfare with consideration in nutrition and immunization according to Besnier (2020).

From the result of this study, the researcher developed a framework for assisting single mother of the community and the social services in developing empowerment programs to meet the needs and objectives. It is suggested to be utilized by the government office concerned while conducting the women empowerment programs.

The framework shows it starts with an assessment of the challenges encountered by single mother and women of the community as baseline of the programs. It can be from the survey, observation, and direct interview to address the needs of the women in the community.



Framework of Women Empowerment

From the data obtained, the social services office will design the empowerment programs and services based on the analysis of the need-based on the tools used with identified goals, objectives and flow of implementation. With this, the action plan should also be developed as to indicate the division of labor, the resources needed, and the expected outcome of the programs.

In addition, tapping of concerned offices in the empowerment program is important input of the framework to make the objectives achievable and the implementation shall be aligned to the set objectives of social services office. With this, the assurance on the effectivity will increase as the office seek the assistance of the expert in the field.

The office will proceed to implementation of the action plan upon tapping of the concerned partner. There is monitoring and evaluation to be conducted upon the implementation to assess and determine if the set objectives and goals are met. If not, the office will create intervention action plan which is necessary during the consultation with the partner agencies who are specialized with the program.

With constant practice of the program through sustainable activities, woman empowerment in the community were expected to achieve.

CONCLUSION AND RECOMMENDATION

In accordance with the findings of the study, the single mother in Pagsanjan, Laguna moderately encountered challenges in financial support, moderately encountered difficulty in work-life balance, moderately encountered difficulty in emotional struggle and moderately encounter challenges in terms of decision making as it is difficult for an individual to attend different responsibilities at home and at work in the same time creating great challenge among single mother to comply in different duties and responsibilities.

Also, single mothers were moderately high involved in physical activity to cope with stress as they are more focus on managing different responsibilities at home and at work leading to minimal time for physical activity. Also, single mother obtained very high engagement in mental coping mechanism as they are looking for positive aspect of being a single mother for the sake of the child's future while moderately high engage in social coping mechanism as they afraid of being judge by the society and more focus on responsibility as a parent.



Furthermore, community practice highly empowered status of women engagement in political activities allowing the women participation in planning and policy making, highly empowered status of women engagement in social activities as they allow women to practice social engagement activities that permits every women of the community to entertained as release stress , moderately empowered status of women engagement in Economic activities as there are programs that upskill women with different livelihood tracks and job opportunities while highly empowered status of women engagement in Health activities as there are several health programs focus on the mental and physical health of women in the community.

Challenges encountered by single mother significantly predict women empowerment. It was implied that the challenges encountered by single mother in terms of financial support, work-life balance, emotional struggle and decision making has significant effect on the status of women empowerment in the community in terms of political, social, economic and health. The results showed that the challenges encountered by single mother may also be encountered by several women in the community that may serve as determinants of the empowerment programs needs by the community.

Also, single mother coping mechanism in terms of physical, mental and social has significant effect on the status of women empowerment in the community in terms of political, social, economic and health as the coping mechanism of women may also be the basis of women empowerment from the assessment performed by the office to improve the programs. Therefore, the hypothesis stating that challenges encountered does not significantly predict women empowerment and coping mechanism of single parent does not significantly predict women empowerment in Pagsanjan, Laguna was rejected.

From the said conclusions, the following recommendations were presented:

Local government units and community are advised to provide support to single parents in terms of financial support, work-life balance, emotional struggle and decision making by providing seminars and assistance regarding financial literacy, and time as well as household management with the assistance through psychological first aid for emotional struggle and consultation to professional for decision making.

Single mothers and women of the community are recommended to participate in physical activities by participating in activities such as Zumba, fun run, tree planting activities and clean-up drive initiated by local government.

Local Government is suggested to provide upskilling of women in the community and providing opportunity to participate in earning money as they may create project that focus on attainment of national certificate among women of the community that may serve as their edge in accessing opportunities in work fields. More so, conducting job fair is also beneficial to the women that provides idea in which field their skill may contribute.

Local government and offices are suggested to utilize the suggested framework in conducting women empowerment programs to assure the attainment of the goal and sustainable development among the women of the community by following the process and the flow.

Furthermore, Local Government are suggested to create activities namely *Samahan ng Kababaihan* that might enhance their capacity in building rules and regulation as well as political involvement while having enjoyment as they execute their talent throughout the program that enhance socialization skills of women as they are being empowered.

The future researcher is suggested to further study about the practices of women empowerment in community and its effects on coping with challenges encountered by solo parent.

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FORMULATION AND EVALUATION OF HERBAL CAPSULE CONTAINING PANEER DODI AND FENUGREEK FOR THE TREATMENT OF DIABETES

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ABSTRACT

Withania coagulans is commonly known as Paneer Dodi belonging to family Solanaceae is a well-known plant in herbal medicinal systems having great potential against diabetic disease by improving the secretion of insulin. In addition, Trigonella Foenum Graecum plant is also known as a Methi or fenugreek which is used as ayurvedic medicines for antidiabetic, anti hypercholesterolemic, anti-toxic and immunomodulatory activity. It was though worthwhile to explore its application into our body to treat type-2 diabetes, it acts on the insulin receptors for the better consumption of insulin. The objective of present study was to formulate a dosage form of antidiabetic herbal capsule dosage form having higher efficacy, less side effect and dose accuracy. Our study focuses on preparation of herbal capsule that consist of antidiabetic activity by combination of Paneer Dodi with Fenugreek. The equal proportion of Paneer Dodi and Fenugreek powder (Biherbal powder) is dried & triturate for increase the surface area of powder during dissolution. The Biherbal powder prepared have lack of dose accuracy and bitter taste during consumption thus to overcome this both limitations Powder is filled in Capsule shell which can retain the 300mg of powder. To achieve 1gm dose per day the capsule is given thrice a day. The capsule is disintegrated in 3.5 to 4 minutes and the drug is released and dissolve within a period of 1 hour.

KEY WORDS: Anti-diabetic, *Withania coagulans*, *Trigonella Foenum Graecum*

INTRODUCTION

Introduction to Disease.

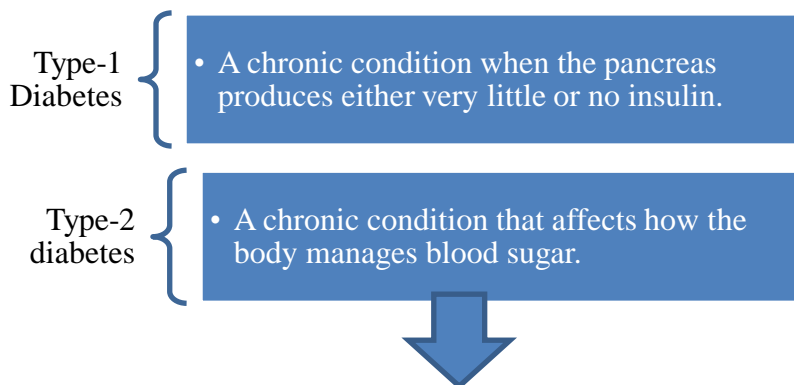
A chronic condition of the metabolism of proteins, lipids, and carbohydrates is known as DIABETES MELLITUS. One defining characteristic of diabetes mellitus is an impaired or insufficient insulin secretory response, which results in impaired use of carbohydrates (glucose). The most prevalent endocrine disorder, diabetes mellitus (DM), is frequently caused by an insufficient or absent supply of insulin or, less frequently, by an impairment of insulin activity (insulin resistance). Diabetes mellitus is also known as "sugar" in popular culture. The International Diabetes Federation (IDF) estimates that there are currently 40.9 million diabetics in India, with a projected increase to 69.9 million by the year 2025. The pancreas produces both the glucagon and insulin hormones. The beta (β) cells in the islets of Langerhans release insulin, whereas the alpha (α) cells in the same organelles secrete glucagon. By facilitating glycogenesis and delivering glucose to the muscles, liver, and adipose tissue, insulin lowers blood sugar levels. While alpha (α) cells play a significant role in managing blood glucose by generating glucagon, which raises blood glucose levels by speeding glycogenolysis, erythrocytes and neural tissue do not require insulin to use glucose.

The risk of obesity, metabolic, and cardiovascular diseases as well as cancer in the fetus's future life after birth are all elevated. In between 80% and 90% of cases of diabetes mellitus, type II diabetes is present. The severity of the issues and total morbidity and mortality might vary depending on the location. Additionally, those with diabetes who engage in modest levels of physical exercise had a negligibly decreased chance of passing away than sedentary people. It is now widely accepted that for such an occurrence to occur, a particular genetic constitution is needed. One of the biggest health obstacles to the growth of the economies of WHO African Region members is the rising burden of non-communicable illnesses like diabetes.

Diabetes is characterized by an abnormality in either the synthesis or secretion of insulin, as seen in Type 1 diabetes mellitus (T1DM) and pancreatic duct stenosis, or by the emergence of insulin resistance or its abnormal production, as seen in Type 2 diabetes (T2DM) and certain secondary diabetes.

1.2 INTRODUCTION OF DISEASE

Diabetes mellitus, a group of disease that results in too much sugar in the blood.



Sugar builds up in the bloodstream because the pancreas doesn't produce enough insulin. Both type-1 and type-2 diabetes may cause by a combination of genetic or ecological factor.

Type-2 Diabetes

Cells in the liver, fat, and muscles develop insulin resistance. The cells don't take in enough sugar as a result. The pancreas cannot produce enough insulin to maintain appropriate blood sugar levels.

1.3 INTRODUCTION OF DOSAGE FORM

Capsule

Capsules are solid preparation with hard and soft of various shapes and capacities, usually containing a single dose of active ingredients.

- **Hard gelatin capsule**
- **Soft gelatin capsule**

Hard gelatin capsule: It contains medicine in the form of dry powder or very small pellets and granules. There is various size of capsule available 000, 00,0,1,2.

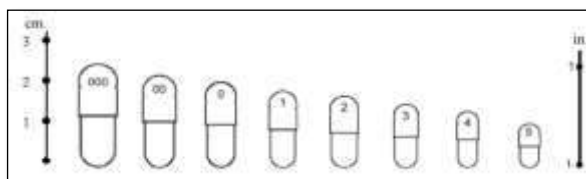


Figure 1.1 Capsule Size



Table 1.1 Capsule Size

Size	Outer diameter(mm)	Height or locked length(mm)	Actual volume(ml)
000	9.97	26.14	1.37
00	8.53	23.30	0.95
0	7.65	21.7	0.68
1	6.91	19.4	0.50
2	6.35	18.0	0.37
3	5.82	15.9	0.30
4	5.31	14.3	0.21
5	4.91	11.1	0.13

1.3.1 Advantages and Disadvantages of Capsule

Advantages

Fast acting: Capsules tend to break down more quickly than tablets. They may offer faster relief from symptoms than tablets.

Tasteless: Capsules are less likely to have an unpleasant taste or odor.

Tamper-resistant: They're often made so that it's not as easy to split them in half or crush like tablets. As a result, capsules may be more likely to be taken as intended.

Higher drug absorption: Capsules have higher bioavailability, which means that more of the drug is likely to enter your bloodstream. This could make capsule formats slightly more effective than tablets.

Disadvantages

Less robust: Tablets are typically more stable than capsules. They may react to environmental conditions, particularly humidity.

Shorter shelf life: Capsules expire more quickly than tablets.

More expensive: Capsules that contain liquids are generally more expensive to manufacture than tablets and may cost more as a result.

May contain animal products: Many capsules contain gelatin sourced from pigs, cows, or fish. This may make them unsuitable for vegetarians and vegans.

Reduced doses: Tablets can hold twice the amount of medication that capsules can. You might need to take more to receive the same amount as you would in a tablet.

1.4 INTRODUCTION OF DRUG

PANEER DODI also called Withania coagulans is a small shrub and belongs to the family Solanaceae. It is commonly known as 'Paneer Dodi' or 'Indian cheese Malor'.

FENUGREEK also called Trigonella Foenum graecum is a seed and belongs to the family Leguminosae. It is commonly known as 'Fenugreek' or 'Methi'.

Paneer Dodi and fenugreek is an effective ayurvedic herb used to manage blood sugar levels.

In diabetes, beta cell become damaged and cannot produce insulin. This combination corrects the beta cell of pancreas leads to better use of insulin.

Aim: Formulation and Evaluation of Herbal Capsule Containing Paneer Dodi and Fenugreek for the Treatment of Diabetes.



Objectives

- To Develop Novel Oral Drug Delivery System.
- Dose Accuracy.
- Patient More Compliance.
- Act as Taste Masking.
- Capsule Over Tablet.

Rationale

Type-2 Diabetes is a Chronic Condition.



Cell in muscle, fat and the liver become resistant to Insulin. As a result, the cells don't take in enough sugar.

The pancreas can't make enough insulin to keep sugar levels within a healthy range.

Paneer Dodi stimulates the pancreas β - cells and facilitates better insulin secretion and makes proper use of insulin, while the fenugreek reduce the insulin resistance and reduce fasting blood glucose level and improve glucose tolerance in patient. Paneer Dodi and fenugreek is an effective ayurvedic herb used to manage blood sugar levels. In diabetes beta cell become damaged and cannot produce insulin additionally the patient having resistance to insulin thus this combination corrects the beta cell of pancreas and also leads to better use of insulin but reducing insulin resistance

Material Used

Table 5.1 Materials

SERIAL NO.	COMMON NAME	CATEGORY	QUANTITY	FIGURE
1	PANNER DODI	ANTI DIABETIC	25 gm	
2	FENUGREEK	ANTI DIABETIC	25gm	

Method of Preparation

A) Collection of Drugs

Primarily we obtain two drugs one is Paneer Dodi which is flower portion and another is Fenugreek which is seed portion.

**Figure 5.3 Raw Drug**

B) Drying of Drugs:- Dry both the Drug Fenugreek and Paneer Dodi in hot air oven at 150 degree C individually.

**Figure 5.4 Drying Method**

C) Triturate of Drugs:- Triturate both Paneer Dodi and fenugreek in a mortar pastel individually.

**Figure 5.5 Trituration Process**

D) Sieving of Powder

After Trituration process both drug powder is passing through different number of sieves 100, 80, 60 to obtain different size of drug particle (Fine powder).

**Figure 5.6 Sieving of Paneer Dodi**



Figure 5.7 Sieving Process of Fenugreek Seed

E) Mixing of Powder

Subsequently, 1:1 ratio of Panner Dodi and Fenugreek powder is added. Both the drug are mixed manually.



Figure 5.8 Mixing of Powder

F) Capsule Filling

Weigh 300mg of drug and then filled it manually (hand filling) in capsule shell of size #1. Then place the capsule cap over the body and lock the capsule.



Figure 5.9 Weighing



Figure 5.10 Capsule Filling

G) Packaging and Storage

Strip packaging is a unit-dose packaging in which a semi-rigid blister/cavity previously formed is filled with product and lidded with heat-sealable backing material.

Different packaging strip is used like aluminum foils, cellophane, polyethylene.

Capsule is filled between 2 aluminum foil heat is applied on the foil for sealing.



Figure 5.11 Packaging



5.3 Direction for Use

Maximum 1gm of dose is required per day to treat diabetes.



In size #1 capsule 300mg is filled.



So, Dosage Frequency is Thrice Capsule per Day.

Phytochemical Screening

Table 6.1 Result of Phytochemical Screening

Tests for Phytochemical	Chemical test	Fenugreek	Paneer Dodi	Combination
Carbohydrate	Molish Test	+ve	+ve	+ve
	Benedict Test	+ve	+ve	+ve
Protein	Biuret Test	-ve	-ve	-ve
Amino Acid	Ninhydrin Test	-ve	-ve	-ve
Glycoside	Keller-Killani Test	+ve	+ve	+ve
Steroid	Salkowski Test	+ve	+ve	+ve
Alkaloid	Dragendroff Test	+ve	+ve	+ve
	Mayer Test	+ve	+ve	+ve
	Wagner Test	+ve	+ve	+ve
Flavonoid		+ve	+ve	+ve



Test of Combination (Paneer Dodi & Fenugreek)

Pre- compressional Parameters

Table 6.3 Result of Micromeritic Properties of Powder

Sr no.	Parameters	Fenugreek	Paneer Dodi	Combination
1.	Bulk volume	25	27	27
2.	Tapped volume	20	19	19
3.	Bulk Density	0.4	0.37	0.37
4.	Tapped Density	0.5	0.5	0.52
5.	Angle of repose	13.42	11.347	12.65
6.	Hausner's ratio	1.25	1.43	1.405
7.	Carr's index	0.2	0.301	0.307

Post Evaluation Parameter

6.4.1 Dissolution Test

Preparation of Phosphate Buffer pH 7.2: -

Dissolve 1.404gm of sodium hydroxide and 6.795gm potassium dihydrogen phosphate in sufficient water to produce 1000ml



Table 6.4 Trial Batch

Time(min)	I	II	III
0	0	0	0
5	0.077	0.073	0.070
10	0.133	0.132	0.130
15	0.173	0.177	0.179
20	0.184	0.189	0.190
25	0.210	0.201	0.200
30	0.224	0.221	0.229
35	0.250	0.246	0.248
40	0.276	0.274	0.278
45	0.301	0.310	0.309
50	0.345	0.349	0.340
55	0.457	0.459	0.458
60	0.492	0.498	0.496
65	0.523	0.524	0.588
70	0.625	0.520	0.582

Data of Dissolution Study

Time (min)	STDEV	Mean absorbance	conc(ug/ml)	Conc (mg/5ml)	cummulative release	Conc (mg/900ml)	corrected cr	%Drug release
0	0	0	0	0	0	0	0	0
5	0.004	0.073	0.973	0.005	0.009	0.875	0.884	8.844
10	0.002	0.132	1.929	0.010	0.019	1.736	1.755	17.547
15	0.003	0.176	2.661	0.013	0.032	2.395	2.427	24.270
20	0.003	0.188	2.847	0.014	0.046	2.562	2.608	26.085
25	0.006	0.204	3.109	0.016	0.062	2.798	2.860	28.601
30	0.004	0.225	3.454	0.017	0.079	3.108	3.187	31.872
35	0.002	0.248	3.836	0.019	0.098	3.452	3.551	35.506
40	0.002	0.276	4.295	0.021	0.120	3.866	3.985	39.852
45	0.005	0.307	4.798	0.024	0.144	4.318	4.462	44.617
50	0.005	0.345	5.421	0.027	0.171	4.879	5.049	50.494
55	0.001	0.458	7.279	0.036	0.207	6.551	6.758	67.580
60	0.003	0.495	7.891	0.039	0.247	7.102	7.348	73.482
65	0.037	0.545	8.705	0.044	0.290	7.834	8.125	81.245
70	0.053	0.576	9.208	0.046	0.336	8.287	8.623	86.230

Time(min)	%Drug release
0	0.00
5	8.84
10	17.55
15	24.27
20	26.08
25	28.60
30	31.87
35	35.51
40	39.85
45	44.62
50	50.49
55	67.58
60	73.48
65	81.25
70	86.23

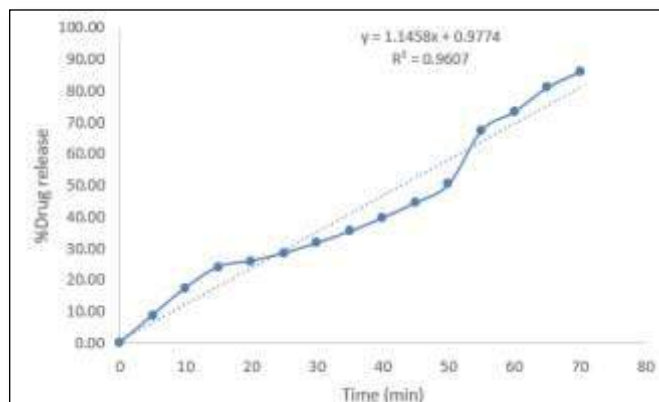


Figure 6.8 Dissolution Apparatus

Disintegration Test

Preparation of Phosphate Buffer pH 6.8: -

Dissolve 0.896gm of sodium hydroxide and 6.795gm of potassium dihydrogen phosphate in sufficient water to produce 1000ml.

Disintegration Time

In Phosphate Buffer: - 3 minutes

In Water: - 4 minutes



Figure 6.10 Disintegration Time in Phosphate Buffer



Figure 6.11 Disintegration Time in Water

**RESULT AND CONCLUSION****7.1 RESULT**

TEST	RESULT
Color	Transparent
odor	odorless
Size of capsule	#1
Dissolution Time	1hr
Disintegration Time	3-4 min
Therapeutic Effect	Anti- diabetic
Drug Content in Each Capsule	300mg
Dosage Frequency	3 times per day

7.2 CONCLUSION

Our present work is to formulate Anti-Diabetic Drug to treat Type-2 Diabetes with the use of Panner Dodi and Fenugreek. So, it has negligible side effect and contain herbal product with no excipient.

So, we can conclude that herbal capsule with least side effect which can impart the required proportion to heal the Diabetes.

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THE FUTURE OF MARKETING: EMERGING TRENDS AND TECHNOLOGIES

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ABSTRACT

The field of marketing is constantly evolving, driven by advancements in technology and shifting consumer behaviors. The future of marketing by examining emerging trends and technologies that are reshaping the marketing landscape. It provides an overview of key developments and their potential impact on marketing strategies and consumer engagement. The importance of adapting to these changes and offers insights and recommendations for marketers to stay ahead in the dynamic and digitally-driven marketplace. The objective of this research study is to investigate the strategies and practices employed by successful organizations in anticipating and adapting to industry changes, particularly in relation to emerging trends and technologies to provide valuable insights into the proactive measures taken by organizations to stay ahead of the competition and effectively leverage emerging trends for sustained success in the dynamic marketing landscape. The diverse range of studies that contribute to our understanding of the future of marketing in the context of emerging trends and technologies. It emphasizes the significance of data-driven marketing, personalization, influencer marketing, voice search, and ethical considerations in shaping the marketing landscape. By building upon the existing body of knowledge, the research article on the future of marketing aims to provide further insights and practical recommendations for marketers to navigate and excel in this dynamic and evolving field.

KEYWORDS: *digitally-driven marketplace, industry changes, dynamic marketing, influencer marketing, marketing landscape, evolving field*

INTRODUCTION

The future of marketing in the context of emerging trends and technologies. It sets the stage for the research by highlighting the rapid pace of technological advancements and their impact on consumer behavior and market dynamics.

Evolution of Consumer Behavior:

The changing patterns of consumer behavior and their influence on marketing strategies. It discusses the rise of digital natives, the increasing use of mobile devices, and the growing demand for personalized and authentic experiences. It emphasizes the need for marketers to understand and adapt to these shifts in order to effectively reach and engage their target audience.

Data-driven Marketing:

The importance of data-driven marketing in the future landscape. The role of big data, analytics, and artificial intelligence in gathering consumer insights, predicting trends, and enabling targeted marketing campaigns. It explores the benefits and challenges associated with leveraging data-driven approaches and provides recommendations for marketers to optimize their data strategies.

Customer Experience and Personalization:

The increasing emphasis on customer experience and personalization in marketing. It discusses the use of technologies such as chatbots, virtual reality, and augmented reality to create immersive and tailored experiences for customers. It explores the potential impact of these technologies on enhancing customer engagement, loyalty, and brand advocacy.

Influencer Marketing and User-Generated Content:

The rise of influencer marketing and the growing importance of user-generated content in shaping consumer perceptions. It discusses the power of social media influencers, brand collaborations, and the role of authenticity and transparency in influencer campaigns. It provides insights into how marketers can effectively leverage influencer marketing and user-generated content to build brand trust and reach wider audiences.

Voice Search and Smart Assistants:

The emergence of voice search and the integration of smart assistants in everyday life. It discusses the implications of voice-activated technology on search engine optimization, content marketing, and customer interactions. It provides recommendations for marketers to optimize their strategies for voice-based interactions and capture the opportunities presented by smart assistants.

Ethical Considerations and Consumer Privacy:



The ethical considerations and privacy concerns associated with emerging marketing trends and technologies. It discusses the importance of transparency, consent, and data protection in building consumer trust. It emphasizes the need for marketers to prioritize ethical practices and comply with relevant regulations to maintain a positive brand image.

REVIEW OF LITERATURE

Notable works by Berman, B. (2017) shed light on the significance of data-driven marketing in the context of emerging trends and highlight the importance of harnessing big data, utilizing advanced analytics techniques, and leveraging artificial intelligence for effective marketing decision-making.

Brown, S., & Jones, P. (2021) shed light on the effectiveness and challenges of influencer marketing. They focused on the rise of influencer marketing and user-generated content as effective strategies in the future of marketing and investigate the role of social media influencers, the impact of brand collaborations, and the power of user-generated content in shaping consumer perceptions and behaviors.

Research articles by authors such as Gupta, S., & Sharma, A. (2016) provide insights into the digital revolution and its impact on marketing practices. Also explores how advancements in technology have transformed consumer behavior, marketing strategies, and the overall marketing landscape.

Works by Nair, S., & Kapoor, S. (2013) provide insights into the role of personalization in enhancing customer engagement and satisfaction. Articles that delve into the use of emerging technologies such as chatbots, virtual reality, and augmented reality to deliver personalized experiences to consumers.

The emergence of voice search and the integration of smart assistants in marketing strategies. It reviews research articles that discuss the implications of voice-activated technology on search engine optimization, content marketing, and customer interactions by Pham, N., & Nguyen, T. (2014).

Smith, J., & Johnson, A. (2022) provide valuable insights into the ethical dimensions of marketing in the digital age. They were address the ethical considerations and privacy concerns associated with emerging marketing trends and technologies and the importance of transparency, consumer consent, and data protection in building trust and maintaining a positive brand image.

OBJECTIVES OF THE STUDY

1. To identify and analyze the key emerging trends and technologies that are reshaping the marketing landscape.
2. To understand the potential impact of these emerging trends and technologies on marketing strategies and consumer behavior.
3. To explore the opportunities and challenges associated with adopting and implementing these emerging trends and technologies in marketing practices.
4. To provide insights and recommendations for marketers to effectively leverage emerging trends and technologies in their marketing strategies.
5. To examine the role of data-driven marketing, personalization, influencer marketing, voice search, and ethical considerations in shaping the future of marketing.
6. To understand the implications of emerging trends and technologies on customer experience, brand engagement, and consumer perceptions.
7. To contribute to the existing body of knowledge on the future of marketing by synthesizing key insights and identifying gaps for further research.
8. To equip marketers and organizations with the knowledge and understanding necessary to adapt and thrive in the evolving marketing landscape.

RESEARCH DESIGN

- a. Research Approach: Adopt a qualitative research approach to gather in-depth insights and subjective opinions from marketing experts, industry professionals, and academics. Additionally, incorporate quantitative data to support and validate the findings.
- b. Data Collection: Utilize a combination of primary and secondary data sources for data collection. The primary data will be collected through interviews, surveys, and focus groups with marketing professionals and experts. The secondary data will be gathered from scholarly articles, industry reports, and relevant publications.
- c. Sampling: Use purposive sampling to select participants who have expertise in marketing trends and technologies. Ensure a diverse range of participants to capture various perspectives and experiences.
- d. Data Analysis: Employ thematic analysis to identify and interpret patterns, themes, and key findings from the collected data. Utilize statistical analysis methods for quantitative data, such as descriptive statistics and regression analysis, to derive meaningful insights.



DISCUSSION

1. Identifying and analyzing key emerging trends and technologies:

Identify and analyze the key emerging trends and technologies that are reshaping the marketing landscape. This involves thorough research and examination of recent developments in technology, consumer behavior, and market dynamics. By identifying these trends and technologies, such as artificial intelligence, virtual reality, chatbots, and blockchain, marketers can stay abreast of the latest advancements that have the potential to disrupt traditional marketing approaches.

2. Understanding the potential impact on marketing strategies and consumer behavior:

Understanding the potential impact of emerging trends and technologies on marketing strategies and consumer behavior is crucial for marketers to effectively adapt their approaches. By studying the implications of these changes, marketers can gain insights into how consumer preferences, purchasing behavior, and decision-making processes are influenced. For example, the increasing use of social media influencers and the rise of user-generated content have transformed traditional advertising methods, requiring marketers to rethink their strategies to effectively engage with their target audience.

3. Exploring opportunities and challenges in adopting emerging trends and technologies:

Adopting and implementing emerging trends and technologies in marketing practices present both opportunities and challenges. This objective involves exploring the potential benefits and risks associated with integrating these innovations into marketing strategies. For instance, while personalization technologies offer the opportunity to deliver tailored experiences to customers, challenges related to data privacy and security must be carefully addressed. Understanding and navigating these opportunities and challenges is crucial for marketers to effectively leverage emerging trends and technologies.

4. Providing insights and recommendations for effective leveraging:

Based on the analysis of emerging trends and technologies, the study aims to provide valuable insights and recommendations for marketers to effectively leverage these innovations in their marketing strategies. This may include suggestions on how to integrate data-driven marketing practices, incorporate personalization strategies, develop successful influencer marketing campaigns, optimize voice search optimization, and ensure ethical considerations are upheld. These insights and recommendations can guide marketers in making informed decisions and implementing effective strategies to maximize the benefits of emerging trends and technologies.

5. Examining the role of data-driven marketing, personalization, influencer marketing, voice search, and ethical considerations:

To understand the future of marketing, it is essential to examine the specific roles played by key elements such as data-driven marketing, personalization, influencer marketing, voice search, and ethical considerations. This objective involves exploring how these factors shape the marketing landscape, influence consumer behavior, and impact brand engagement. For example, data-driven marketing enables marketers to gain valuable consumer insights and deliver targeted campaigns, while ethical considerations ensure that consumer trust and privacy are protected in an increasingly digital and data-centric environment.

6. Understanding the implications on customer experience, brand engagement, and consumer perceptions:

Emerging trends and technologies have significant implications for customer experience, brand engagement, and consumer perceptions. By understanding these implications, marketers can adapt their strategies to create enhanced customer experiences, increase brand engagement, and shape positive consumer perceptions. For example, immersive technologies like virtual reality can offer unique and interactive brand experiences, while influencer marketing can shape consumer perceptions through authentic and relatable content.

7. Contributing to the existing body of knowledge and identifying gaps for further research:

Contribute to the existing body of knowledge on the future of marketing by synthesizing key insights and identifying gaps for further research. By reviewing and analyzing existing literature and research, the study can build upon previous findings, validate existing knowledge, and highlight areas that require further exploration and investigation. This contributes to the ongoing academic and practical discourse on the future of marketing.

8. Equipping marketers and organizations to adapt and thrive:

Equip marketers and organizations with the knowledge and understanding necessary to adapt and thrive in the evolving marketing landscape. By providing insights into emerging trends and technologies, along with recommendations for leveraging them effectively, marketers can stay ahead of the competition.

FINDINGS

The findings may reveal effective approaches, frameworks, and practices that enable organizations to proactively identify emerging trends, develop adaptive strategies, and gain a competitive advantage. Additionally, the study may uncover challenges faced by organizations in anticipating industry changes and provide recommendations for overcoming these obstacles.

Practical Guidance: The study will offer practical guidance to marketers on how to anticipate industry changes, leverage emerging trends, and adapt their marketing strategies accordingly.

Strategic Decision-Making: The research will provide insights to organizations for making informed strategic decisions related to resource allocation, technology investment, and long-term planning in the context of evolving industry trends.

Organizational Adaptation: The study will highlight the importance of fostering a culture of innovation, agility, and continuous learning to effectively adapt to industry changes and drive organizational success.



Academic Contribution: The research will contribute to the existing body of knowledge by synthesizing key insights, identifying gaps, and providing recommendations for further research in the area of anticipating industry changes and its impact on marketing strategies.

SUGGESTIONS

1. **Anticipating Industry Changes:** Marketers and organizations anticipate and prepare for the changes and disruptions that emerging trends and technologies bring to the marketing landscape. By understanding these developments, marketers can proactively adapt their strategies and stay ahead of the competition.
2. **Strategic Decision-Making:** The emerging trends and technologies that have the potential to significantly impact marketing practices. It equips marketers with the knowledge and understanding necessary to make informed and strategic decisions regarding resource allocation, investment in technology, and long-term planning.
3. **Enhancing Customer Engagement:** The future of marketing, emphasizes the importance of customer-centric strategies and the role of emerging trends and technologies in enhancing customer engagement. It highlights the opportunities for personalized experiences, immersive content, and interactive communication with customers, enabling marketers to build stronger relationships with their target audience.
4. **Navigating Digital Transformation:** With the rapid advancement of technology, organizations are undergoing digital transformation. The study helps marketers navigate this transformation by identifying the emerging trends and technologies that are most relevant to their industry and target market. It provides guidance on how to leverage these tools effectively and efficiently to achieve marketing success.
5. **Gaining Competitive Advantage:** Understanding and embracing emerging trends and technologies can give organizations a competitive edge in the marketplace. By staying updated on the latest developments, marketers can identify untapped opportunities, reach new audiences, and differentiate their brand from competitors. The study empowers marketers to proactively leverage emerging trends to position their organization as an industry leader.
6. **Ethical Considerations:** The study acknowledges the ethical considerations associated with emerging trends and technologies in marketing. It emphasizes the significance of consumer privacy, data protection, and transparency. By highlighting these considerations, the study promotes ethical marketing practices and helps organizations build trust and maintain positive brand reputations.
7. **Contribution to Knowledge:** The existing body of knowledge on the future of marketing by synthesizing key insights and identifying gaps for further research. It provides a comprehensive overview of emerging trends and technologies, creating a foundation for future academic and practical exploration in this area.
8. **Industry Adaptation:** It encourages a mindset of continuous learning, innovation, and agility, fostering a culture of adaptability within organizations. By embracing emerging trends and technologies, marketers can position themselves for long-term success in an ever-changing marketplace.

CONCLUSION

The conclusion summarizes the key findings of the research article and highlights the importance of embracing emerging trends and technologies in marketing. It underscores the need for marketers to continuously adapt, innovate, and prioritize consumer-centric strategies to thrive in the future landscape. Marketers and organizations will gain a deeper understanding of the significance of industry changes and be equipped with practical strategies to adapt, thrive, and maintain a competitive edge in an ever-evolving marketing landscape. Its ability to inform marketers and organizations about the emerging trends and technologies that will shape the future of marketing. It empowers them to make strategic decisions, enhance customer engagement, gain competitive advantage, navigate digital transformation, uphold ethical standards, contribute to knowledge, and adapt to the dynamic marketing landscape.

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CURRENT PROBLEMS OF TEACHING ENGLISH AT A NON-PHILOLOGICAL UNIVERSITY AND THEIR POSSIBLE SOLUTIONS

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ANNOTATION

The article attempts to consider the main problems of modern teaching of foreign languages. Particular attention is paid to the situation in non-linguistic universities, where the role of learning foreign languages is often downplayed due to the dominant role of special disciplines and the limited opportunities of educational institutions.

KEYWORDS: *teaching, foreign language, professionalism, motivation, learning process, efficiency*

АКТУАЛЬНЫЕ ПРОБЛЕМЫ ОБУЧЕНИЯ АНГЛИЙСКОМУ ЯЗЫКУ В НЕФИЛОЛОГИЧЕСКОМ ВУЗЕ И ВОЗМОЖНЫЕ ИХ РЕШЕНИЯ

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Аннотация

В статье предпринимается попытка рассмотреть основные проблемы современного преподавания иностранных языков. Особое внимание уделяется ситуации в неязыковых вузах, где роль изучения иностранных языков часто принижается в силу главенствующей роли специальных дисциплин и ограниченности возможностей учебных заведений.

Ключевые слова: *преподавание, иностранный язык, профессионализм, мотивация, процесс обучения, эффективность*

INTRODUCTION

Obviously, the educational process performs one of the fundamental functions in the formation and development of any society. Not only the fate of each individual person depends on the success of training, but also the prospects for progress in the area in which this person will work in the future, applying the acquired knowledge in practice, embodying theoretical ideas in reality. Underestimation of the importance of the education process and its results inevitably leads to a drop in many indicators of the quality of life of the population and the functioning of a complex branched structure of state mechanisms.

The optimization of the educational process is urgent, and our society must solve all the accumulated problems in education as soon as possible in order to avoid serious socio-cultural consequences. The educational environment regularly requires updates and improvements in tools, methods and approaches to meet the ever-changing needs of an evolving society. At the same time, any lag in the modernization of the educational process immediately becomes noticeable and causes significant damage in various spheres of society.

In the age of globalization and international integration, a special place is occupied by training aimed at creating, maintaining and strengthening ties between countries and peoples in order to exchange knowledge and experience, create common interethnic



projects, mutually beneficial conditions for cooperation between different states. Teaching foreign languages, national and cultural characteristics of different countries becomes extremely important.

Three sides of the problem

Like any other complex, strategically important for society and constantly improving process, teaching foreign languages has a number of features that, if ignored, turn into problems. In our opinion, the roots of these problems and ways to overcome them should be sought in each of the three key participants in the educational process: the teacher, the student and the educational environment (by which we mean the education system in general and individual educational institutions in particular). Let us consider the main problems of teaching foreign languages on the example of a modern non-linguistic university from the perspective of the three parties involved.

The role of the teacher in teaching foreign languages

High demands are placed on modern specialists in all fields of knowledge, dictated by the need to comply with international standards, allowing professionals in their field to remain competitive and successfully implement the experience of foreign colleagues. High demands should also be placed on teachers who train these specialists, in particular, on teachers of foreign languages, who, ideally, help to build this very "bridge of continuity" of the experience of countries and nationalities, to establish a dialogue of cultures.

Every university teacher must be a professional. Under the professionalism of a teacher of higher education L.I. Gu-rye understands "a high level of psychological-pedagogical and scientific-subject knowledge and skills, combined with an appropriate cultural and moral character, which in practice provides socially demanded training for future specialists"; the professional competence of a university teacher is presented in the form of interrelated blocks: pedagogical activity, pedagogical communication, the personality of the teacher, the level of training and development of students; the structure of activity - gnostic, design, constructive, organizational and communication skills [1].

Unfortunately, in reality, understanding the professionalism of a teacher often comes down to his actual knowledge of the subject. The tasks of the teacher should not be limited to the transfer of information: it is important not only the informative content of the discipline being taught, but also how and under what conditions the educational material is presented to students. "Dry" and boring retelling of the text of the textbook or limiting tasks to reading, translating and retelling texts - all these methods have long been in the past. Now the teaching process should be dynamic, creative and diverse. This is the kind of activity that, no matter how trite it may sound, requires "putting your heart into it", experiencing a sincere interest in the results of your work. A true professional teacher should be interested in the success of his students and do everything possible for this. If, due to certain circumstances, the teacher approaches the educational process solely as a job that he is obliged to perform for a certain fee, the probability of his teaching success will most likely tend to zero.

In our opinion, the main factors negatively affecting the improvement of professionalism by teachers themselves are the following: 1) excessive workload, often leading to burnout; 2) significantly underestimated profitability of work; 3) lack of motivation on the part of management; 4) poor organization of conditions for advanced training of teaching staff. Thus, with a huge workload and lack of significant motivation, teachers often do not have internal incentives to improve themselves and improve their skills.

Ideally, every foreign language teacher who claims to be a professional in his field should:

1) constantly "rotate" in the language environment: watch films and read literature in a foreign language; find opportunities to communicate with native speakers; travel abroad to maintain the level of proficiency in a "natural" (rather than bookish) language and familiarization with the culture of the language being taught;

2) regularly get acquainted with new teaching aids; master modern teaching methods; try to develop their own more effective and innovative methods of language teaching;

3) improve their knowledge in the language of the specialty that their students are mastering (for example, if a teacher teaches business English, self-education in the field of economics, communication with colleagues teaching subjects in various economic disciplines can be of great help);

4) contribute to the creation (and maintenance) of a creative, friendly atmosphere in the classroom, which allows you to keep the attention of the audience and bring additional motivation to the assimilation of educational material;

5) practice public speaking skills, learn strategies and ways to influence the audience;

6) have knowledge in the field of pedagogy and psychology;

7) regularly share their knowledge and experience through the publication of scientific and methodological articles, manuals and textbooks that really improve the work with educational material, participate in scientific events (conferences, seminars, round tables).

In the conditions of a modern university, not all teachers of foreign languages meet these, it would seem, obviously necessary requirements. The reasons for this circumstance can be numerous and different: from a banal misunderstanding of the importance of a constant desire to improve the quality of teaching to objective external circumstances, such as working conditions and the economic situation in society.



As the most optimal measures to combat the problem of insufficient and "stagnating" level of professionalism of teachers, the following can be proposed:

1) tightening control over the quality of teaching, accompanied not only (and not so much) by fines (reprimands from management, material deductions, dismissal), but by measures to encourage initiative teachers;

2) creation of permanent scientific seminars on the basis of educational units. The active participation of the author of this article in the work of the scientific seminar held at the Department of Foreign Languages every semester leaves him no doubt that this practice of scientific and methodological meetings significantly contributes to improving the quality of teaching at the department. Scientific seminars provide an opportunity for colleagues to exchange experiences and learn something new for themselves. Given the benefits of such events, I would like to make a proposal to hold them more frequently, for example, 3-6 times a semester. Outside of seminars, colleagues simply do not have time (due to the heavy workload) for the exchange of experience and their own methodological research;

3) popularization of university teacher training programs and motivation to participate in them. Undoubtedly, such programs require additional funding, but even in the face of budgetary austerity, they are a worthwhile investment in the future of the educational institution;

4) establishing close relationships between language departments and departments of other specialties, whose students study a foreign language. In universities, as well as in companies, it is worth developing a corporate culture not only locally, in individual departments, but also at the interfaculty and interdepartmental levels. This will not only rally the team, but also achieve interdisciplinary synergy. In the case of a foreign language, close cooperation between the language department and the faculties it serves will make it possible to bring theory closer to practice, to focus on the truly important aspects in teaching the language of the specialty, to build terminology explanations on real (life) examples from professional practice;

5) the introduction of a competitive component in the management of the educational unit: all teachers should be aware of the professional achievements of their colleagues; the best teachers in the semester or in the academic year should be rewarded, and their experience should be passed on to colleagues.

The teacher should be a model for his students. And not only in terms of extensive knowledge of the subject being taught, but also in terms of moral qualities. In our opinion, a teacher has the right to demand from students a high quality of work with educational material only if he himself demonstrates high-quality teaching, based on his capabilities. And vice versa, a specialist who is negligent in his duties often does not make any high demands on his wards. In fairness, it should be noted that such "indifference" to the quality of one's teaching and its effectiveness can often be associated with external circumstances, which were discussed earlier (burnout, low salaries, lack of incentives, etc.). We'll talk more about this a little later. And now let's look at the problem of modern education from the point of view of a student.

The role of the student's personality and its impact on the quality of education

Speaking about the difficulties and problems of the functioning of the educational environment, one cannot ignore the role of the student. The main, in our opinion, difficulty in involving students in the educational process is the change of generations (the so-called generations "x", "y" and "7") and the change in life priorities and patterns associated with this change. In particular, a large number of students have a significant change in their attitude towards the education they receive - many do not realize (and do not feel) its practical significance, considering a diploma to be only a formality necessary for subsequent employment. With this approach to learning, how can you say about the high motivation of students? Of course, without the proper interest of the student, it is very difficult (if not impossible) to make him master the educational material in a quality manner and learn how to apply the acquired knowledge, skills and abilities in practice. This circumstance greatly complicates the work of the teacher and, sadly, often reduces all his efforts to zero.

So that students do not become "enemies" in the process of transferring knowledge, it is important to make them "allies" in the common business with the teacher - teaching. It is the cooperation of the teacher and students that can lead to the maximum indicators of teaching effectiveness. The detachment of the teacher or students from the effectiveness of the educational process, if not undermining it, then to a large extent slows it down.

The solution to the problem with the motivation of students should be the observance of the following conditions:

1) the use by the teacher of all his professional potential and continuous self-improvement, which was discussed above;

2) establishing contact with the audience and each of the students from the very first lesson, a constant desire to maintain friendly relations of constructive cooperation. Based on our own professional experience, we suggest devoting part of the first lesson with a new group of students to getting to know their interests, personal qualities and characteristics, for example, in the form of their brief self-presentations according to the established algorithm (answers to questions). This simple task not only allows you to learn about some of the interests of the students, but also gives the teacher a first impression of the level of language proficiency and the knowledge and life experience that the audience already has;

3) explaining to students the importance of knowledge of a foreign language and its role in their chosen specialty. This refers not just to an educational conversation on the importance of a foreign language, but to bring specific facts and examples from life experience;



4) a balanced combination of individual and group work of students in the classroom. Ideally, each student should feel that he is individually given equal attention of the teacher with his classmates, but at the same time be aware of himself as part of a group (collective);

5) the interactive nature of learning. In interactive learning, the interaction and cooperation of the teacher and the student, the teacher and the group, students among themselves are

one of the most important elements of the methodological system and the main socio-psychological condition for the success of the educational process [2];

6) constant binding of educational material to the actual realities of life, close and understandable to students, as well as directly related to future professional practice. The student should always understand why he is doing this or that task, how it will help him in the future;

7) development and encouragement of optional language teaching and practice of its use. It is necessary to develop extracurricular forms of communication: clubs, circles, open lectures in foreign languages, scientific societies of interest, where students of different specialties can gather [3];

8) the correct selection of educational material, not only meeting the requirements of the curriculum, but correlated with the actual needs and interests of students. In our opinion, all educational material should, as a result, allow students to apply the acquired knowledge in practice. Any educational material for learning a foreign language should be accompanied by a system of practice-oriented tasks - cases. Cases are an ideal tool for practicing theoretical knowledge in practice, parallel acquaintance of students with the socio-cultural characteristics of native speakers. In addition, this methodological technology significantly increases the motivation of students who like to test their knowledge and skills in situations that are as close as possible to their future work.

9) maximum use of the possibilities of the Internet. Now it is appropriate to talk about the emergence of a new teaching culture in connection with the use of computer technology: "The rapid growth of the Internet over the past few years has made it a magical window to knowledge. In addition to engaging students in various linguistic tasks such as reading, grammar, writing (these are not tasks), the Internet is changing not only the way we live and work, but also the way we think and learn" [4 p. eleven].

Subject to the above conditions, in our opinion, it is possible to achieve the most productive situation, when students themselves motivate themselves to study and willingly go beyond the material provided by the program. In such a situation, the main tasks of the teacher are to direct the internal needs of students to knowledge, create conditions for the practice of applying the knowledge gained and control the results.

The influence of the "system" on the course and results of the educational process

No matter how professional the teacher is and no matter how high the involvement of students in the learning process, the success of learning largely depends on the circumstances and conditions in which it takes place. Oddly enough, the importance of foreign languages is often underestimated in the course of drawing up educational programs. In particular, one of the negative trends of recent years has been the annual reduction in the number of hours for studying a foreign language at a university.

In this case, we have to talk about ... a standard situation in which a foreign language in a non-specialized university is given an average of 3-4 hours a week of classroom lessons and about 1 hour of independent work of students. The effectiveness of the latter requires, in turn, careful and thoughtful organization. Thus, it is obvious that the conditions for teaching a foreign language in terms of the volume of the teaching load also do not fully correspond to its goals [5].

In the development of teaching foreign languages in a non-linguistic university, the development of educational and methodological complexes is of particular importance. "The development of programs and teaching materials based on national pedagogical values, taking into account the best world practices, is of great importance," writes Z.B. Nebaraeva. [6]

In addition, with an increase in the teacher's workload in the form of the number of classroom hours, in our opinion, the increasing workload in the form of preparation for classes is significantly underestimated (ideally, it should take as much time (if not more) to prepare for a lesson as to conduct it). Thus, the load of 900 hours (which teachers now have) should be divided, for example, into 450 classroom hours and 450 hours for preparation for classes.

To improve the conditions for teaching a foreign language, one should:

1) rethink the importance of a foreign language for the formation of a full-fledged personality of a professional;

2) consider the costs (in the form of a decent salary and bonuses for teachers, the purchase of the latest equipment, renovation of classrooms, etc.) necessary to maintain a satisfactory level of language teaching as promising investments in the future of students and the state;

3) increase the number of classroom hours for language learning and at the same time reduce the actual workload for each individual teacher;

4) do not underestimate the time spent preparing teachers for classes and include this time in the total workload.

CONCLUSION

As mentioned above, the role of a foreign language in shaping the personality of a specialist should not be underestimated. As soon as all the above problems are taken into account in the tripartite interaction "teacher - student - educational environment", the level and quality of students' knowledge of a foreign language will increase many times over. University graduates will receive



a huge advantage in employment and subsequent promotion; the state will acquire full-fledged professional personnel capable of adopting foreign experience and using it for the benefit of their country.

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RISK MANAGEMENT IN THE CORPORATE GOVERNANCE SYSTEM

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ABSTRACT

In this paper we prove the importance of effective risk management in corporate governance. Settle and describes some aspects of the world's leading risk management companies developing its system in accordance with international standards of risk management. Subjected to the analysis and practice of risk management in Russian companies, identify potential problems in the system of risk management and the reasons for which they may occur.

KEY WORDS: *corporate governance, risk management, risk, risk management strategy, international standards, international practice, strengths, weaknesses, threats to market, market opportunities.*

International practice shows that the lack of an appropriate level of corporate governance, as in leading world and companies. There are plenty of examples. One of them is the collapse of the world-famous company Enron, where there was a falsification of reporting and misleading investors. Often this happens due to ineffective risk management.

An integral part of corporate governance is precisely the process of risk management, on the improvement of the mechanisms of which the attention of owners and company management, as lack of an effective risk management system in companies is one of the main problems in the field of corporate governance, and risk management itself is one of its main aspects that should be subject to priority changes. According to the results of numerous studies analyzing the practice of risk management in leading global consulting companies, we can say with confidence that the development and implementation of effective corporate risk management systems is one of the priority strategic goals of every successful company.

The activity of any organization is always associated with risks, however, if an enterprise implements risk management system in the process of business planning and performance evaluation, then strategic and operational goals are achieved much faster. **International company leaders understand the need for this process for the organization and apply the following experience [3]:**

- the organization has approved a method for determining the acceptable level of risk;
- Stress testing is used to confirm risk tolerance;
- the management of the organization has implemented an effective risk management program;
- business planning and risk reporting cycles are coordinated, which allows timely consideration of information about risks in business planning.

For effective risk management, first of all, it is necessary for the management of the company to have a clear strategy in this area, as well as in the field of corporate governance. Special meaning in this regard, acquire proper oversight of these areas and a reporting structure. Executive management should play a key role in risk assessment and governance them. Developed corporate governance structure, providing reports and information on management of risks to the board of directors ensure the growth of the importance of the risk management system within the organization, improving accountability and increasing transparency. Besides, effective risk management reporting and oversight ultimately leads to improve the decision-making process [3].



Based on international practice, leading companies apply the following experience in the field risk management [3]:

- there is an open dialogue about risks with external stakeholders;
- Timely exchange of transparent information with stakeholders parties, as well as providing them with meaningful information about the decisions and corporate the values of the organization;
- the board of directors or board of directors play a leading role in setting the objectives of the system risk management;
- developed and implemented a unified risk management system for the entire organization.

For successful activities, leading companies build a risk management system in accordance with international standards. One of the international standards in the field risk management is ISO 31000:2009. According to him, in order to manage risk management was effective, the organization should at all levels comply with the following: principles [2]:

• Risk management creates and protects assessments

Risk management contributes to the demonstrable achievement of goals and improvement of performance, for example, human health and safety, protection, compliance with laws and regulations, public recognition, environmental protection, product quality, project management, performance, leadership and reputation.

• Risk management is an integral part of all organizational processes

Risk management is not an autonomous activity, it is separated from the main activity and organization processes. Risk management is part of the responsibility of management and an integral part all organizational processes, including strategic planning and process management projects and changes.

• Risk management is part of the decision

Risk management helps decision makers make the right choice, arrange priorities and identify alternative courses of action.

• Risk management expresses uncertainty clearly

Risk management considers uncertainty, the nature of that uncertainty, and how they can be expressed.

• Risk management systematized, structured and coordinated in time

Systematic, structured and timed approach to risk management contributes to efficiency as well as consistent, measurable and reliable results.

• Risk management is based on the best available information

The input to the risk management process is based on information resources such as as historical data, experiences, stakeholder feedback, observations, forecasts and expert statements. However, decision makers should be aware and take into account any limitations in the data or use of modeling, and the possibility of divergent opinions of experts.

• Risk management is specific to each organization

Risk management focuses on the organization's external and internal context and structure risk.

• Risk management takes into account human and cultural factors

Risk management recognizes the potential, perceptions and intentions of external and internal stakeholders that can help or hinder the achievement of goals organizations.

• Risk management is dynamic, iterative and capable of change process

How internal and external events happen, context and knowledge change, monitoring and analysis, new risks arise, so something changes and something else disappears. Therefore, the risk management responds to change.

• Risk management contributes to the continuous improvement of the organization

Organizations must develop and implement strategies to improve the development of their risk management along with other aspects of the organization.

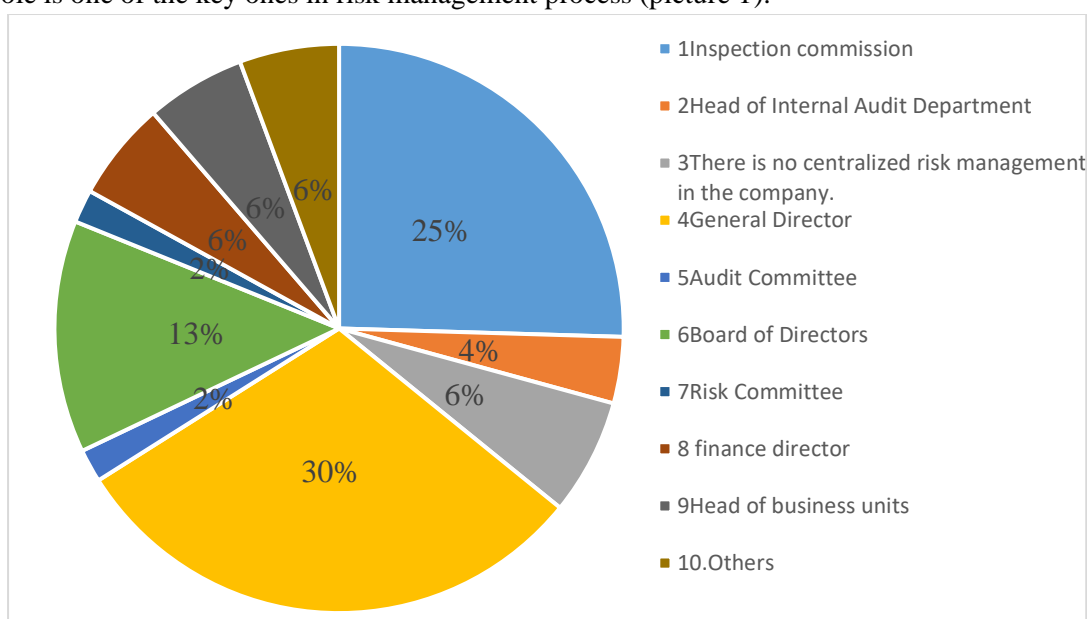
In order to introduce international risk management standards in Russian companies,



which are effectively used by the world's leading companies, it is necessary to evaluate and analyze existing risk management practices, especially strategic ones,

identify possible problems and the reasons for which they may arise. The analysis of the risk management system in organizations was carried out according to two main components: risk management practices were assessed and strategic aspects of risk management. According to respondents, the key aspects of building an effective management system risks are taking into account information on risks when making decisions on company management - 49%, organizational and formalized process of identifying and managing risks - 46%, development and implementation of a risk management policy or concept – 37%.

In 32% of companies, the responsibility for organizing and supporting the risk management process in the company are assigned to the CEO, which is in line with global risk management practices. In 27% of companies, these functions are performed by the Audit Committee (commission) and in 14% of companies - Board of Directors. However, only in 6% of companies, the responsibility for organizing and supporting risk management is performed by the financial director, whose role is one of the key ones in risk management process (picture 1).



Picture 1. The official responsible for the organization and support of the management process risks in the company.

In the above graph we can see that the highest figure is made by the general director.

Application in the company of an integrated system for improving corporate governance and risk management is the key to increasing the competitiveness of the company and its successful development.

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THE STAGES OF DEVELOPMENT OF THE HANAFI SCHOOL

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ABSTRACT

The word “Mazhab” means “way”, “something to rely on”. In istilah, it has several meanings: it means: a specific way of deriving practical Shariah rulings from their detailed evidence, ijtiḥad of an imam, rajih, i.e. a strong ruling in the eyes of scholars of the madhhab. The Hanafi school went through three main stages: 1. The period of emergence and formation. 2. Period of expansion and development. 3. Decision-making period.

KEYWORDS: *mathhab, mujtahid, ahli ray, Zahirur rivaya, fatwa and events.*

The word “Mazhab” means “way”, “something to rely on”. In istilah, it means several things:

1. A certain way of deriving practical sharia rulings from their detailed evidence.

2. When the students of an imam learn the ijtiḥads and people follow him, it is called one’s madhhab

3. Rajih, that is, a strong ruling in the eyes of the scholars of the Madhhab is also called a Madhhab. For example, as it is said: "The speech of one is this madhhab", as it said.¹

Adhering to a madhhab is the right path that² our Lord has directed us to in the ayat of azza wa jalla: **“If you do not know, ask the people of zikr”**³.

The Hanafi Madhhab is one of the most prominent Madhhabs that the ummah has accepted and continues to follow. The Hanafi Madhhab is also known as the “Ahli Ray Madhhab”. It is the earliest of the four Madhhabs. Its founder is Imam Abu Hanifa No'man ibn Thabit, may God bless him and grant him peace. The emergence of this Madhhab was not limited to the words of Imam Abu Hanifa. Perhaps his words and the words of his students, who are considered to be Hanafi Madrasas, formed a Madhhab.

The Hanafi madhhab is considered to be more careful than other fiqh madhhabs in terms of solving issues and classifying them into chapters. Because it is considered that Imam Abu Hanifa summarized the knowledge of Sharia and divided it into chapters. Then, Imam Malik ibn Anas, may God bless him and grant him peace, followed him in organizing the Muwatta. Before Abu Hanifa, may God bless him and grant him peace, no one had attempted to introduce such a method. Because the Sahaba and Tabein, may Allah be pleased with them, did not publish any organized book or chapter on Shari'i knowledge. Maybe they relied on their strong spells. When Imam Abu Hanifa, may God bless him and grant him peace, saw the knowledge scattered, fearing that the next generation would waste it, he sorted it into chapters and made it into a book. He first started with ablution, after prayer, then with other prayers and behavior issues, as a result, he finished the book with "Inheritance Issues". This method is followed by the jurists after him.

Stages of spread and development of the Hanafi madhhab

The Hanafi school went through three main stages:

1. The period of emergence and formation.

2. Period of expansion and development.

¹ Muhammad Horun ibn Muhibburroḥman. Al-fathur Robbaniy. Dorul ishroq. – Karachi. 2020. – P.201.

² D. Saloh Muhammad Abul Hoj. Is'odul muftiy. Dorul bashoir al-islamiya. – Beirut. 2021. – P. 101.

³ Anbiyo sura, verse 7.



3. Decision-making period.

1. The period of emergence and formation.

This period is the period when Imam Abu Hanifa and his senior students founded the madhhab and developed the rules and jurisprudence methods of the madhhab. This period includes the age of the Imam and his disciples. This century begins in 120 AH. The reason is that Hammad ibn Abu Sulayman, the teacher of Abu Hanifa, may Allah bless him and grant him peace, died in this year.

After the death of his teacher, Imam Abu Hanifa, may God bless him and grant him peace, started teaching and issuing fatwas. Although the roots of the Madhhab arose earlier than this, scholars consider this date as the initial formation.

It is not narrated that Imam Abu Hanifa, may God bless him and grant him peace, wrote any book on fiqh during this period. Because in his time, it was not customary to publish a book on jurisprudence. The jurisprudential issues that have come down to us are the narrations of his students. His students collected the issues that Abu Hanifa, may God bless him and grant him peace, said in the class meeting and put them in the form of a book. Among his senior students, Abu Yusuf, may God bless him and grant him peace, was the first to publish a book. But Imam Muhammad ibn Hasan Shaybani was the student who wrote the most. He narrated the book himself from Abu Hanifa or through Abu Yusuf.

The first and most authoritative books authored by Imam Muhammad ibn Hasan are called "Zahirur Rivaya". They are six books "Mabsut", "Asl", "Jome'us saghir", "Jhome'ul kabir", "Siyarus saghir", "Siyarul kabir" and "Ziyadot". The reason they are called "Zheerur Rivayah" is because these books were narrated from Imam Muhammad by reliable narrators in a mutawat or popular manner.

2. Period of expansion and development.

This period starts from the death of Hasan ibn Ziyad (may God bless him and grant him peace) (204 AH) until the death of Imam Abdullah ibn Ahmad ibn Muhammad Nasafi (710 AH). By this time, if there was a disagreement between the imams of the Madhhab, the rule about which one should be followed changed. That is, if the word of Imam Abu Hanifa is matched by the words of one of his two disciples (Abu Yusuf and Imam Muhammad), the Imam's qawl is introduced. If two of his students agreed and the Imam contradicted them, and that matter was one of the issues that change with ijihad, then the opinions of his students would prevail. At this stage, juziz talifats on the issues of usulul fiqh began to be written. The works written by scholars in this regard can be divided into three types:

First. Brief books.

Among the most important summary books of that period:

1. "Mukhtasarut Tahavi".
2. Imam Hokim's "Kofi" book.
3. Samarkandi's book "Tuhfatul Fuqaha".
4. "Mukhtasar ul-Quduri".
5. Imam Margilani's book "Bidayat ul-Mubtadi".
6. "al-Mukhtar" book by Abu Fazl Abdullah ibn Mahmud ibn Mawdud Mawsili.
7. Imam Nasafi's book "Kanzud Daqiq".
8. Imam Sodrush Shari'a's book "Viqayatur Rivaya".

Second. Comments.

Here are some of the most important reviews:

1. Imam Sarakhsi's book "Mabsut".
2. Alauddin Kosani's book "Badoe'us sanoe".
3. Imam Margilani's book "Hidaya".
4. Imam Mavsili's book "Ikhtiyar lita'lilil mukhtar".

Third. Fatwa and events.



By this time, scholars were faced with new issues to be solved by ijtiḥad. For this reason, they began to publish books on new modern issues. The most important of these are:

1. "Fatwa" book by Shamsul A'imma Halvani.
2. Imam Sodrush Shahid's book "Fatavo Kubra".
3. The book "Fatavoi Nasafiyya".
4. The book "Fatavoi Qazikhan".

These books are considered to be authoritative works in the Madhhab. The highest level of them are summary books. Then comments, then fatawa books.

3. Decision-making period.

This period continues from the death of Imam Nasafi to our present day. That is, from the eighth period of the Hijri to this day is the period of stabilization of the Hanafi madhhab. This stage can also be divided into three stages:

Step 1:

It lasts from the middle of the seventh century Hijri to the tenth century Hijri. At this stage, scholars began to publish books supporting the Hanafi school with evidence. Including:

1. Musnads attributed to Imam Abu Hanifa.
2. Munjabi's "Fundamentals of Compilation of the Book and Sunnah".
3. "Nasbur Roya" book by Zayla'i.

Step 2:

It lasts from the middle of the tenth century of the Hijri to the end of the thirteenth century of the Hijri. New books begin to be written during this period. From celebrities:

1. Halabi's book "Multaqal Abhar".
2. Temirtashi's book "Tanvirul Absar".
3. Shurunbuloli's book "Nurul Iyzaḥ".

Step 3:

The period from the end of the thirteenth century Hijri to the present day. By this time there was a consolidation of justice judgments. The reason was to develop laws and regulations based on Hanafi jurisprudence on matters of sentencing and dealing with judges and governors in the Ottoman state.

The methods of the Hanafi school

Imam Abu Hanifa Noman, may God bless him and grant him peace, defined the rules of the Hanafi madhhab as follows: "I take the book of God, and if I do not find it, the Sunnah of the Messenger of God, may God bless him and grant him peace, and if I do not find it in the book of God and the Sunnah of the Messenger of God, I take the words of the Companions. I leave I will not take their word for it. If the case reached Ibrahim, Sha'bi, Ibn Sirin, Hasan, Ata and Sa'id ibn Musayyab (to name a few people), they are the people who practiced ijtiḥad. I will perform ijtiḥad as they performed ijtiḥad."

The Hanafis paved a wide path in istehsan and left a great jurisprudential legacy.

The Hanafi Madhhab was based on the following principles:

1. Holy Quran

The Holy Qur'an is the most important and supreme source in the eyes of Imam Abu Hanifa, may God bless him and grant him peace. Because the Holy Qur'an is a fixed book. There is no doubt in any of his letters. No other report can compare to the level of its stability except mutawatir hadith. That is why Imam Abu Hanifa, may God bless him and grant him peace, did not consider it permissible to copy the Holy Qur'an with ahadith. Yes, he tried to follow the Sunnah as much as possible. Sunnah Sunnah is abandoned only when it is strictly contrary to the Book.

2. Sunnati Nabawi.



Imam Abu Hanifa, may God bless him and grant him peace, did not consider the Sunnah of the Prophet in the same degree. Maybe, for example, Qawli considered circumcision better than verb circumcision. In view of the fact that this verb may be characteristic of the Prophet, peace and blessings of God be upon him. When the mutawatir sunnah and the good message contradict each other and it is impossible to combine them, the mutawatir sunnah is put forward. In addition, if a good news contradicts a Shariah rule derived from the Qur'an or the Sunnah, it is abandoned to follow that good news.

3. Ijma'

Ijma' is the consensus of the mujtahid imams of a period after the death of the Messenger of Allah, peace and blessings be upon him. Ijma' is one of the documents to be followed by Imam Abu Hanifa, may God bless him and grant him peace.

4. The words of the Companions.

5. Comparison

This is to add a fari ruling that does not contain the original ruling to a certain original ruling, which is obligatory or forbidden. In this case, the defect (reason) found in the original judgment must be found in the fari judgment. Imam Abu Hanifa, may God bless him and grant him peace, preferred the Sunnah, even though it is mursal and weak.

6. Ishtehsan.

It is to demand the best in following the command that is given. In the eyes of Imam Abu Hanifa, may God bless him and grant him peace, this is not following the whims of the soul and making judgments with a purpose. Perhaps it is the choice of the strongest of two arguments in a particular case.

7. Tradition and custom

Custom is something that is intellectually settled in the soul and accepted by a healthy nature. The reason why tradition is considered a Shari'i proof is the saying of Ibn Mas'ud, may Allah be pleased with him: "What Muslims consider good is also good in the sight of Allah". There should be no Shariah evidence from the Book and the Sunnah for the tradition to be evidence. But if the tradition contradicts the Book and the Sunnah, then the tradition in this place is rejected. For example, as businessmen have made it a tradition to practice riba, because it is an act that is contrary to Sharia.

The Hanafi Madhhab appeared in Kufa, the homeland of Imam Abu Hanifa, may God bless him and grant him peace. Then it began to spread in the fourth century of Hijri. First, after the people of San'a in Yemen, it began to spread to the jurists and judges of Iraq and the lands of Sham. The reason why the Hanafi Madhhab spread widely in Iraq was that during the reign of Harun al-Rashid, the judge of judges was Abu Yusuf. This Madhhab became the official rule in the Ottoman Caliphate and the states under it.⁴

The Hanafi Madhhab also spread in the eastern climate, namely Khurasan, Sijistan and Mawaroonnahr. Also, Hanafis began to multiply in the Persian territories. After the death of Abu Hanifa, may Allah bless him and grant him peace, scholars began to teach in Baghdad. After that, it began to spread in Islamic countries.

In particular, it reached the Muslims of the Balkans, the Gulf States, Afghanistan, East and West Turkestan, Pakistan, Bangladesh, North India, Iraq, Turkey, Syria, China and Russia.

The person who first introduced the Hanafi Madhhab to Egypt was the first Hanafi judge in Egypt, Ismail ibn Yasa' Kofi (d. 146 A.H.). The Hanafi school continues to this day.

Important works of the Hanafi school:

1. "Fiqhul Kabir".
2. "Musnadul hadith".
3. "Kitabul Olim and Mutaallim".
4. "Six apparent narratives".

⁴ Muhammad Taqi Osmani. Usulul ifto va odobuhu. Darul ishraq. – Karachi. 2020. – P. 202.



5. "Jame'ul Kabir".
6. "Jome'us saghir".
7. "Siyarul Kabir".
8. "Siyarus Sagir"
9. "Mabsut" book by Shamsuddin Sarakhsi.
10. "Asl".
11. "Ziodot".
12. Kosani's book "Badoe'us Sanoe' fiy taribush sharoi".
13. Imam Margilani's book "Hidaya".
14. "Hoshiyatu Ibn Abidin".
15. "Uqudul Jawahiril Munifa Fi Adillati Mazhabi Abi Hanifa"
16. Mavsili's book "Ikhtiyar fiy ta'il mukhtar".
17. "Lubob".
18. Ibn Humam's book "Fathul Qadiri" and others.

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THE DEVELOPMENT OF ISLAMIC SCIENCES DURING THE SELJUK SULTAN SANJAR PERIOD

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ABSTRACT

In this article highlights of the development of islamic sciences during the seljuk Sultan Sanjar period.

KEY WORDS: *Seljuk, Sultan Sanjar period, Islam and science.*

The name of the Seljuk state is derived from the name of Seljuk ibn Dukak, the chief of the nomadic Turkic-Oghuz tribe living on the banks of the Syrdarya. The Seljuk Turks were Mahmud Ghaznavi's viceroy in Khorasan. In 1038, Tughril (1038-1063), the grandson of the Seljuks, conquered Nishapur and declared the establishment of his state in the Khorasan region and partly in Mawarannahr. (Agadjanov, S, 1991, p. 51). In 1040, the Battle of Dandakon took place between the Ghaznavid sultan Mas'ud and Tughril. After the defeat of Mas'ud in the Battle of Dandakon, the Seljuk state ruled over a large area consisting of Khorasan, Khorezm, western Iran, Azerbaijan, and Iraq. In 1055, Tughril also captured Baghdad. The Abbasid caliph al-Qaim (1031-1075) handed over power in Baghdad to Tughril, declaring him the "King of the East and the West" and marrying his daughter (Agadjanov, S, 1991, p. 66).

The Seljuks sought to create all the conditions for the development of science and culture. In the Seljuk madrasahs, both natural and exact sciences were taught from socio-religious knowledge. Students were given a monthly stipend and provided with space, taught by mature scholars of their time, and had thousands of volumes of libraries at the disposal of students of science. We know that in some madrasahs the number of students is in the thousands. For example, it is known that one of the Nizamiyya madrasahs, founded by Nizamulmulk, was home to 6,000 students.

The traditional serious focus on knowledge and enlightenment among Muslim rulers did not lose its importance even during the Seljuk period. The first madrasah in the Seljuk state was built in 1046 in Nishapur by order of Tughril (Öngül, 2003). Fakhriddin Jurjani (d. 446/1054), the author of "Vis and Ramin", one of the great writers of his time, was the chairman of the Ray office in the time of Sultan Mas'ud, the son of Mahmud Ghaznavi. Scholars such as Abul A'la ibn Hassul (d. 450/1058) (Khalifa, 2016, p. 462), the author of "Dumyat al-qasr fi shu'ara al-asr" Ali ibn Hasan Boharzi (d. 467/1075) have been active (Khalifa, 2016, p. 461), (Sama'aani, 1977, pp. 16-17), (al-Hamawi, 1993, p. 1682).

During Tughril's reign, the Hanafi sect was declared the state sect. During this period, there was serious competition in the state between Hanafi and Shafi'i. Izzuddin ibn Asir, in his work "al-Kamil fi at-tarikh", said: "He asked the Sultan for permission to criticize the Rafidis in the mosques of Khorasan. With the permission of the sultan, Amid al-Mulk began to criticize the Rafidis as well as the Ash'arites. The minister did so because he feared that Abu Sahl Nishapuri, one of the leaders of Nishapur and a Shafi'i, would become a minister in the future. As a result, mature representatives of the Shafi'i school, such as Imam Juwayni, Abu Suhail Muwaffaq, Abul Qasim Qushairi, and Imam Baihaqi, were forced to leave the land of Hijaz. This continued until Alp Arslan ascended the throne and was appointed minister of Nizamulmulk, the Shafi'i. According to some narrations, Amid al-Mulk repented for his treatment of the Shafi'is" (Asir, 1987, p. 365).

Sultan Alp Arslan (1063-1072), who ascended the throne after Tughril's death, patronized science throughout the country. During his time, in 1067, the first madrasah was built in Baghdad. This madrasah was named "Nizamiyya"



because it was built on the initiative of the Minister Nizamulmulk. Later, madrassas built in Ray, Nishapur, Merv, Balkh, Herat, Basra, Isfahan and Mosul were also called Nizamiyya. In contrast to the politics of Tughril's time, clerics from four sects were involved in Nizamiyya madrasahs. Many clerics expelled during Toghrulbek's rule were repatriated and madrassas were built for them. The ideological conflicts of Tughril's time were completely eliminated.

Turkish researcher Nevzat Kosoglu says: "The teachers, imams and preachers who graduated from these madrassas were a key factor in shaping the beliefs and way of life of the people" (*Kosoglu, 1991, p. 68*). In addition to religious sciences, literature, mathematics, astronomy and philosophy were taught in Nizamiya madrassas. The main activity of the Nizamiyya madrasahs was to deny Shiite sects such as rafidies and botinies. This is evidenced by the fact that madrassas were built in cities where rhetoric and innerism were prevalent.

Scholars worked at the Nizamiyya madrasah in Baghdad, for example, the Shafi'i jurist, the author of the works, "al-Tanbih fi furu al-fiqh al-Shafi'i", "al-Muhaddhab fi-l-madhab", "al-Tabsira fi usul al-fiqh", "al-Nukat", "Talkhis" Abu Is'haq Shirazi (393/1003-476/1083), a great jurist and mutakallim, author of the works "Kitab al-mughni", "Tatimmah al-ibana", "Kitab fi al-khilaf" Abu Sa'd Mutawalli (427/1036-478/1086), Sharif Abul Qasim Dabbusi (d. 483/1090), Husayn ibn Ali Tabari (d. 504/1097), Abdul Wahhab Sherazi (XI century), "Documents of Islam" Imam Abu Hamid al-Ghazali (450/1058-505/1111), Ahmad ibn Muhammad al-Ghazali (d. 520/1126), Abu Bakr ibn Ali Shashi (d. 1113), al-Khatib Tabrizi (421/1030-502/1109) and Ibn Burhan Scholars such as Ali ibn Muhammad Baghdadi (479 / 1087-518/1124). (*Khallikan, 2007, pp. 29-31, 99*), (*al-Jawzi, 1992, p. 244*), (*Kosoglu, 1991, pp. 449, 462, 465, 486*), (*Bulliet, 1972, pp. 133-134, 216-219*).

The madrasa library in Baghdad has been endowed with books for 6,000 years by the regime. Abu Is'haq Shirazi was the first director of the madrasah. Imam Ghazzali was the director of the madrasah from 1091 to 1095.

The Nizamiya Madrasah in Nishapur was built in 1058 in honor of Imam al-Haramain Imam Juwayni (419 / 1028-478 / 1085), who was forced to emigrate to Hijaz during the Tughril period. Imam Juwayni was the first teacher of the madrasah (*Bulliet, 1972, p. 73*). This madrasah differed in construction and education from the Simjuri madrasah, which ruled Khorasan from 940 to 1000, and the "Sa'idiya" madrasah of the Ghaznavids. Until Tughril's death, the madrasah was called "Sultan Madrasah".

From 300 to 400 students studied at the madrasah. Sufis, commentator, muhaddith, author of the works "ar-Risala", "at-Tahbir fi-t-tazkir", "at-Tafsir al-kabir" by Abul Qasim Qushairi (376/986-465/1072), Muhammad ibn Ahmad Marwazi (d. 465/1072) such scholars worked in the madrasa.

The Nizamiyya madrasah in Isfahan was built in 1072 next to the Masjid al-Juma in the city center. The madrasah was taught by Abu Bakr Sadriddin Khojandi (d. 483/1090), Fakhriddin Abul Ma'ali (d. 559/1163) and Abu Sa'id ibn Abu Bakr (XIII century). The madrasahs magnificent library in Baghdad dates back to the XIV century.

Abul Qasim Abdullah ibn Tahiri (XI-XII centuries) was a teacher in Balkh madrasah. The madrasah was taught by scholars such as Abu Sa'd al-Harawi (12th century) and Ziyavuddin Sadr al-Aimma (XII century). Rashiduddin Watwat (d. 573/1177), a poet and writer of the Khorezmshah period, is also a graduate of this madrasah (*Is'fandiyor, 2002, pp. 109-112*). The madrasa was demolished in 1153.

Qadhi Abu Hamid Shahrzuri (586/1190) and Qadhi Abu Bakr Khalidi (XII century), Abu Fazl Anbari (XII century), Abu Bakr Shashi (421/1030-502/1109), Abu Muzaffar Samani (426 / 1035-489 / 1096) and Abul Fath Asad Mahini (12th century) Scholars such as Mosul, Herat, Basra, and Merv have taught at the Nizamiyya madrasahs (*Asir, 1987, p. 462*). Alisher Navai has renovated the Nizamiyya madrasah in Herat.

Before these madrasahs began to operate, those who sought knowledge had to travel to distant cities. Nizomiyya madrasahs have fully met this need.

After the death of Sultan Alp Arslan in 1072, his 13 year old son Maliksah (1072-1092) ascended the throne. In 1074, Maliksah conquered Termez, Bukhara, Samarkand, and later Fergana. During the reign of Maliksah, the Seljuks were very militarily and politically powerful. The capital was moved from Nishapur to Is'fahan. The king also declared Nizamulmulk as his minister. Like his father, he sponsored science and education.



The historian of the Ottoman period, Ahmad ibn Mahmud (d. 1570), in his work “Saljuq-nama” (“Book of Seljuk Empire”), describes the contribution of the Nizamulmulk to science and enlightenment as follows: “Those who could not see Nizamulmulk’s patronage of science told the sultan, “Nizamulmulk spends 300,000 dinars a year from your treasury on Quran memorizers, jurists and Sufis. If this money is spent on troops, we can conquer Constantinople”. Nizamulmulk replied to Sultan Malikshah from this letter: “O Sultan of the worlds! Allah has bestowed upon you and on me blessings that none of His slaves have. Do you see 300,000 dinars more than those who remember the Book of Allah? You spend twice as much on soldiers. However, the bullet fired by them does not go more than a mile. And with this money I will form such an “army” that their knowledge will not be able to prevent them from ascending to the Throne of Allah. “To Sultan Malikshah Nizamulmulk, increase the number of this “army” as much as you can. I will give you as much wealth as you want. The riches of the world are yours”. (*Mahmud, 1977, pp. 142-144*).

During the reign of Sultan Malikshah, an observatory was built in Is’fahan and a madrasah in Tabaristan. The english orientalist Henry George Raverty, in his study of the medieval Muslim historian Minhajiddin Juzjani’s “Tabaqati Nosiri”, assesses the development of science during the reign of Sultan Malikshah as follows: “Sultan Malikshah has a lot of good things left in the world. One of them is the correction of errors in the science of Nujum. Nujum and arithmetic scholars, by order of Malikshah, developed a new method of observing the stars and redefined the days of the moon. A new calendar ‘Jalaliy’ has been developed for the state” (*H.G.Raverty, 1873, p. 142*).

During the reign of Sultan Malikshah, Abu Is’haq Shirazi, Abul Qasim Qushairi, Imam al-Haramain Juwayni, Imam al-Ghazali, well-known Shafi’i jurists, disciples and sons-in-law of Abdul Qahir Baghdadi, author of the works “at-Tabsir fid-din”, “Taju-t-Tarajim”, “Awsat”, “Tafsiru-l-Kabir” Shahfur ibn Tahur Isfari (d. 471/1078), Mahmud Kashgari (421/1030–521/1127), grammar scholar, author of the works “Asroru-l-balaga”, “Dalililu-l-ejaz”, “ar-Risalatul-Shafi’iya”, “Kitabu-l-Jumal” Abdul Qahir Jurjani (d. 471/1079), great philosopher, poet, astrologer, mathematician and physician, author of works such as “Ruboiyot”, “Risola fi taksim rub’i-d-daira”, “Risalat al-kawn wa-t-taqrib”, “Risola fi-l-wujud”, “Risola fi kulliyati wujud”, “Nawroznama”, “Ziji Malikshahi” Omar Khayyam (439/1048-526/1132), poet and writer known for his works “Shi’ru ibn al-Habbariyya”, “Falak al-Ma’ani” Ibn Habbariyya (414/1033-509/1115), Abu Tahur Hatuniy (d. about 529-532 / 1134-1137), author of historical works such as “Uyun at-Taworikh”, “Al-Hafawat an-Nadira”, “Kitab ar-robi” Abul Hasan Sobi (416/1025-480/1088) such as religious scholars, poets and engineers who lived and worked (*adz-Dzahabi, 1996, pp. 432-433*), (*V.V., 1998, p. 87*), (*Rozenfeld B, Yushkevich A., 1965*), (*Brockelmann, 1937, p. 505*)

As a result of the internal struggles for the throne that began after the Sultan Malikshah, a period of stagnation arose in the Seljuk scientific environment. The recession continued during the reigns of Mahmud I (1092-1093), Berkyaruk (1094-1105), and Malikshah II (1105). After Muhammad Tapar (1105-1118) came to power, science and culture began to rise again. During this period, scholars from the time of Sultan Malikshah were mainly active.

Imam al-Ghazali dedicated his persian work “al-Tibr al-masbuk fi nasihat al-muluk”, and Ibn Balkhi dedicated his “Farsnama” to Muhammad Tapar. Muhammad Tapar built rabats for Sufis around each of the Nizamiyya madrasahs.

Muhammad Tapar died in 1118. At this point, the Seljuk state was divided into two. Western Iran, Iraq, and Azerbaijan were ruled by Mahmud II (1118-1131), son of Muhammad Tapar, under the name of the Sultanate of Iraq (1118-1194). Hamadan has been designated as the capital of the Sultanate of Iraq. In Khorasan, Sijistan, Khorezm and Movarounnahr, Ahmad Sanjar (1118-1157), the son of Malikshah, was proclaimed sultan. Sultan Sanjar declared Merv as the capital of his state. After the death of Sultan Sanjar (1157) the Seljuk rule in Khorasan came to an end. In 1194, Khorezmshah Takash overthrew the Sultanate of Iraq. Another Seljuk state, the Sultanate of Konya, ruled until the XII century.

The period of Sultan Sanjar is the most prosperous period of the Seljuk state. Like his father, he sponsored science. Sultan Sanjar invited Khorasan not only muslim scholars but also representatives of other religions. He had great respect and attention to scientists. “This land (Khorasan) was a place of knowledge, a source of virtue and a land of professions” (*Rowandi, 2005, p. 167*).



Sultan Sanjar had a high regard for scholars. Instead of interfering in the intellectual struggles between the sects, he followed the scholars. He also did not interfere in the disputes between the Hanafis and the Shafi'is in Nishapur. He had good relations with great scholars such as Imam al-Ghazali and Yusuf Hamadani. In 1110, he sent 50,000 dinars and a letter to Yusuf Hamadani, who was in Samarkand. In his letter, he asked to be blessed in his own right.

Sultan Sanjar distributed 700,000 dinars, 1,000 pieces of clothing, many horses, and other valuables from the treasury to scholars, physicians, and philosophers. When the treasurer said that the treasury was being emptied, he said, "If you say I am prone to wealth, it is not true. Distribute these clothes".

During the reign of Sultan Sanjar, all branches of science developed. Scholars have written mature works in the fields of tafsir, fiqh (jurisprudence), kalam, tasawwuf, philosophy and the exact sciences.

The Seljuk period is a bright page in the development of Islamic civilization. One thing is clear, the Seljuks from the Syrdarya region relied on centuries-old experience and traditions in the political, economic, cultural and educational spheres of the Khorasan and Mawarannahr regions, and tried to continue them in their activities.

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POWER OF INTELLECTUAL ENERGY RESOURCES IN UZBEKISTAN

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ANNOTATION

The essence of the sources of intellectual energy is widely disclosed in the article. Also, indicators of the potential of renewable energy sources in Uzbekistan were analyzed.

KEYWORDS: *Distributed energy, digital energy, energy, sources of energy, renewable energy.*

The longed for development of the industry affects the environmentalist environment. Therefore, the problem of protecting the atrophy and the rational use of natural resources is of great importance now. It is known that the main sources of environmental pollution are chemical and petrochemical, energy, light industry and construction materials enterprises. They account for 90 percent of harmful substances released into the atmosphere. In recent years, there has been a slight decrease in the emission of harmful substances. Because, as in the whole country, the attention of the ecologist to improve the situation has increased in the region as well. Many enterprises have been provided with modern cleaning equipment, and funds are being allocated for this work. However, environmental pollution has not been given enough attention.

Unlike previous approaches to the development of the electric power industry, it is more efficient to start the transition to an intelligent energy system from the bottom, from the consumer and local energy supply systems, creating distributed clusters of new energy, a new market environment in the industry. And the experience of the world's largest economies shows the success of such undertakings.

Intensive advances towards the intelligent electric power industry are being carried out in Europe, the USA, the BRICS countries, Japan, South Korea, etc.

The topic of an intelligent energy system, a national technological initiative reflects the main trends that exist or are emerging in the development of modern electric power industry - a bias towards information and communication technologies, active electrical devices, active regulators of electrical energy flows, and integrated distributed sources of electrical energy.

It is required to solve a number of important tasks for the creation of modern intelligent electrical systems ¹:

- to change the power industry management system. The goal should be to minimize the costs of development and operation of the industry while meeting the requirements of reliability, quality of electricity, ecology, energy security of the state;

- to develop methods and information and software tools for obtaining optimal solutions for the development and functioning of the country's electric power complex;

- to create a unified system of technological and commercial rules and mechanisms for joint work of the owners of electric power facilities, ensuring the implementation of optimal solutions in the exercise of appropriate control by state authorities;

¹ Allaev KR Power industry of Uzbekistan and the world. T.: Fanva technology, 2009. 463 c.



- create an industry-wide system of strategic planning, taking into account long-term prospects for ensuring the reliability and quality of electrical energy;

- to create a system for planning and conducting research and development of innovative technologies, including technologies for flexible highly integrated energy systems using automation, robotization, informatization, and digitalization of the industry.

The task of developing a system of integral optimal management of the development and operation of the electric power complex in the presence of many owners of electric power facilities, taking into account different temporal and territorial levels of management and a variety of generation sources and components of power systems, is relevant.

From a wide range of new market participants and service providers, new networks of producers and consumers are being formed and, as a result, completely new business models of energy trading are emerging ². There are many examples of the use of artificial intelligence algorithms in forecasting tasks ³. For example, the dependence of renewable energy generation on weather conditions has greatly increased the need for accurate forecasting.

In Germany, the German company Schleswig-Holstein Netz AG, which operates electrical networks, uses artificial intelligence methods (a self-learning network) to determine the locations of alleged damage [12]. Information on the service life of electrical network elements and repairs carried out, as well as information on loads and weather conditions are used as initial data.

In the United States, unmanned aerial vehicles are used to survey the condition of high-voltage power lines and wind turbines, controlled based on software with artificial intelligence algorithms to process monitoring results ⁴. The neural network helps to better solve the problem of pattern recognition, for which, during the training process, thousands of images of damaged wind turbines are loaded into the program (including the consequences of lightning strikes, delamination, coating erosion, etc.).

Today, such a term as "digitalization" is increasingly heard, which should cover all areas of the economy and industry ⁵. The digitalization of the energy industry is the most important component of the future energy industry and, accordingly, the state economy. Digital energy is an energy industry in which relations between producers and consumers of electricity have changed dramatically, as new, affordable technologies have appeared.

"Digitalization" is called a fundamental part of the architecture of the fourth industrial revolution, the so-called "Industry 4.0" ⁶. Digital energy will become part of the digital economy - digitalization of all branches of the fuel and energy complex: electric power, which should become intelligent and distributed; oil and gas and coal industries

Digital energy, as a new format for managing the operation of electric power systems, ensures the optimization of technological and business processes to achieve the target state of the electric power industry.

Digitalization of the electric power industry, unlike other technological areas that support the traditional, extensive development of the industry, can significantly reduce the pace of this development without compromising the reliability and cost of energy supply, due to more efficient use of the existing energy infrastructure, which at the same time receives its information counterpart - "energy Internet".

²Quadrature energy circle.

(https://w5.siemens.com/web/ua/ru/news_rress/news/2019/pages/kvadratura-energeticheskogo-ruga.aspx). _ _ _ _ _

³Comprehensive FNI plan. "Fundamental problems of intelligent energy systems and ways to solve them"./Under. ed. corresponding member RAS Stennikova VA – M. ISEM SB RAS. 2017.48 p.

⁴ Artificial intelligence in electrical networks. energy innovation. (<https://electricalnet.ru/blog/iskusstvennyi-intellect-v-elektricheskikh-setyah-innovatsii-v-energetike>). _ _ _ _ 2018.

⁵Allaev KR Power industry of Uzbekistan and the world. T.: Science and technology, 2009. 463 c.

⁶Martynov A. _ Power industry 4.0: go on digit _ (<http://atomicexpert.com/electricenergy4.0>).



As noted, the world will witness how in the future the digital and physical worlds will come together, this will give impetus to the 4th industrial revolution, where the applications of artificial intelligence, blockchain, robotics and augmented reality technologies to the energy system will be in the foreground. The energy sector will benefit from such changes, as advanced technologies will help reduce production costs, increase energy efficiency and eliminate network failures. Overall, digitalization will have a profound impact on the global energy system now and in the future ⁷. Digitalization of existing and future energy supply structures, including energy markets, makes it possible to create complex simulation models of their regimes, processes and development, and, therefore, it will be possible to find the right technical and economic solutions for the energy supply system.

Today's development path for the electric power industry is towards a flexible, highly integrated energy system that has a single energy space, a utility utility and, ultimately, energy prosumers. On this path, the role of distributed generation will be significant. It is obvious that the future of the electric power industry is a harmonious balance of "large" centralized and "small" distributed energy. It is the gradual approach of generation to the consumer that will lead to the emergence of energy consumers.

The size of the global market for distributed generation technologies in 2015, according to BCC Research, amounted to 65.8 billion dollars. It is predicted that from 2016 to 2021 it will grow by 10% annually.

The global energy sector needs environmentally friendly electricity, the generation of which makes maximum use of renewable and nuclear energy sources. It is clear that moving away from fossil fuels and centralized systems with few power plants and towards decentralized systems with many renewable energy sources such as wind turbines and solar panels will not happen overnight.

Such radical changes require the solution of serious technical problems. The processes of production and consumption of electricity are separated in time and space, which inevitably leads to the complication of energy systems. And the more decentralized devices are integrated into the power system, the more challenges arise ⁸. In the world energy sector, the period of unbridled globalization has ended, and the era of decentralization and cost optimization has begun.

Table 1
The potential of renewable energy sources in Uzbekistan⁹

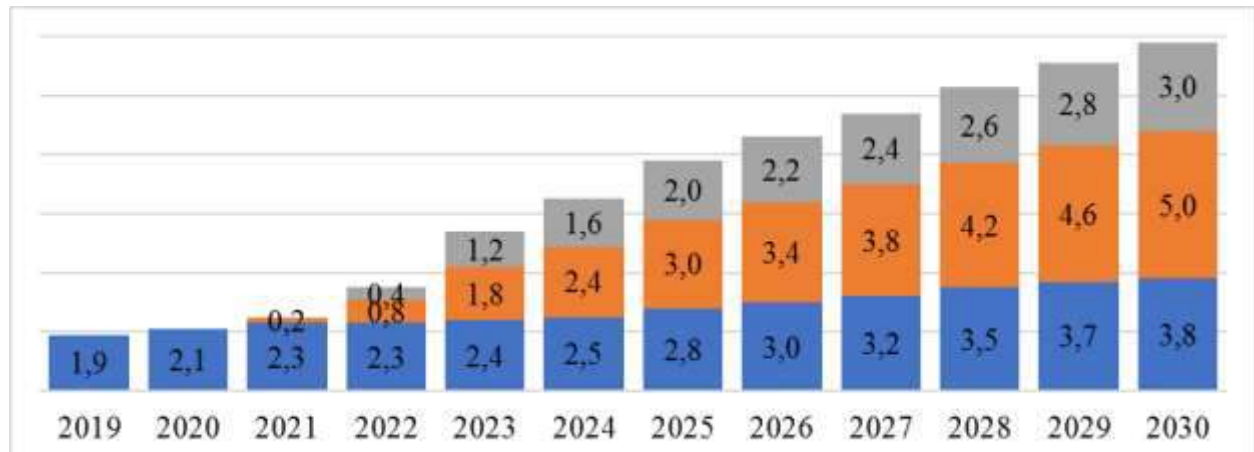
Types	Great potential	Techniques for potential
hydropower	9.2 Mtoe _	2 million toe.
Wind energy production	2.2 Mtoe.	0.4 Mtoe.
Solar energy _	50,973 Mtoe.	177 million toe.
Geothermal energy	67,000 Mtoe _	0.3 Mtoe.
Zhami	117,984 Mtoe.	179.3 Mtoe.

⁷Decarbonization, digitalization and the search for solutions to global energy problems. (<https://www.ruscable.ru/news/2018/06/09/Dekarbonizatsiya-tsifrovizatsiya-i-poisk-reshenij/>).

⁸ Quadrature energy circle.

(<https://w5.siemens.com/web/ua/ru/news/ress/news/2019/pages/kvadratura-energeticheskogo-kruga.aspx>).

⁹<https://review.uz/ru/post/vozobnovlyaemaya-energiya-dlya-ustoychivogo-razvitiya>



1-distance Uzbekistan forecast indicators of the installation of electric energy production facilities in the alternative energy association until 2030 , MW¹⁰

63.6 billion in Uzbekistan in 2019. By 2030, in order to diversify the production of electric energy, it is planned to increase the share of electric energy production from alternative sources to 15.3%, the share of atomic energy to 14.9%, and to reduce the share of gas and coal energy to 58.5% (Fig. 2).

In 2020-2022, in cooperation with public financial institutions, tenders (tenders and auctions) for identifying investors using the "Build-own-operate" model will be held in order to activate direct foreign investments in the Republican renewable energy sector, with which electric energy long-term (up to 25 years) contracts are concluded for the purchase of blue.

Attention will also be paid to the creation of isolated (not connected to a single electric power system) power stations in remote areas of the Republican population, in regions where ecotourism development is planned. In addition, medium-power (1-2 MW) kuyosh electric power stations will be built for the production of electric energy for the personal needs of production enterprises and industrial technoparks. Taking into account the rapid increase in the ability of consumers to produce electricity for their own needs and to supply excess electricity to the system, in order to stimulate the activation of the investment potential of the Republic, in 2021-2025, about 150,000 photovoltaic stations (power 2-3 kW) and household appliances will be built. 2- 2.5% of water heaters (average 200 liters) by 2026, taking into account the installation of renewable energy objects by the population, 4.3% of households in the republic will consume about 800 million kW.h per year. Provision of electricity in Khazhmy is being arranged.

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¹⁰<http://minenergy.uz/uz/lists/view/32>