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# PROCEDURES FOR CARRYING OUT ACTIONS OF CONTROLLING PEST AND DISEASES OF VEGETABLES IN KARAKALPAKSTAN

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## ABSTRACT

*The article provides information on the morphological characteristics of pests and diseases of melons in the Republic of Karakalpakstan, the characteristics of bioecological development, the degree of damage, control measures. The biological effectiveness of chemical measures against pests and diseases is presented.*

**KEYWORDS:** *melons, pests, diseases, control, biological effectiveness.*

## INTRODUCTION

One of the most popular agricultural crops which are being sown in Karakalpakstan, as in many other regions, is vegetables and they differ with their fast-ripeness, tasteless, being rich in nutrients and usefulness. According to the suggestion of medical researches, using an average of 19,5 kg of vegetables for each person per year is the most necessary method for health. Today, different kinds of vegetables are being sown to 6,000 hectares of arable land of farms and agricultural fields. The average of total product which is received from the field is 100,611 tons. This means that the role of vegetable products in providing the population with such food products during the year is special.

In the conditions of the Republic of Karakalpakstan, there are a lot of problems in the cultivation of vegetable crops, and the degree of damage caused by pests and diseases during the vegetation period dramatically decreases the amount and quality of the product. Therefore, today's actual problem is to carry out scientific research works on studying common

types, morphological features, peculiarities of bioecological development, spreading areas, the degree of damage of pests and diseases of vegetables and the biological effectiveness of actions on controlling them.

## MATERIALS AND METHODS

Our research work was carried out in 2018-2020 in the Kegeyli, Chimbay, Nukus districts of the Republic of Karakalpakstan on the vegetable sowing farms and agricultural fields. The methods of V.B. Golub, Sh.T. Khojaev, V.I. Tanskiy., K.K. Fasulati., V.F. Paliy were used for researching morphological signs, bioecology of vegetable pests and actions of controlling them, V.I. Bilay, P.N. Golovin, M.A. Litvinov, T.A. Dobrazrakova and others methods for identifying diseases and A.E. Chumakov, T.I. Zakharova's methods to determine the spreading level of diseases.

The biological efficacy of the used preparations (drugs) was determined by using the V. Abbot's formula [10]. Mathematical and statistical calculations of both experiments and results were performed using the method of B.A. Dospikhov [8].

**RESULTS AND DISCUSSION**

As a result of the scientific research work on the study of pests and diseases of vegetables and organizing actions of controlling them in the condition of the Republic of Karakalpakstan, it was defined that in the fields of melon, watermelon, and pumpkin, which are the main types of vegetables, the following kinds of pests damage mostly: melon fly (*Myiopardalis pardalina* Big.), leafminer fly *Liriomyza bryoniae* (Kaltenbach), aphids - Aphididae, turnip moth - *Agrotis segetum* Den. Et Schif., Click beetle - *Agrotis meticulosus* Cond. Melon fly, which is the main object of the research, has been determined in the fields of vegetables since 2001 [9]. Since this year, research has been conducted on the origin, distribution, morphological structure, peculiarities of bioecological development, degree of damage, organizing control.

Melon fly is considered to be an oligophagous species due to its variability in feeding. In Pakistan, Turkey, Israel, Iran, the Caucasus, Georgia, Armenia, Azerbaijan, Russia, Afghanistan, Tajikistan, and Turkmenistan, adults of the pest have been found to be highly harmful to the fruits of vegetables [2, 3, 5, 14, 18, 20, 21, 22, 24, 27].

It is known that in the conditions of our Republic, as a result of damage caused by melon fly 90-100% of the yields were damaged at the beginning when they appeared.

During our experiments, the morphological features of melon fly were determined by increasing the number of adults in the field and in the laboratory. It turned out that the average body size of the pest analyzed was 6,0-7,0 mm, the paternity was 5,5-6,0 mm, and the length of the egg was around 0,35-1,0 mm. The egg is elongated, with a white, shiny color, and the analyze lays eggs under the fruit cover with the help of special growing part. The larva of the pest are on average 9,0-10,0 mm long, white, the legs are almost undeveloped. In most cases, the worms pierce the fruit cortex in the morning or in the evening. This is because the sunlight does not fall vertically during this time, which prevents the worms from crawling or freezing. The next phase is

the period of pupa, which takes place underground. The pupae are reddish-brown or yellowish-red, about 7 mm long, and in this phase they pass into the adult phase. This means that, as it turns out, the pests are included in the polyvoltine-developing animals, with a total of three or four offspring during the vegetation period.

It has been found that melon fly is more harmful to melon varieties than to types of watermelon. It was defined that the following types of melon: 98-100% of Gurbek, 50-60% of yellow Gulaby, 40-55% of Bishek, and the following types of watermelon: 60-70% of farmer kind, 60-65% of agricultural kind were damaged.

In the conditions of the republic, according to the bio ecological diversity of the pest in the multi-year observations the pest appears in melon fields in the first ten days of June. Wintering lasts until the end of June, depending on soil conditions. The first offspring go through the full developmental phase, and the second offspring are mixed with the first offspring. This situation will be repeated in future generations. This means that it is necessary to take into account above mentioned actions in the treatment of each phase of the pest.

A number of chemicals have been tested against the adult phase in the treatment of melon fly pests. The results are given in Table 1, and in the first variant biological effectiveness 98,1% on the 14th day when the drug containing deltamethrin was used 0,7 liters per hectare, in the second variant it was 97,1% on the 14th day when the drug containing lambda-cyhalothrin was used 0,5 liters per hectare, in the third variant it was 97,0% when the drug with cypermethrin + chlorpyrifos was used in the amount of 0,7 liters, in the fourth variant it was 92,9% on the 14th day when the drug containing abamectin was used 0,6 liters per hectare, in the next variant it was 83,3% when the drug with malathion was used.

As can be seen from our experiments, high biological efficiency has been achieved in the variant in which the drug deltamethrin is used.

**Table 1**  
**Biological efficiency of insecticides against adults of melon fly pests**  
(Chimbay district, KKSSRI, field experience, 2018-2020)

№	Containing element	Norm of the drug, l/ha or kg/ha	Average number of the pest in 10 plants before using chemicals	Biological effectiveness, % in days				
				1	3	7	14	21
1	Deltamethrin	0,7	2,7	84,3	90,7	97,6	98,1	83,7
2	Lambda-cyhalothrin	0,5	2,7	82,5	88,7	96,4	97,1	82,5
3	Cypermethrin + chlorpyrifos	0,7	2,5	81,8	81,9	95,9	97,0	81,7
4	Abamectin	0,6	2,3	80,4	80,2	90,1	92,9	80,1
5	Malathion	1,0	2,5	77,6	79,2	82,3	83,8	70,2
6	Control (without using chemicals)	-	2,7	-	-	-	-	-
	LSD <sub>05</sub>			0,51	0,44	0,54	0,44	0,52



It was obvious that total thirty seven types of fungal pathogens, which cause disease in the seeds, were found in melon fields where the research was carried out. Of these, *Gliocladium roseum* - 13,6%, *Alternaria humicola* - 12,3%, *Penicillium expansum* and *Verticillium dahliae* - 10,0%, and *Fusarium solani* - 2,0% were found to be damaged in seeds.

In addition, ten types of the mushrooms that caused the disease in the leaves and stems of the melon were found, and 100 strains were isolated from them. During the observations it was found that 51,2 percent of the plant was damaged by this disease, the largest number of which were detected in fusarium wilt, powdery mildew, and alternariosis.

Biological effectiveness of using fungicides Previkur SL 722 (1,5 kg/ha) and Falcon (0,4 l/ha) and Alto Super (0,3 l/ha) after 15 days, 30 days and 45 days was studied during the experiments. As can be seen from Table 2, biological effectiveness was 91,2; 83,1; 79,6% during these days when the Previkur SL 722 (1,5 kg/ha) fungicide was used, 86,3; 78,4; 72,1% when Falcon 46% EC (0,4 l/ha) was used, 80,3; 72,2; 65,3% when Alto Super, 33% EC (0,3 l/ha) was used.

It is obvious from the research work that the use of special fungicides is required from the time when symptoms of disease appear in plant. Previkur (1,5 kg/ha) of the three fungicides was highly biologically effective when it was used to control the disease.

**Table 2****Biological efficiency used chemical fungicides against of melon diseases**

(Republic of Karakalpakstan, Kegeyli district, "Aynazar Baba" farm, experience of production, 2018–2019)

Experimenting variants, norms	Fungicide rate, kg/ha or l/ha	Biological effectiveness after how many days:		
		15	30	45
Previkur SL 722 WSC	1,5	91,2	83,1	79,6
Falcon 46%, EC	0,4	86,3	78,4	72,1
Alto Super 33%, EC	3	80,3	72,2	65,3

**CONCLUSION**

The analysis of the results of the experiments showed that the melon fly gives 3-4 offspring in the regional conditions, which causes a high degree of damage to mainly early and medium ripening varieties of melon. Diseases such as lying powdery mildew, powdery mildew, mountain sickness, salivary diseases, vascular diseases were found and high biological efficiency is achieved when controlling actions were carried out on time.

It is possible to decrease the number of pests to the level, which does not bring to economic damage, by using the recommended drug to adults of the melon fly from 5 to 8 o'clock in the morning through pouring it with the help of OBX-28 aggregate in large fields and in small fields with the help of hand pouring things.

High biological efficiency was achieved in the variant when Previkur SL 722, WSC was used in the amount of 1,5 kg per hectare to control diseases. This means that yield is saved by organizing actions of controlling pests and diseases on time and as the shown amount during the growing and developing period of melon.

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# ASSESSMENT AND FORECASTING OF BIOMASS POTENTIAL AND ENERGY DEMAND OF WONDO GENET DISTRICT, SIDAMA REGIONAL STATE, ETHIOPIA

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## ABSTRACT

Biomass energy is one of the important alternative sources of energy because it is renewable, cheaper, readily available and environmentally friendly. In Ethiopia, the lack of access to modern energy services that are clean, efficient and environmentally sustainable is a critical limitation of economic growth and sustainable development. The main aim of the present study was to assess biomass potential and energy potential from chat, sugarcane and coffee husk in Wondo Genet District and to forecast biomass and energy potential of the District for the coming ten years. Secondary data from agricultural office of Wondo Genet District were used as data source of yearly available biomass potential and also purposively 60 electric city user households from the District were interviewed on their amount of energy consumption per month. Biomass potential forecasting for the next ten years was done using empirical formula. In the District in 2019 the total area covered by chat, coffee plant and sugarcane was 5414 hectares and from crop production 7255.03 tons per year of residue was produced. The amount of energy produced from chat waste, coffee husk and sugarcane waste was 46397.62 GJ/year. Yearly growth rate of agricultural residues of chat, sugarcane and coffee husk is 2.7%, 2.3% and 1.4% per year respectively and after ten years residues will be grown 9224.602 tons/year. In the year of 2019, the average energy consumption of households in the District was 6 KWh/day and total energy consumption of households in the District was 2040.22152 GWh/year. The energy demand for households after ten years will be grown 472.021009979 GJ/year.

**KEY WORDS:** Biomass, Chat, coffee husk, energy

## 1. INTRODUCTION

Biomass energy is one of the important alternative sources of energy because it is renewable, cheaper, readily available and environmentally friendly (UNCTAD, 2008). Currently, several biomass technologies have been mentioned as being viable in the world. These include: electricity generation through direct combustion or gasification; briquetting; biogas generation, etc.

Per capita energy consumption of Ethiopia is very low; average energy per capita is not more than 100 kWh per year, when 500 kWh per year is considered the average minimum level consumption per capita for reasonable quality of life (Minster of

Water and Energy, 2013). In Ethiopia biomass accounts about 88% of the total energy consumed. In urban areas 75.3 % of the residents use electricity for lighting, while rural areas kerosene 80.1% and firewood 18.5% are predominant. In rural areas electricity is not common in many villages. Access to electricity in rural areas is about 2%, for a whole the country this is 10% (Erbato and Hartkopf, 2012).

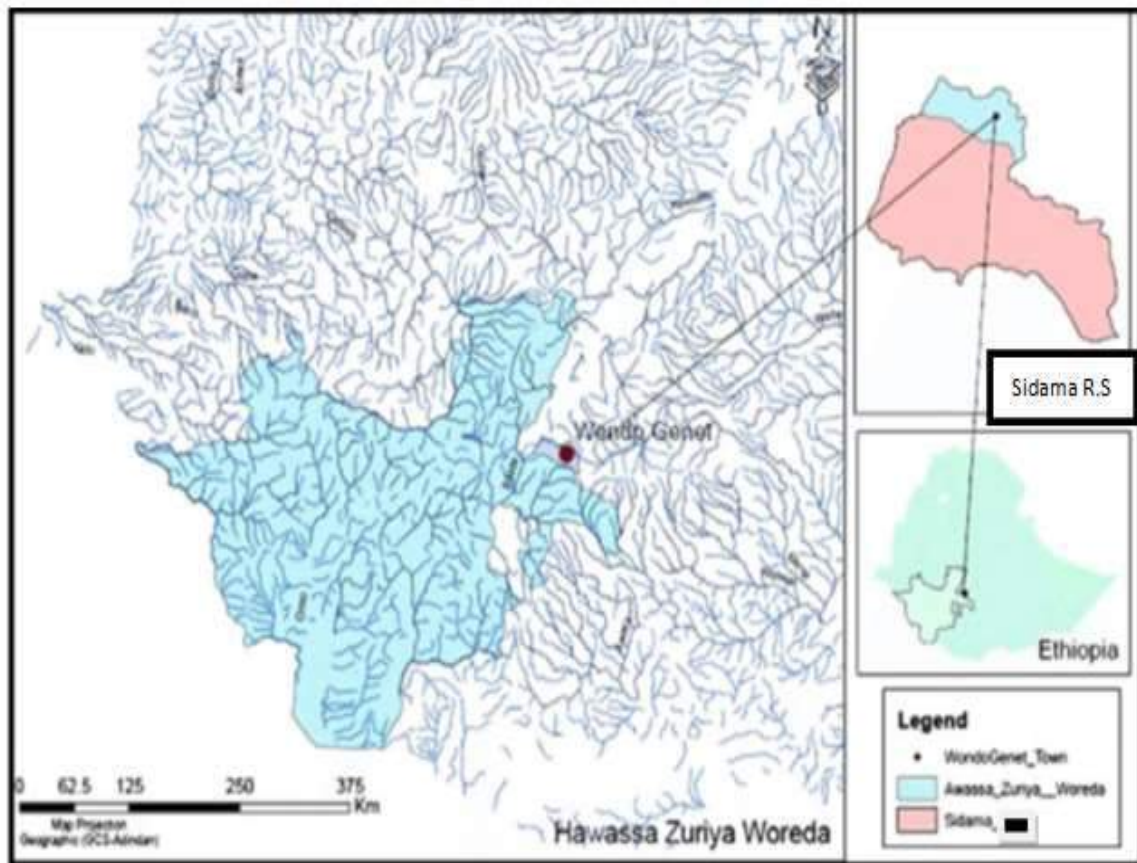
Biomass energy demand is growing steadily with population growth: whereby, wood fuel is still the most important biomass fuel in Ethiopia. While, the supply base for wood fuel is shrinking, demand for wood fuel is growing rapidly. Moreover crop residues availability has increased significantly

because of increased crop production, crop production in Ethiopia has increased by 6% while agricultural residues by 3.4% (“Ethiopian National Energy Policy,” 2013). In Wondo Genet District like other parties of the country, more than 90 % of population was fuel wood dependent to fulfil daily energy consumption. And also in the District, cash crop production like chat, sugarcane and pineapple increased due to expected higher economic returns and market accessibility. The expansion of the Chat in the District resulted in a 30% decline of natural forest and associated forest fragmentation in major Chat producing areas, a decline in food crop production, and soil erosion from steep land cultivation (Dessie and Kinlund, 2008). The main aim of the present study was to assess biomass potential of chat, sugarcane and coffee husk and to project energy potential and energy demand for coming ten years in the District.

## 2. MATERIALS AND METHODS

### 2.1 Description of the Study Area

Wondo Genet District lies at 7°10' N to 7°50' N latitude and 38°36'E to 38°38'E longitude, located in the area of the Hawassa watershed in the East African rift zone, which is 260 km south of Addis Ababa (Fig 1). The District topography is featured by rolling upland in 1700-2600 meter above sea level (masl) with one third of the land over 2200 masl and the major part of the area is steeply (>30%) sloped. There are three major land uses, namely forests, pastures and cultivated lands. The higher altitudes and steep slopes support natural forests and by comparison, in lower altitudes and gentle terrain, farmland is the main land use where a significant number of diverse natural on-farm trees grow. In the District two rainy seasons are characterized: a long one from July to September and a short one from February to April, leading to the annual rainfall be at 1244 mm and the mean annual temperature of 19 °C (Dessie Gessesse and Kleman Johan, 2007).



**Figure 1: Map of the study area**

### 2.2. Source of data

The secondary data were collected from Water Mineral and Energy office and Agricultural office of the District to determine agricultural crop potential in 2019 and primary data was collected on the

household energy consumption. Additionally, population data of the District was obtained from Central Statistical Agency (CSA) 2013.

**2.2 Type of biomass and available potential in the District.**

According to the secondary data collected from Wondo Genet District in 2019 the most abundant biomass resources available in the area were generally divided into three biomass fractions: estimated agricultural residue (Energy crops of sugarcane, enset, chat, maize, and coffee) was 70,500 tons per year, forest biomass (forest residue): the estimated forest cover change in the District is 11,200 hectares per year and livestock waste (animal dung and slaughter wastes) is predicted to be 143,000 Kg per year.

**2.3 Biomass Potential Projection of the District after 10 years**

To project the future biomass potential of the District after 10 years; was estimated by using the methodology suggested by (Ayamga et al., 2015). The data from the District Agricultural office and forest development office indicated that (especially crop yields) annual growth rate have not followed any clear pattern and have been fairly constant over the last decade or it depends on the erratic annual rainfall levels. For the purpose of the present study only sugarcane, coffee and chat annual growth rate was considered in order to estimate the future biomass availability after 10 years because these selected crops are the most dominated in the District. According to secondary data obtained in 2019 from District Agricultural office, annual growth rate of biomass is sugarcane (2.3%), chat,(2.7%) and coffee husk (1.4 %). The projection of biomass potential for the District was calculated using empirical formula suggested by (Ayamga et al., 2015).

$$P_n = P_0(1+r/100)^n \text{ ----- e.q (1)}$$

where,

$P_n$  = future biomass available,

$P_0$  = current biomass available,

$r$  = growth rate of biomass type, and

$n$  = projected number of years.

**2.4 Estimation of Current and after ten years energy consumption of the District**

To estimate the District's current and future energy consumption; purposive sampling method was used. Accordingly, 60 electricity users households were selected. The energy consuming house equipments (electric cooking stove, enjera baking electric mitad, refrigerator, lighting television and others) were carefully obtained by interviewing the sampled households. Finally, in the year of 2019 the District's energy consumption and after 10 years energy consumption of the district were determined by using empirical formula suggested by (Bhattacharyya and Timilsina, 2009).

$$AEC_{(kWh/day/hh)} =$$

$$(AP_{(kW)} * AT_{(hr/day)}) / \text{House hold (HH)} \text{ ----e.q (2)}$$

Where,

AEC is average electricity consumption per day per household in Kilo watt hour per day (KWh/day)

AP is average power consumption per day in kilo watt (KW)

AT is average time used per day (hr/day)

HH is number of family in the household

**To project the energy consumption after coming ten years was used the formula:**

$$P_c = \text{population no} \times \text{annual energy demand growth rate} \times P_n \times n / \text{number of households} \text{ ----- e.q (3)}$$

Where,

$p_c$ , = predicted consumption per year

$P_n$ , = current energy consumption per year

$N$  = predicted year

Ethiopian energy demand growth is 9% year (Guta and BBerner, 2015).

**2.5 Population of the District and projection after 10 years**

Based on the CSA report of 2013, Wondo Genet District has a total population of 232,899 of whom 119,010 are male and 113,889 female; 41,783 or 17.94% of its population are urban dwellers. The future population growth of Wondo Genet District was estimated by depending on the current Ethiopian population growth rate, which was taken from the Ethiopian central statistical agency (CSA) and it is calculated as follows:

$$P_f = 2.6/100 \times P_r \times n \text{ -----e.q (4)}$$

Yearly population growth rate of Ethiopia is 2.6% (source:- World bank report,2019)

$P_r$  = current population and

$n$  = projected number of year.

Finally, the house hold number was estimated based on current Ethiopian average persons per household (6 persons per household).

Total number of households in 2019 =  $232899/6 = 38817$

Number of population will increase after ten year =  $2.6/100 * 232899 * 10 = 60553$

Total number of population after ten year will be =  $232899 + 60553 = 293452$

**2.5 Deteriming the Potential of Agricultural Residues**

Even though, the crop residues have different categories (gross residues and surplus residues), here only the surplus residues were considered since the farmers use the others for different purposes. The formula used for calculating the energy potential from crop residues was adopted from (Okello et al., 2013). Surplus amount of residue, which can be used for energy purposes, is given as:



$$R_s(i) = \sum_{i=1}^n \{ [RPR_i * (A_i * Y_i)] * SAF_i \} \text{ ----- equation (5)}$$

Where:

$R_s(i)$  is the surplus residue potential of ith from n number of crops (ton/year),

$SAF_i$  is surplus availability factor or surplus residue fraction of the crops,

$A_i$  is the area used for crops ith per hectare,

$Y_i$  is yield of the crop ith (ton/area),

$RPR_i$  is residue to product

**Table 1: Potential of Biomass to Energy Conversion**

Types of crops	Residue to product ratio (RPR)	Surplus availability factor (SAF)	Lower heating value (LHV) MJ/Kg
Sugarcane bagasse	0.29	1	13
Sugarcane top & leaves	0.32	0.8	15.8
Coffee husk	21	1	12.8
Chat	0.35	0.9	20

Source :- (Gabisa and Gheewala, 2018)

## 2.6 Estimation of Energy Potential from Biomass

Bio-energy crop residue potential from biomass was estimated method use (Okello et al., 2013).

$$E_{ACR} = \sum_{i=1}^n R_s(i) * LHV_i \text{ ----- e.q (6)}$$

Where:

$R_s(i)$  is the surplus residue potential of crop ith from n number of crops (ton/year);

$LHV_i$  is the lower heating value of crop ith from n number of crops (MJ/kg)

## 2.7 Biomass to Energy Conversion

The estimation of potentially producible energy requires the approach of how much energy is stored in the biomass. Once having this value, the electrical energy that can be produced is obtained applying the efficiency of the conversion system to the total amount of energy released from the available biomass.

Potentially generable Electricity estimation (GW) = total biomass energy potential (GW) × energy conversion efficiency ( $\eta$ ) (in this case efficiency = 37% (Sharma et al., 2014). (Sharma et al., 2014)

## 2.7 Projection of the District's Biomass Energy Potential after Ten Years

Electricity generation from biomass after ten years was calculated by the formula as follows

$E_g = E_c \times \text{efficiency} (\eta) \times \text{projected year (in this case 10 years)}$  ----- e.q (7).

Where,

$E_g$  = energy generated after ten years

$E_c$  = current electricity generated from biomass

$\eta$  = Energy conversion efficiency given which was 37% (Sharma et al., 2014).

## 2.8 Projection of the District energy consumption after ten years

Annual population growth rate of Ethiopia is 2.6% (World bank 2019) and energy demand growth rate is 9% per year annum (Guta and BBnrer, 2015) .

The collected data was analysed by using Microsoft excel software.

## 3. RESULT AND DISCUSSION

### 3.1 Available biomass potential in the District

Based on data collected from Wondo Genet District agricultural development office in 2019 the potential of biomass and biomass energy potential are given in Table 2&3.

**Table 2: Potential of biomass in the District**

Crop type	Production Year	Area covered (ha)	Average crop production (ton/year)	Average yield (ton/ha)
Sugarcane	2019	441	1543.5	3.5
Coffee	2019	685	68.5	0.1
Chat	2019	4288	17152	4
Total		5414	18764	7.6

**Table 3: Biomass residue and energy potential of the District**

Type of crop	Type of residue	Production/ton/year	RPR	SAF	Surplus residue potential (ton)	Total residue (ton)	LHV(MJ/Kg)	Efficiency	energy potential (GJ/year)
coffee	coffee husk	68.5	21	1	1438.5	1438.5	12.8	0.35	6444.48
chat	chat waste	17152	0.35	0.9	5402.88	5402.88	20	0.35	37820.16
sugarcane	bagasse	543.5	0.29	1	157.65	157.65	13	0.35	717.3
	tops & leaves	1000	0.32	0.8	256	256	15.8	0.35	1415.68
Total		18764			7255.03	7255.03		0.35	46397.62

**3.2 Biomass energy potential and energy consumption of households**

By using the obtained energy potential and recommended

efficiency (efficiency given 35%) it was able to calculate energy potential from each crop and the result is given in Table 4.

**Table 4: Biomass energy potential and energy consumption of households**

Crop type	Estimated energy potential (GJ/year)	Total number of household	Average energy consumption (Kwh/Day/HH)	Total household energy consumption (GWh/year)
Chat	37820.16			
Coffee	6444.48	38817	6	2040.22152
Sugarcane	2132.98			
Total	46397.62			

**Table 5: Projected biomass and energy potential after ten years**

Crop type	Biomass type	Current biomass available ton/year	Projected biomass ton/year	Projected energy conversion efficiency	LHV(MJ/Kg)	Projected energy generation after ten years (GJ/year)
Chat		5402.88	7052.28	0.37	20	52186.87
Coffee husk		1438.5	1653.063	0.37	12.8	7828.90637
Sugarcane	tops & leaves	256	321.36	0.37	15.8	1878.67056
	bagasse	157.65	197.902	0.37	13	951.9086
Total		7255.03	9224.602			62846.355

**Table 6: Energy demand projection after ten years**

Current population	Projected population	Current total energy consumption GWh/year	Projected energy consumption after ten years (GWh/year)
232899	293452	2040.22152	472.021009979

Even though, residue to product ratio of chat is low, Surplus residue produced from chat in the District was very high in case of chat planted area coverage percentage in District is very high (Dessie and Kinlund, 2008). The lowest residue potential was obtained from sugarcane with low production

coverage area. The energy from chat, coffee husk and sugarcane waste in Wondo Genet District was 46397.62 GJ/year. Chat residue had high energy potential with 37820.16 GJ/year and sugarcane residues was low in area and had lowest energy potential among chat residue and coffee husk in



2019. The overall energy potential of the District was 46397.62 GJ/year, and total energy consumption in one year for different household utilities was 2040.221520 GWh/year. This indicated that; the available biomass potential of the District could substitute the energy demand of the area.

## CONCLUSION

Based on the present study and available data, Wondo Genet District had high potential for waste and coffee husk and low potential of sugarcane biomass. Conversion of available biomass to energy could substitute energy demand of both present and after coming ten years of the District.

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## **EXPRESSION OF UZBEK AND KOREAN ETHNOGRAPHIC LEXICON IN EVERYDAY LIFE (ON THE EXAMPLE OF THE LEXICON OF SAMARKAND KOREAN DIASPORA)**

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**KEYWORDS:** linguocultural, glutonic, ethnographism, lexicon, lexical-semantic, concept, ethnic, lexical-semantic, deport, dialect, suyunchi, folklore, *aqeeqah*, dominant position, ethnographic lexicon (EL), lexical-semantic group (LSG),

The Korean Diaspora is one of the largest ethnic groups in Uzbekistan, with a population of over 200 thousand. CIS Koreans call themselves Koryo-saram. Their language is Koryo-mar<sup>1</sup> dialect. Being close to the Yukchin dialect, the Koryo-mar underwent the strong influence of the Russian language. Koryo-saram also speak the local languages: Uzbek, Russian, Kazakh and others. Representatives of many nationalities and ethnic groups have lived in Uzbekistan since ancient times. Interethnic harmony is one of the priorities of the state policy of the Republic of Uzbekistan, that implies the unity and cooperation of numerous nationalities and ethnic groups, living in a particular area. This issue is also very important for the Republic of Uzbekistan. The harmony in interethnic relations effectively influences the political and economic development of a multinational society. The vivid example is Uzbekistan – South Korean relations. There are 31 Korean national cultural centers in Uzbekistan. They have the same conditions for the development of language, culture and customs as other nationalities and ethnic groups. The Interregional festival of Korean language and culture is also traditionally held with the support of the South Korean embassy [1]. In a letter of thanks to the President of the Republic of Uzbekistan, President of the Republic of Korea Park Geun-hye said, "I was

pleasantly surprised and deeply impressed by your attention to the Korean diaspora in Uzbekistan[8]."

On May 19, 2017, the Decree of the President of the Republic of Uzbekistan "On measures for further improving interethnic relations and friendly relations with foreign countries" was adopted. In order to ensure the stability of civil harmony and peace between different nationalities, to strengthen the sense of a multi-ethnic family, to support and develop the activities of national cultural centers and friendship societies, to expand cultural and educational ties with foreign countries on the basis of the International Cultural Center the Committee on Interethnic Relations and Friendship Cooperation with Foreign Countries under the Cabinet of Ministers of the Republic of Uzbekistan was established [9]. The Committee is tasked with ensuring interethnic harmony and tolerance in society, promoting peace-loving policies, achievements and progress in all spheres of life, strengthening the friendly relations with the international community, including the Uzbek diaspora abroad [4]. The Decree "On measures for further improving interethnic relations and friendly ties with foreign countries" pays special attention to educating young people in the spirit of tolerance, respect for national and universal values, preservation of history, culture, national traditions and customs. In this regard, our article meets today's demand.

In world linguistics, becomes important to study the ethnographic lexicon, which contains linguistic and cultural information about the material and spiritual culture, lifestyle, national traditions and values of peoples, and to pass on the ethnographisms, which are the unique treasure of languages to future generations. The systematic study of the lexical and

<sup>1</sup>Central Asian dialect of Korean language





semantic features of ethnographisms related to the concept of food in the linguistic aspect is one of the important factors ensuring the development of the field.

To study the work done on the research of gluttonic ethnographisms in Uzbek and Korean linguistics and, on this base, to analyze the research on the lexicon of dialects of Koreans living in the Samarkand region;

By studying the features of Samarkand Korean dialects and its connection with the Korean literary language, we aimed to reveal lexical-semantic features of ethnographisms that express the concept of food in ceremonies in Samarkand Korean dialect.

Every nation in the world pays special attention to the issue of food. Among peoples of the East, this issue has risen to the level of a philosophical problem. After all, eating habits and culinary traditions have a national significance and are a part of the national culture.

It is known that the ceremonies associated with the birth of a baby have a special place in the spiritual culture of Samarkand. It is important to pay attention to the lexical units associated with this process and study ethnographic words related to the birth of a baby, the ceremony of cradle, beshketti, chillaqochdi, solendar, aqeeqah to'y, muchal wedding.

With the birth of a child, the process of preparing him for his future life and society begins through the ancient traditions of the people. This process is carried out through rituals such as naming, bathing the baby, cradling, chillqochdi, chilla, ceremony of first teeth, cutting the nails, hair removal, muchal, going to school, and so on, as well as the influence of ethnographic traditions and folklore language. We are interested in the fact that each of the named processes are organized with preparing its own special dishes. For example, the ceremony of naming a baby: aqeeqah is an Arabic word for a ceremony in which sheep is slaughtered at a feast on the seventh day, and the child is given a name. Although the names given to children are mainly included in the Dictionary of Uzbek Names [2], sometimes anthroponyms of ethnographic nature are formed by adding the suffixes -a and -ay to the names of girls. For example: Amir - Amira, Aziz - Aziza, Rahim - Rahima, Sabir - Sobira, Adash - Adashoy, Erkin - Erkinoy, Olmas - Olmasoy. Sometimes it is named depending on the month in which the child was born: Rajab - Bibirajab, Ashur, Barot, Muharramoy, Qurbon - Qurbonoy; b) EL on cradle-laying, beshketti, hair-cutting ceremonies: in ethnography belonging to this category, lexemes such as beshikka, beshik, alla are in a dominant position.

In Korean, the vocabulary related to the birth of a child and its care can be described and classified as follows: after the birth of a child, according to tradition, the leader of childbirth, the spirit of goodness - Samsin halmoni (Samsin momo) is gifted. Such gifts are also performed on the third, seventh, fourteenth, and twenty-first days of a baby's birth. It is called Tol. The ceremony consists of three stages, which are as follows:

- 1) giving thanks to the Creator and the spirits of goodness and praying for the health, life, happiness of the child;
- 2) to make special festive clothes for the cause of the birthday, to dress nicely and, as a rule, to decorate the table and to hold a ceremony to predict the fate of the child;
- 3) Organize a banquet for relatives and neighbors.

So celebrating a child's one-year-old starts with a thanking. The ceremony began the day before and was conducted by special grandmothers. Now the families need to hold the ceremony themselves. The special table is served with steamed rice, seaweed soup, water (in ancient times it was taken from a well in the early morning), and next to the table is a loaf of rice bread. It was understood that the bread should not be eaten outside the house, only by family members, and that if it went out, the birthday owner's happiness would be lost. Usually thanksgiving was done only by women and they were the baby's mother, grandmother and relatives. In thanksgiving, prayers are said several times. Then the family sits down for breakfast. Breakfast is steamed rice, seaweed soup. The second part of the ceremony is the main stage. The child's parents prepare festive clothes in advance. On the morning of the holiday, the child is dressed. This tradition has been preserved in historical records during the reign of King Yojon (reigned 1721-1724). There are two types of baby clothes: for a boy and for a girl.

### Boy's clothes

1. Purple or gray children's pants (paji);
2. Pink or ribbon-colored blouse (chogori) of different colors;
3. A striped robe of different colors ( turumagi);
4. A blue jacket (chokki) decorated with gold or silver threads;
5. A narrow blue striped top robe (chonbok) made of red thread decorated with gold or silver threads;
6. Stockings with flowers (thareboson);
7. Specially sewn black hat (tokkon).



### Girl's clothes

1. Separate colored cut yellow blouse (chogori)
2. Raspberry or dark pink long skirt (chximma)
3. Triangular jewelry of different colors (norige kvebul)
4. Hat decorated with gold or silver threads ( chovabi)
5. Camisole ( peja)

The main dishes for the birthday are rice and fruit. These include peksilto-bread with several layers, rectangular rice cakes - injolgi, steamed red beans (sonphan), multi-colored rice bread mujigettok, and round beans sprinkled with sweet beans (kyondan). You should choose at least three or five types for the holiday table. However, it is necessary to have phesolgiva and kyodan from them.

Each dish has its own specific meaning. It should be noted that steamed rice bread is a wish for happiness, health and good luck to the child not food for guests. The prepared ttok should be eaten by the child himself, his parents, relatives and neighbors. A family that buys rice cakes for breakfast returns the dish with a gift of money, toys, rings, kitchen utensils, and so on, without returning it dry. The dishes are not washed in the sense that there will be more holidays in the birthday owner's house. Steamed rice cakes are a symbol of purity and longevity.

Red bread is believed to drive away evil spirits and protect against disease and evil. The Koreans say that the pxesolgi should be on the holiday table until the child reaches the age of ten, as it is important for the child to grow up healthy and energetic. Colored cakes symbolize the five colors: blue, yellow, red, white, and black (metal, wood, water, fire, earth). It is known that red, blue, black, white, yellow colors in Korean are the traditional colors of Korea 오방색 (obangsaek). They each have a history and meaning. We see these colors in national costumes and dishes. According to the data, the history of colors goes back to a doctrine that originated in China. 음양오행 In-yan and according to the five-element theory 음양 In-yan - eum-yang represents light and darkness in the image of the sun and moon. (오향) Oxyan (ohyang) five elements; a symbol of fire, water, wood, metal or gold and earth. They also represent the south, north, east, west and center. The whole universe is in constant motion: soil is food for plants; water - food for plants and animals; fire - heat for all living things, wood - food for living things, and so on. It all happens in harmony. They are also the sweet, salty, sour, bitter, pungent flavors, and serve to preserve harmony. Half of these cakes are made with mince and half without mince. Bread with mince helps a child to have a flawless heart, and

Koreans firmly believe that bread with mince, it expands the worldview.

A muzhigettok of different colors is a sign that in the future the child's life will be rich in colors like a rainbow. Rice, apples, pear, jojoba fruits are also served on the table.

Now let's turn our attention to the Uzbek tradition. It is known that child care in the cradle has existed among the peoples of Central Asia since ancient times, there are many traditions associated with the cradle and cradle to child (or tying), and their language expression forms a separate ethnographic lexical layer: cradling, cradle head, cradle delivery, cradle making. In turn, the concept of cradle-making forms a small lexical-semantic group (LSG): the base of the cradle is like an arrow, a board on which the child lies, a hole in the foot of the cradle, and a tray placed on it. The following ELs, which are indirectly related to the concept of "cradle making", can also be listed: master - cradle master; willow, walnut and mulberry - the names of the trees from which the board is made to make a cradle; although the cradle is made of light wood for easy vibration, its foot and handle are made of solid wood such as walnut and mulberry.

EL, which represents the equipment of the cradle: a blanket, which is not made of cotton, but of straw, millet or roasted pea skin (to absorb sweat and urine) and has its own symbolic features; then they write cotton, thin blankets, and rugs. These include ELs such as foot wraps, handcuffs, head and shoulder straps, foot and arm straps, and pillowcase covers. The mother, aunts and other female relatives of the woman with the child will also be invited to the ceremony. The kaywani, bibihalfa, or nurani grandmothers first recite the blessed prayer, and the bathed child is placed in a cradle with white oil on his joints. EL, which represents these processes, includes: a blessed prayer, a small loaf of bread (a loaf of bread for the whole child), a stone (a loaf of bread for the child to be healthy and energetic, or a "head made of stone"), a joy money (given to children by grandparents), a knife (to keep the child safe), a pepper (to protect it from the evil eye), mutton (in the sense that the child's food is whole) and a snail (in the sense of giving alms, joy and blood to the neighbors for the birth of the child).

Chilla is the first forty days of a baby. This period is divided into small chilla (20 days) and large chilla (40 days). After the mother and child chill, the bride's parents hold a chilla ceremony. According to the "Explanatory Dictionary of Uzbek ethnographisms", "chillaguzon". Forty days after the birth of the baby, that is, after the chill has come out, the child is taken to a close neighbor and relatives, visited, and a ceremony is held in this regard. Also, (tooth extraction) and (hair



removal) are rituals that are performed when the child is 4-5 months old and one year old, and no specific LSG has been formed in this area.

b) Words and terms related to circumcision and muchal wedding. A large EL group has been formed in Samarkand for these specific types of weddings: hatna to'y (wedding for circumcision of a boy), sunnat to'y, maslahat oshi, master for making hanta (circumcise), dressing in turbans, circumcision, and wedding ceremonies or wrap a turban), which is why this tradition is known as sallabandon. The muchal wedding is held when a child reaches the age of 12 and is associated with the account of the 12 animal years available in Eastern peoples: mouse, cow, tiger, rabbit, fish, snake, horse, sheep, monkey, chicken, dog and eldest. The number 12 is a number that represents perfection. Parents celebrate their muchal weddings with good wishes when their children turn 12, putting new clothes on the child. At such a party, parents, friends and relatives take part, have fun, congratulate the child on the wedding. To make the Muchal wedding even more fun, 12 young children wear 12 animal masks and sing.

In our article, we have tried to show that the traditional traditions of the Samarkand-Korean ethnic group have been preserved and the changes in the social life of the people through the study of glutonic lexical units. We will continue the topic in our next research

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<sup>1</sup> The content of the prayer: "This is a good commandment, the health of all, the prosperity of the place, the joy of the home, may the family be blessed on this happy day. May Allah give the newborn baby with his life and good footsteps, may he grow up to be smart and intelligent, and may his parents enjoy it. God bless the guests gathered here and here, the sweet voices of the children from each of our homes. "

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# DIGITAL INTERACTION AND STUDENTS' PURCHASE DECISION IN E-TAILING INDUSTRY IN PORT HARCOURT

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## ABSTRACT

*This study empirically examined the relationship between digital interactions on students purchase decision. Survey research design was employed in the study. The population of interest was 9,743 students, with a sample size of 370 students. Spearman Rank Correlation Coefficient were used for analysis with the aid of Statistics Package for Social Sciences (SPSS) version 20. The study finds that digital interaction strategies significantly influences students purchase decision in varying degrees. It was therefore recommended that e-tailing industry should research into the digital interaction needs of the students and take advantage of its use in order to effect their purchase decision positively.*

**KEYWORDS:** Digital Interaction, E-tailing Industry, Purchase Decision

## INTRODUCTION

Digital interaction provides a marketplace where buyers and sellers develop transactions directly and interactively beyond the physical limitations experienced with the traditional brick and mortar retailers (Kiang & Shang, 2015). The speedy development of information communication technology and electronic commerce has allowed consumers to purchase products and services online (Lai, 2014). It is a resourceful tool which enables firms to create strong brands and gain competitive advantage (Tiago & Verrissimo, 2014).

Internet shopping is a phenomenon that has witnessed a rapid growth nowadays as such has significantly influenced the business environment. An examination into the exponential growth of the main players of this industry indicates that there is still a large reservoir of market potential for e-commerce. The

emergence of social media is among the most pronounced development in the history of commerce. On regular basis 100,000 tweets are sent, 684,478 contents are shared on Facebook, 2 million search queries are made on google, 48 hours of video are uploaded to YouTube, 3600 photos are shared on Instagram and 571 websites are created (James, 2012).

Retailing is the set of business activities that adds value to the products and services sold to consumers for their personal or family use. On the other hand, electronic commerce is a form of electronic business, it is a means of sharing business information through the internet. Ozuru and Kalu (2006), views e-tailing as shopping online where goods and services are sold directly to the consumers electronically; which is also known as business to consumer (B2C).

Kiang & Shang (2015), indicated that the purchase behaviours of online shoppers play an important role in the success of e-retailers. Otim &



Grover (2006), stated that service delivery through websites relates to the extent to which a website facilitates efficient and effective shopping, purchasing, and delivery of products and services. Digital interaction not only encourages user-generated contents but also extends the focus to the users by permitting them to share contents among different networks. The fierce competition presently existing in digital environment justifies the relevance of developing online services to capture the attention of surfers. Thus, e-business requires more than just offering a website; despite the fact that most firms ignorantly believe that just being online is enough to generate interest and improve their business (Suh, 2015).

However, the previous researchers did not explore the relationship between digital interaction and

students purchase decision; few studies have been carried out to ascertain the extent to which social media affect consumer purchase decision of e-tailing firms. For instance, Hussain and Adamu (2014), in their research, concluded that the use of social media especially Facebook and twitter plays important role in facilitating purchase decisions. Additionally, Murphy (2009), in his study found that social media networks allows e-tailing firms to advertise their products through low cost and low risk channels. Therefore, given this knowledge gap, the current researcher's point of departure from previous studies is to empirically establish the relationship between digital interaction and students purchase decision of e-tailing industry in Port Harcourt.

## RESEARCH PROBLEM

The huge growth of online shopping has driven intense competition among e-commerce retailers, who increasingly see the customer experience as vital (Lai, 2014). Online consumers identify and value the advantages of online services, at the same time e-retailers face a set of specific demands in the online environment based on the fact that on the Internet, a competitor is only a click away (Yun & Good, 2007). The proliferation of many e-tailing firms in the e-tailing industry has resulted to huge competition for a better

patronage. In spite of the increase in the rate of internet penetration, e-tailing firms (Jumia, Konga, Jiji, Kara, Vconnect, etc) are faced with the need to constantly adapt to changes and trends in technology; more so, issues like servers or browsers being down, software malfunction, etc., can be a major setback to the success of e-tailing firms. Furthermore, the wide exposure of digital media has resulted in consumers being more selective about purchasing the products of online firms; making it difficult for the firms to attract the customer's attention (Noel, 2009).

## AIM OF THE STUDY

### THEORETICAL FOUNDATION

#### Instant Gratification Theory

This theory was propounded by Robertz in the year 1956. Instant gratification theory was first used by Sigmund Freud to describe the function of the 'id', his proposed component of the unconscious mind that is driven purely by instincts (Good Therapy, 2015). At the center of instant gratification theory is one of the most basic drives inherent in humans (that is, the tendency to avoid pain and see pleasure); this tendency is known as the pleasant principle.

#### Study Variables and Model Specification

The study adopted Digital Interaction (DI) as independent variables with its measures as Search engine (SE), Social Media (SM) while Students

The aim of this study is to examine the relationship between digital interaction and students purchase decision of e-tailing industry in Port Harcourt Today's generation are fondly referred to as 'microwave generation' because they are used to getting things done very fast. As a result of internet evolution and technology there is little or no patience in people any longer. Instant gratification theory saw the fast place environment in which we inhabit, that requires instant action and how things happen at once and too quickly. By this, (Allard et al, 2001) opines online shopping has impact on consumers because the use of internet to make purchases ensures the buying process is faster, efficient and effective.

Purchase Decision (SPD) was adopted as the dependent variable measured with Decision to buy (DB) and After Purchase Behaviour (APB).

## FUNCTIONAL RELATIONSHIPS

This study reiterate its aim to establish functional relationship between the measures of predictor and criterion variables. For the purpose of this study, we developed a model specification to aid the functional relationships as follow:

The attributes of this study are follows:

$$SPD = f(DI) \dots \dots \dots (1)$$

$$DI = f(SE, SM) \dots \dots \dots (2)$$

$$SPD = f(DB, APB) \dots \dots \dots (3)$$



$(DB, APB) = f(SE, SM)$   
..... (4)

Where:

SPD= Students Purchase Decision

DI = Digital Interaction

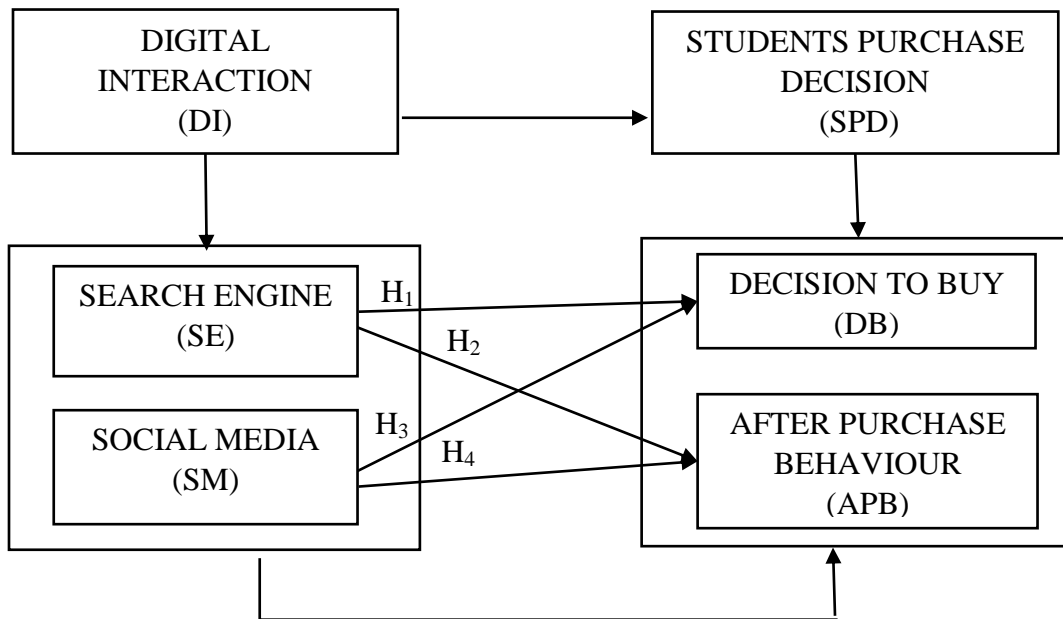
SE = Search Engine

SM = Social Media

DB = Decision to Buy

APB = After Purchase Behaviour

**CONCEPTUAL FRAMEWORK/ OPERATIONAL FRAMEWORK**



**Fig 1: Conceptual/ Operational framework on Digital Interaction and Students Purchase Decision in E-tailing Industry in Port Harcourt.**

*Source: Researcher's Concept 2019, as adapted from Silverman (2001); Ayodeji (2018).*

**EMPIRICAL REVIEW**

George (2004) has studied how a consumer's beliefs about the privacy and trustworthiness of the Internet might ultimately shape their attitudes towards the Internet and their purchasing intentions. In a similar vein, researchers have studied how the Internet's perceived 'usefulness' and 'ease of use' (Bhattacharjee, 2000; O'Cass & Fenech, 2003) might ultimately shape consumers' intention to shop.

**REVIEW OF LITERATURE**

**Digital Interaction**

Digital interaction enables customer post reviews and update about services, firms, brands, products at firm's websites and even third party websites and social networks and these reviews have the tendency of reaching a larger number of potential customers (Kannan & Alice, 2017); it provides a

Rasool and Madni (2014) from their research, found that 53% of customers get their information from social media, firm's websites before purchasing a product. Also, Haubl and Trifts (2000) in their research, investigated the nature of the effects that interactive decision aids may have on purchase decision making in an online shopping environment.

suitable environment for experiential communication between e-tailing firms and its customers

According to Chukwu and Uzoma (2014), the digital platforms of e-tailing firms (e.g. Jumia, Konga, Jiji, Payporte, Vconnect etc.) offers a wide selection of styles and brands, complete convenience, easy access from any location, efficient customer service, secure payment through bank deposit or online banking as well as cash on delivery, fast delivery services,



effective return policy in case of any defects, etc. Digital interaction is an integrated communications environment where electronic or digital devices are the tools which communicate and manage the content and activities within it.

In the words of Ayodeji (2018), digital interaction provides a place for online shopping within the internet, which includes websites, cloud servers, search engines, social media, mobile apps, email, audio and video and other web-based resources, online market place, etc. In this study, we limited our dimensions of digital interaction to **search engine and social media**.

### **Search Engine**

Search engine is a mechanism for effective selection, Chan et al., (2011) explained, customers acquired through search engines purchase more and constitute higher customers' value compared to those gotten through other online or offline channels. These search engines includes Google, Bing, Yahoo, Ask.com, AOL.com, Baidu, Internet archive, etc; its purpose is to extract requested information from the internet, as such, search engine becomes a day to day tool for interaction. Search engines provides access to free information in products and services, enabling consumers to identify brands and firms that fit their needs and wants thereby resulting in their purchase decision (Kannan & Alice, 2017). Thus, the following hypotheses were conceptualized:

Ho<sub>1</sub>: There is no significant relationship between search engine and decision to buy in e-tailing industry in Port Harcourt.

Ho<sub>2</sub>: There is no significant relationship between search engine and after purchase behaviour in e-tailing industry in Port Harcourt.

### **Social Media**

Dann & Dann (2011), indicated that social media formation is based on interconnected elements such as social interaction, content and communication media; thus it enables a two-way conversation. Marketing through social media is an umbrella term which entails the use of social platforms as marketing tools; it is the use of the social through media to market businesses (Weinberg, 2009). Social media is an

### **Students Purchase Decision**

Consumer behaviour has been a major subject of market research since the beginning of the 21<sup>st</sup> century (Mokrysz, 2016). Purchase decision is the selection of an action from one, two or more alternative choices (AAker et al., 2014). Kotler and Armstrong (2005) posits, decision making process is made up of five stages to acquire products or services. It proceeds from

essential touch point in today's purchase decision process from the stage of need recognition to post purchase behaviour (Smith & Zook, 2011).

Weber (2009) opines, social media offers opportunities to achieve potential customers who have interest in sharing to others. The global average time spent per person on social networking sites is 6.9 hours per month (Delaney & Salminen, 2012). In the words of Trattner and Kappe (2012), social media sites such as Facebook, Twitter, LinkedIn, Youtube, Google+, etc allows customers to interact with one another; thus acting as a vehicle which aids firms gain traffic to their websites through links and adverts placed on their social media sites.

Drury (2008) argued, the use of social media platform by e-tailing firms is no longer a one dimension but a two-way process which engages a brand and an audience thereby fostering purchase decision. In the words of Safko and Brake (2009), social media involves activities, practices and behaviours among people who gather online to share information, knowledge and opinions using a conversational media. Social media such as Facebook, Twitter, Instagram, etc. are dynamic tools that facilitate online relationship (Golden, 2011); it is a relatively low cost of marketing that allows e-tailing firms to engage in direct and end-user contact (Laplan & Haenlein, 2010).

Furthermore, Weber and Weinberg (2009) posits, advertisement via social media reaches potential customer thereby inducing their purchase decision. The growth of social media has allowed for increased awareness in terms of a changing environment (Mayfield, 2011) thus social media is playing an increasing essential role in marketing and customer purchase decisions (Cuming, 2015). Therefore, the following hypotheses were formulated:

Ho<sub>3</sub>: There is no significant relationship between social media and decision to buy in e-tailing industry in Port Harcourt.

Ho<sub>4</sub>: There is no significant relationship between social media and after purchase behaviour in e-tailing industry in Port Harcourt.

the stage the consumer recognizes a need, gathers information, evaluates alternatives and make a decision. However, few stages are skipped in regular buying and routine purchases (Kotler and Armstrong, 2010).

The traditional model of decision making process (Five-stage model of the buying process) involves five steps that consumers move through when buying a product or service. Solomon et al, (2006)



opined, the decision making process is the amount of effort that goes into the decision each time it must be made. A marketer has to understand these steps to properly move the consumer to the point of buying the product, communicating effectively to consumers and closing the sale.

### Decision to Buy

This is the stage in the decision making process when the purchase actually takes place. During this stage, the customer forms an intention to buy the most preferred brand as a result of his alternative evaluation. According to Kotler (2011), this stage can be disrupted by two factors: negative feedback of others and level of motivation to accept feedback and a situation one did not anticipate such as losing a job. In the words of Backhaus et al, (2007) decision to buy is the occurrence of transaction. More so, decision to buy could be described as minor like buying toothpaste or as major like buying a car; thus, the more major the purchase

decision, the more efforts is typically put into the purchase process.

### After Purchase Behaviour

This stage consists of examining and comparing products/service features such as quality, price; the customers tend to correlate their expectation to perceived value (Macinnis et al, 2014). After the product has been consumed, the customers experience certain levels of satisfaction or dissatisfaction thereby evaluating the choice they have made in selecting the alternative. More so, Silverman, (2001) indicated that this is a phase when the customer decides whether or not to move from implementing the product only or to a full adoption; that is whether to repurchase the product repeatedly or not. Neal et al (2004), argued that it is the most important stage as it directly affects the consumers' purchase of the same product or services from the same supplier in the future. nine thousand seven hundred and forty three (9743); to determine the sample size we made use of the Krechle and Morgan Sample Size Determination Table, by this we had a sample size of 370. Thus, 370 copies of questionnaires were distributed; however after data cleaning, 356 copies was found usable. Data was analyzed using Spearman Rank Correlation with the aid of Statistical Package for Social Science (SPSS) version 20.

## METHODOLOGY

The population of this study comprised of the students from faculty of management sciences and business studies of three Universities located in Port Harcourt (Rivers State University, Ignatius Ajuru University of Education and University of Port Harcourt) that patronize e-tailing firms in Port Harcourt. In this study, our population of interest was

### Data Analysis and Presentation

**Decision Rule:** Reject null hypothesis ( $H_0$ ) if  $PV < 0.05$  but accept  $H_0$  if otherwise. Also,  $0.1$  and above = positive relationship while  $-0.1$  and above = Negative relationship.

**TABLE SHOWING RESULT OF HYPOTHESES**

HYPOTHESES	RELATIONSHIP	CORRELATION	PROBABILITY VALUE (PV)	DECISION
Ho <sub>1</sub>	Search Engine and Decision to Buy	0.843	0.000	Rejected
Ho <sub>2</sub>	Search Engine and After Purchase Behaviour	0.676	0.010	Rejected
Ho <sub>3</sub>	Social Media and Decision to Buy	0.917	0.030	Rejected
Ho <sub>4</sub>	Social Media and After Purchase Behaviour	0.742	0.000	Rejected

Source: Field Survey Data, 2019.





## DISCUSSION OF FINDINGS

The result from our test of hypothesis using SPSS version 20 reveals the following:

**Hypothesis One:** There was a positive relationship between search engine and decision to buy. The positive relationship that exists was also significant at 0.05 level of significance. The null hypothesis was rejected, thereby accepting the alternate hypothesis; this means that the decision to buy of students in Port Harcourt is directly related to the use of search engine. More so, this result concurs with the outcome of the study carried at by Hayta (2013), where it was found that students are significantly influenced by search engine when making their buying decision.

**Hypothesis Two:** There was a positive relationship between search engine and after purchase behaviour. The positive relationship that exists was also significant at 0.05 level of significance. The null hypothesis was rejected and the alternate accepted. This means that the behaviour of students after purchases is influenced by the information gotten through search engine.

**Hypothesis Three:** There was a positive relationship between social media and decision to buy of e-tailing industry. The positive relationship that exists was also significant at 0.05 level of significance. The null hypothesis was rejected, thereby accepting the alternate hypothesis. This means that social media can significantly explain the decision to buy of students in Port Harcourt. This results supports the findings of Ramnarain and Govender (2013), which shows that customers are seeking out social platforms and deliberately turning

away from traditional advertising and therefore makes their purchase decision based on the information gotten from social media.

**Hypothesis Four:** There was a positive relationship between social media and after purchase behaviour. The positive relationship that exists was significant at 0.05 level of significance. The null ( $H_{04}$ ) hypothesis was rejected, and the alternate hypothesis accepted. This means that social media adopted by e-tailing industry influence the after purchase behaviours of university students in Port Harcourt.

## CONCLUSION

The study concludes that digital interaction have a very strong association with students purchase decision of e-tailing industry in Port Harcourt.

## RECOMMENDATION

Broadly, e-tailing industry should concentrate on digital interaction and information technology, attempts should also be made to understand how students perceive them. This would help them influence students purchase decision positively.

## Practical Implication

This study provides the e-tailing firms operational in Port Harcourt and beyond with ample ideas on how to use digital interactions (social media, search engine, etc) adequately in order to ensure favorable purchase decisions which will in turn increase its profitability.

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# MULCH APPLICATION ON BARLEY GRAIN YIELD AND PHYSICOCHEMICAL PROPERTIES OF SOIL IN NEGELE ARSI DISTRICT, CENTRAL, ETHIOPIA

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## ABSTRACT

There is uncertainty about the type of mulch to use to reduce soil nutrient depletion and water loss and at the same time enhance crop yield that will also be influenced by the materials available locally for use and their management. The objective of this study was to investigate the effect of mulch application on barley grain yield and physicochemical properties of soil in Negele Arsi district, Central, Ethiopia. Experimental plots were laid on farmers fields' in randomized complete block design by taking farmers field as a replication. Five farms of each with a currently mulched plot, a year ago mulched plot with perennial mulch and conventional fields as control (15plots of 10m in width and 20m in length in general) were selected for the establishment of the experiment. Subplots of 1mx1m at each corner and a center of each main plot were used for taking barley grain yield and soil data. A total of 30 soil samples collected from two depth layers: 0–20 and 20–40cm were air-dried and passed through a 2 mm sieve to remove roots, and large organic residues. Soil organic carbon concentration in the soil samples was determined by Walkley and Black method. The soil data were subjected to a two-way ANOVA analysis using the general linear model Procedures of SAS. The pairwise comparison method was also used to assess the mean difference of the treatment types and depth levels depending on soil properties. The average barley grain yield obtained from plots mulched with perennial mulch in 2018 ( $1.52 \pm 0.209\text{kg}$ ) was higher than plots mulched in 2017 ( $1.48 \pm 0.135\text{kg}$ ) and conventional farmland plots ( $1.44 \pm 0.0962\text{kg}$ ). The overall mean SOC stock was found to be higher under plots mulched in 2018 ( $49.8291 \pm 17.9301$ ) and lower in soils under conventional farm plots ( $39.1182 \pm 13.5183$ ) than another treatment type. The highest overall mean of soil carbon stock under plots mulched in 2018 indicates that perennial mulch might be the remedy for replenishing the declining soil fertility on conventional farmlands and to increase barley grain yield on a sustainable basis.

**KEYWORDS:** *conventional farm, grain yield, perennial mulch, soil fertility*



## 1. INTRODUCTION

The choice of selection of an appropriate mulching material depends on the local climate, cost-effectiveness, and crop feasibility (Wang et al., 2015). Mulching is a very useful practice in rain fed areas for conserving nutrients in the soil profile (Sharma et al., 2010). Boosting the number of nutrients retained in the soil through mulching and limiting nutrient leaching has positive effects on crop yields (Silver town et al., 2006). The research conducted by McMillen. (2013) showed that the addition of mulching materials such as grass clippings, wheat straw, and debris of leaves of 5-10cm depth improved soil moisture by 10% compared to the bare soil. The biological and chemical properties of soils play an essential role in the regulation of organic matter decomposition, carbon sequestration, and nutrient mineralization that are crucial for soil health (Kader et al., 2017). However, it is still unknown under which conditions and to what extent changes in soil organic matter contents are governed Steinmetz et al.(2016), and furthermore, as reported by Chapman et al. (2012) having such kind of knowledge is important for estimating soil carbon stock in intensive agricultural practices in which most of the mulching materials are removed at harvest.

Mulching with vegetative materials is a highly beneficial and widely-investigated agro-technique in rain-fed areas but the adoption of this practice has been constrained due to the non-availability of mulch biomass locally (Sharma et al., 2010). Live mulching with fast-growing annual green manure legumes like sun hemp (*Crotalaria juncea*) or pruning of *Leucaena leucocephala* grown as hedgerows can be done for conserving moisture and nutrient cycling in maize – wheat cropping system (Sharma et al.,2010). Crop residues are preferentially used to feed domestic ruminants (De Ridder et al., 2004; Giller et al., 2009), so woody vegetation can provide an in situ source of leaf and branch biomass for soil amendment (Dossa et al., 2013). Moreover, many studies have confirmed that various types of living mulch perform differently in different soil systems (Qian et al., 2015). Therefore, more research is needed to identify the benefits of mulching with different types of soil systems (Zhong et al., 2018). There is a possibility of biomass production and nutrient cycling through live mulching of in-situ grown annual legumes as well as perennial leguminous trees and shrubs as hedgerows along the field bunds (Sharma et al., 2010). There is still uncertainty about the type of mulch to use to reduce soil nutrient depletion and water loss, and at the same time maintain or enhance crop yield that will also be influenced by soil type, rainfall intensity, and the materials available locally for use and their management (Manu et al.,

2018). The mechanisms by which woody amendments may provide benefits to soils and crops remain poorly understood, and no effective agronomic recommendations on the use of leaf and branch material currently exist in the South West Africa context (Félix et al., 2018). *Rosa abyssinica* is one of the mulching materials used in Meraro Hawilo kebele. Kebele is the smallest administrative unit in Ethiopia. It is categorized under a family of Rosacea, its English name is Abyssinian rose and in Ethiopia, it is known as Kega in Amharic language and Gora in Afan Oromo (Bekele, 2007). As Bekele. (2007) reported *Rosa Abyssinica* is ecologically found in Ethiopia in upland dry evergreen forests and margins or clearings of forests as well as in bush land and dry grasslands. So far, so many researches were conducted on different mulching materials under various agro-climatic conditions. But the scientific research that investigates the effect of perennial mulch application on barley grain yield and physicochemical properties of soil in Negele Arsi district, Central, Ethiopia was not done yet. Thus, it is imperative to investigate the effect of mulch application on barley grain yield and physicochemical properties of soil in Negele Arsi district, Central, Ethiopia.

## 2. MATERIALS AND METHODS

### 2.1. Description of the study area

The study was conducted in Meraro Hawilo Kebele, Negele Arsi district of West Arsi Zone, Oromia Regional State of Ethiopia. Meraro Hawilo is one of the 36 rural kebeles' of Negele Arsi district found at 32km distance in the southeast direction of the district's town Negele (Fig 1).

The average annual temperature of the study area varies from 10-27 °C, while rainfall varies between 500-1150 mm. The area has four distinct seasons including the dry season (December to February), the short rainy season (March to May), the main rainy season (June to August), and the autumn season (September to November) (ORS, 2004, unpublished). Meraro Hawilo is one of the kebeles' found in highland agro ecology. Gara Duro which is the highest peak (3095m) in the district is found in Meraro Hawilo kebele (ORS, 2004, unpublished).

Barley is a staple food crop in Meraro Hawilo kebele. Maize, Bean, Wheat, and Enset are also widely grown crops in the kebele.

### 2.2. Research design

Experimental plots were laid on farmers fields' in randomized complete block design by taking farmers field as a replication. Three treatments such as currently mulched plots (in 2018 physical year), a year ago mulch plot (2017 physical year), and conventional



farm plots as control were established on farmers' fields' in five-block; in this case number of block and treatments was five(5). Five farms of each with a currently mulched plot, a year ago mulched plot with perennial mulch and conventional fields as control (15plots of 10m in width and 20m in length in general) were selected for the establishment of the experiment on the farmers' field at Meraro Hawilo kebele where mulching with *Rosa abyssinica* is practiced and known in a summer season. The current mulch plot is a virgin land occupied by *Rosa abyssinica* stand but recently brought under conservation agriculture while a year ago mulch plot is a virgin land brought under conservation agriculture in the past year. Conventional farmland is the land that was under conservation agriculture but over time changed to intensive agriculture.

Subplots of 1mx1m at each corner and a center of each main plot (10x20m) were used for taking barley grain yield and soil data (Fig 2). Crop in each subplot was harvested independently and then mixed together for threshing to get one representative Barley grain yield sample for each plot. Soil samples were taken at the depth of 0-20cm and 20-40 cm (Fig 2) by using a soil core sampler of size 20cm height and 3cm in radius. The second layer soil sample was taken in the opposite direction of the first soil layer in order to avoid the effect of leaching of soil nutrients on the second layer. A soil sample was collected after barley crop harvesting completed for analyzing soil pH, soil textural class, OC%, soil organic carbon stock, available K,  $P_{av}$ , and MC%. For bulk density, a soil sample was collected independently by the same procedure followed for other soil properties and Corresponding layers, from the five small subplots within a plot, were mixed together to form one composite soil sample for each plot independently and 500gm soil from each plot was brought to Wondo Genet College of Forestry and Natural resource soil laboratory for analysis.

After gathering information from key informants on the total number of farmers who practice mulching with *Rosa abyssinica* in the village and characterization of each farm according to its previous history, a random sampling method was used for the selection of five farms to be used for laying out experimental plots. Experimental site selection criteria took into consideration factors such as availability of the practice of mulching with *Rosa abyssinica* by farmers in nearby places to each other to minimize the variation of soil characteristics that may arise from topographic difference, land aspect, altitude, site history, and others so as to minimize variation among the treatments and it was guided by the information

obtained from key informants and personal observation at the site.

A 2kg barley seed was sown on each of five current mulch plots, conventional farm plots, and a year ago mulched plots. Six procedures listed below(1-6) that are familiar among the farmers for mulching with *Rosa abyssinica* were followed for establishing experimental plots on the farmers' field: (1) Selection of pure Barley seed variety,(2)Calling for Self-help system among farmers ("Dabo"), (3)Lightly broadcasting of barley seeds by hand over *Rosa abyssinica* stand, as a single seed can bear tiller and cover the whole area,(4) Cutting and distributing of *Rosa abyssinica* over the sown seed; cutting of the branches of larger trees also carried out to minimize shade effect. Mulching with fresh *Rosa abyssinica* was conducted at this stage, (5) Chopping of *Rosa abyssinica* into pieces so as to improve germination of Barley seed and (6) Hand hoeing over bare plots so as to cover the seed and minimize seed eaten by birds was the steps followed in general for the establishment of the experiment.

### 2.3. Laboratory analysis

A total of 30 soil samples were air-dried and passed through a 2 mm sieve to remove roots, and large organic residues. Soil bulk density was determined by the core method and Soil particle size analysis (soil texture) was done by the hydrometer method (Islam KR, and Weil RR, 2000). Soil pH was measured by the standard method of measuring soil pH with a suspension of 1 part soil by weight to 2.5 distilled water using a glass electrode (pH meter) (Karaoz, 1989). Soil organic carbon concentration in the soil samples was determined according to Walkley and Black (1934). Christopher et al. (2017) reviewed a total of 100 publications for which the method used to calculate SOC stocks was recorded and identified four different methods, which vary in use of the parameters BD and rock fragments content. In method one (M1), a certain volume of soil is sampled, dried, and weighed to determine BD. Thereby, no separation into fine soil and coarse soil (rock fragments, roots) fraction is made, while C concentration is determined in a sieved fine soil sample (usually < 2 mm). Soil organic carbon stocks are then calculated as follows:

$$M1: BD_{\text{sample}} = \frac{\text{mass of sample}}{\text{volume of sample}} \quad (1)$$

$$SOC_{\text{stock}i} = SOC_{\text{con fine soil}} \times BD_{\text{sample}} \times \text{depth } i \quad (2)$$

where BD sample is the bulk density of the total sample, a mass sample is the total mass of the sample, volume sample is the total volume of the sample, SOC stock<sub>i</sub> is the SOC stock of the investigated soil layer (i) (Mg ha<sup>-1</sup>), SOC confine soil is the content of SOC in the fine soil (%) and depth i is the depth of the



respective soil layer (cm). This method does not account for rock fragments at all. In method two (M2), a certain volume of soil is sampled, dried, and weighed. However, after sieving, the mass and volume of rock fragments and coarse roots are determined. The equations can be simplified by omitting coarse roots, which is also “common practice”, although the volume occupied by roots can be considerably high. By approximating a rock fragments density ( $\rho$  rock fragments) of 2.6 g cm<sup>-3</sup> Don et al. (2007) (root density is usually assumed to be close to 1 g cm<sup>-3</sup>), BD of the fine soil is subsequently calculated as M2:

$$BD \text{ fine soil} = \frac{\text{Mass sample} - \text{Mass rock fragments}}{\text{Volume sample} - \frac{\text{Mass rock fragments}}{\rho \text{ rock fragments}}} \quad (3)$$

$$SOC_{\text{stock}_i} = SOC_{\text{confine soil}} \times BD_{\text{fine soil}} \times \text{depth } i \quad (4)$$

Thus in M2, coarse soil content is accounted for in Eq. (3), not in Eq. (4). The opposite is true for the next method (M3), in which the rock fragments fraction (vol. %/100), is determined, but only applied to reduce the soil volume (Eq. 5), and not to determine BD fine soil.

M3: Eq. (1),  $SOC_{\text{stock}_i} = SOC_{\text{confine soil}} \times BD_{\text{sample}} \times \text{depth } i \times (1 - \text{rock fragments fraction})$  (5). In method four (M4), the coarse soil fraction is accounted for in both equations, i.e. to calculate BD fine soil (Eq. 3) and the volume of the fine soil (Eq. 6)

M4: Eq. (3),  $SOC_{\text{stock}_i} = SOC_{\text{confine soil}} \times BD_{\text{fine soil}} \times \text{depth } i \times (1 - \text{rock fragments fraction})$  (6). For this research purpose, the first methodology was used as there were no rock fragments in the study area where experimental plots were established.

The factors that affect the rate of decomposition of mulch such as soil moisture were measured and soil characteristics under the experimental plots tested. Soil moisture content was determined by taking a fresh soil sample from depths of 0-20cm and 20-40cm in the experimental field at the end of the summer barley growing season. Sampled fresh soil was dried, and weighed in the oven for 24 hours at 105°C. The gravimetric soil water content was determined using (1) after weighing the oven-dried soil sample (ICARDA, 2013).

$$\text{Soil moisture (\%)} = \frac{\text{fresh soil weight} - \text{dry soil weight}}{\text{dry soil weight}} \times 100 \quad (1)$$

The Available Phosphorus ( $P_{\text{ava}}$ ) content was analyzed using the Olsen method. (1954) also, extractable K was measured by flame Photometer. The method uses a neutral ammonium acetate solution (1 N) to replace the cations present on the soil exchange complex.

The organic matter content of soil can be roughly estimated from the total nitrogen content of soil by multiplying the percent total nitrogen by 20.

This assumes a 5% N in the organic matter of C: N ratio of 11:6 since the organic matter is conventionally assumed to contain 58% carbon. This estimation of the soil organic matter from the nitrogen content may be as accurate as from the carbon content. Percent of total nitrogen = % organic matter / 20 (Nelson D.W and E.Sommers, 1982).

#### 2.4. Statistical Analysis

The first test for normality (‘Kolmogorov-Smirnov’) for the properties of the soil was conducted. The ANOVA models were utilized to compare the effect of treatment types and soil depth depending on soil physicochemical properties using the general linear model (Proc GLM with Tukey’s HSD) procedures of SAS software (SAS Institute, 2002). Pearson’s correlation coefficients were tested for significance using  $p < 0.05$  as a criterion for significance. The pairwise comparison method was also used to assess the mean difference among the treatment types and depth levels depending on soil properties.

### 3. RESULTS AND DISCUSSIONS

The result from experimental plots established on farmers' land indicated that yield obtained from current mulch plots was on average higher than a year ago mulched plots, and the least was obtained from conventional farmland plots (Fig 3). The yield levels of CA systems are comparable with and even higher than those under conventional tillage systems Jug et al. (2005), with respect to all principles of sustainable agricultural production (Jug et al., 2017). The principles are reduced use of agrochemicals reflecting on the biological component of soil and water quality Laurent et al. (2011), carbon sequestration rate aid ranging from 0.2 to 1.0 t ha<sup>-1</sup> yr<sup>-1</sup> Kertész and Madarász, (2014), depending on the agro-ecological conditions and soil management methods González-Sánchez et al. (2017), reducing the workload by 50%, which allows producers to save time, reduce fuel costs and machinery (Lindwall and Sonntag, 2010). The Grand mean of barley grain yield obtained was 1.48±0.15kg from 5m<sup>2</sup> area of each subplot sampled from 200m<sup>2</sup> areas of each main plot. On hectare bases yield obtained from current mulch, a year ago mulch plot and conventional farm plot was 3040kg, 2968kg, and 2880 kg respectively (Fig 3).

#### 3.1 Effect of mulching on soil physical properties in experimental plots

##### 3.1.1 Soil textural class

The soil textural fractions of sand ( $p=0.0115$ ) and clay ( $p=0.004$ ) showed significant variation with soil depth. The sand fraction was higher in the current mulch plot followed by a year ago mulched plot (Table 1). Overall mean sand fraction was lower under



conventional farm plots compared to the other treatment types. On the other hand, conventional farm plots had a higher clay fraction compared to another treatment type. When fine particles of soil are high, increasing electrical conductivity causes the instability of soil structure and might affect the interaction between soil and crop (Tayel et al., 2010). According to Powlson et al. (2011), the interactions between soil and crop are influenced by clay content, temperature and moisture content of the soil, and oxygen availability in the soil. About 63.3% of surface soil (0-20cm depth) had sandy loam character, while 26.7% of subsurface soil was sandy clay loam. Clay loam and loam soil had small proportions with about 6.7% and 3.3% respectively of subsurface soil. The Pearson correlation coefficient showed that sand fraction was significantly positively correlated with soil organic carbon concentration at ( $p=0.01$ ) while, clay fraction was significantly negatively correlated with soil organic carbon concentration and with sand fraction at ( $p=0.01$ ). Silt fraction was significantly positively correlated with soil organic carbon concentration ( $p=0.05$ ), available potassium ( $p=0.01$ ), and significantly negatively correlated with clay fraction at ( $p=0.05$ ) (Table 2). The strong correlation between silt content and soil organic C reflects the greater water holding capacity and plant available water of silt-dominated soils, which, in turn, affect plant productivity and influence C sequestration in soil.

### 3.1.2. Soil Moisture Content

There was no significant moisture content variation with the soil depth ( $p=0.0816$ ). The results showed that overall mean soil moisture content was slightly higher under current mulch plots while the lowest was observed in conventional farm plots compared with other treatment types. There was significant moisture content variation with the treatment types ( $p=0.0095$ ). The Pearson correlation coefficient showed that moisture content was significantly positively correlated with clay fraction and bulk density at ( $p=0.01$ ) and significantly negatively correlated with available potassium and sand fraction at ( $p=0.05$ ) (Table 2).

### 3.1.3. Soil Bulk Density

The treatment types significantly ( $p=0.012$ ) affected soil bulk density. This argument is in line with Mulumba and Lal, (2008) who reported that the effect of mulching on soil bulk density varies depending on the type and properties of the soil, type of mulch, climate, and land use. Bulk density was higher under conventional farm plots followed by a year ago mulched plot compared to another treatment type. According to Abad et al. (2014); Amanuel et al. (2018) the soils of agricultural land had the highest bulk

densities in comparison to other land-use types. Soil bulk density didn't show a significant difference with the soil depth ( $p=0.089$ ). The lower soil bulk density under current mulch plots could be related to the higher organic matter content which increases the soil volume without affecting its weight and higher bulk density in conventional farm plots could be attributed to the impact of repeated tillage which disturbs the soil structure, causing a compacted surface soil layer. Yimer and Abdurkadir. (2011) reported that the application of organic materials from the plant system leads to a decrease in the surface soil bulk density than the layer below. Yimer et al. (2006) also indicated that the compaction resulting from the weight of the top layer might be the reason for the increased bulk density in the lower layer. The Pearson correlation coefficient showed that bulk density was significantly positively correlated with clay fraction at ( $p=0.01$ ) and significantly negatively correlated with soil organic carbon concentration, and with sand fraction at ( $p=0.01$ ) and with available potassium at ( $p=0.05$ ) (Table 2).

## 3.2. Effect of mulching on soil chemical properties in experimental plots

### 3.2.1 Soil pH

There was no significant difference in soil pH with soil depth ( $p=0.786$ ) and all the treatment types. The results indicated that the mean soil pH was 5.987 and ranged from 5.07 to 6.67 across the treatment types. Results showed that the overall mean soil pH was higher under the current mulch plot and lower under conventional farm plots compared to another treatment type. The lowest soil pH was recorded under conventional farm plots while the highest soil pH was recorded under current mulch plots of soil depth 20-40cm in both cases (Table 3).

It was found that soil acidity was higher in conventional farm plots which might be related to the addition of a high rate of inorganic fertilizer compared to current mulch and a year ago mulched plots. The higher acidity (lower pH) in cultivated land compared with forest land was probably due to continuous removal of basic cat-ions by crops, crops' harvest enhanced leaching of basic cat-ions and washed away of exchangeable bases by soil erosion (Amanuel et al., 2018).

### 3.2.2 Soil organic carbon concentration

The soil organic carbon concentration showed a significant difference with soil depth ( $p<0.0001$ ). The mean SOC concentration was higher under the current mulch plot and lower in soil under the conventional farm plot than other treatment types in the 0-20cm and 20-40cm soil depth, respectively (Table 3). This result is consistent with Amanuel et al. (2018) who reported



that the lower SOC concentration found in the deeper layer could be related to the reduced amount of the external inputs into the soil, and animal wastes and inorganic fertilizers temporarily remain in the top surface soil rather than going deeper (Alemayehu et al., 2010). The soil organic carbon concentration also showed a significant difference with treatment types ( $p=0.0004$ ). The overall mean SOC concentration was higher under the current mulch plot and followed by a year ago mulch plot while conventional farm plot has lower overall mean SOC concentration compared to the other treatment type. According to Manu et al. (2014) a marked decline in soil C, wet aggregate stability, and nutrient status occurred as land use changed from forest to cropping and has suggested that the addition of mulches could be a way to arrest this decline in the resource base. Under cereal land cultivation, the low SOC content may be due to frequent harvesting by crops which thereby perpetually remove the nutrients from the soil (Fermont et al. 2008; Haileslassie et al. 2005). Generally, it has a decreasing trend with soil depth.

### 3.2.3 Total Nitrogen

The available Nitrogen showed a significant difference with soil depth ( $p<0.0001$ ). The mean available Nitrogen was higher under the current mulch plot and lower in soil under the conventional farm plot than other treatment types in the 0-20cm and 20-40cm soil depth, respectively (Table 3). The available Nitrogen also showed a significant difference with treatment types ( $p=0.0004$ ). The overall mean available Nitrogen was higher under the current mulch plot and followed by a year ago mulch plot while conventional farm plot has lower overall mean available Nitrogen compared to the other treatment type. According to Abadi et al. (2014), the highest value of total nitrogen was observed for forests and significantly differs from pasture land and cultivated land. Generally, it has a decreasing trend with soil depth.

### 3.2.4 Available potassium (K)

There was no significant difference of available potassium (K) with soil depth ( $p=0.076$ ) and all the treatment types ( $p=0.086$ ). The mean available potassium (K) was higher under a year ago mulch plot and lower in soil under conventional farm plot than other treatment types in the 0-20cm and 20-40cm soil depth, respectively (Table 3). The overall mean available potassium (K) was found to be higher under the current mulch plot and lower in soils under conventional farm plots than another treatment type. According to Abadi et al. (2014), the highest value of available potassium was observed for forests and significantly differs from pasture land and cultivated land. The Pearson correlation coefficient showed that

available potassium was significantly positively correlated with soil organic carbon concentration at ( $p=0.05$ ) (Table 2).

### 3.2.5 Available phosphorus (P)

There was no significant difference of available phosphorus (P) with soil depth ( $p=0.188$ ) and all the treatment types ( $p=0.753$ ). The mean available phosphorus (P) was higher under the current mulch plot and lower in soil under a year ago mulch plot than another treatment type in the 0-20cm and 20-40cm soil depth, respectively (Table 3). The overall mean available phosphorus (P) was found to be higher under the current mulch plot and lower in soils under a year ago mulch plots than another treatment type. The Pearson correlation coefficient showed that available phosphorus was significantly positively correlated with soil organic carbon concentration at ( $p=0.05$ ) (Table 2).

### 3.2.6 Soil organic carbon stock

The result showed that mean SOC stock was highly influenced by soil depth ( $p<0.0001$ ). The mean SOC stock was higher under the current mulch plot and lower in soil under the conventional farm plot than other treatment types in the 0-20cm and 20-40cm soil depth, respectively (Table 3). The overall mean SOC stock was found to be higher under the current mulch plot and lower in soils under conventional farm plots than another treatment type. Worldwide, CA has been promoted as a strategy to enhance soil fertility, increase soil organic C (SOC), and reduce greenhouse gas emissions Derpsch et al. (2010) besides reducing production costs (Johansen et al. 2012). The Pearson correlation coefficient showed that soil organic carbon stock was significantly positively correlated with available Phosphorus ( $p=0.01$ ) and a sand fraction ( $p=0.05$ ) and significantly inversely correlated with clay fraction ( $p=0.01$ ) (Table 2).

## 4. CONCLUSIONS AND RECOMMENDATIONS

### 4.1. Conclusions

In general, the highest overall mean of carbon concentration and stock under current mulch indicates that integration of perennial mulching with other modern agricultural technologies and packages might be the remedy for replenishing the declining soil fertility on conventional farmlands to increase barley grain yield on a sustainable basis. The absence of addition of organic matter from perennial crops and removal of the crop residues from cultivated land during crop harvesting and continuous tillage practice might be the reason for lower soil carbon and nutrients on conventional farmlands as well as for subsequent low barley grain yield.





Farmers mulched with *Rosa abyssinica* to get high barley grain yield with low external input, for its moisture retention capacity, nutrient conservation, zero erosion, and higher carbon content, which made it preferable climate-smart technology for smallholder farmers in the study area.

#### 4.2. Recommendation

Integration of indigenous knowledge of perennial mulching with modern scientific technology should be considered in agricultural technology dissemination through agricultural extension, to promote conservation agriculture to the wider public. Different agronomic practices that boost total nitrogen, soil organic carbon, available phosphorus, and potassium in the system should be considered when the land is intensively cultivated.

The practice of mulching with *Rosa abyssinica* was reduced in the study area in the past decade, because of the reduction of mulching materials that resulted from various anthropogenic factors. Consequently, shrinking of landholding size of farmers was happened; so that mulching with ex-situ grown *Rosa abyssinica* and future research on alley cropping by introducing it to conventional farmland and ensuring clear land tenure and as well as the creation of many other livelihood alternatives for youth is suggested solutions so as to ensure the sustainability of the practice of mulching with *Rosa abyssinica* in the study area.

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#### Authors' Contributions

Both authors contributed to the study conception and design. The first author wrote the manuscript, collected, and analyzed the data. The second author Commented on previous versions of the manuscript participated in the design of the study and examined the manuscript. Both authors read and approved the final manuscript.

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable

Competing interests

The authors declare that they have no competing interests.

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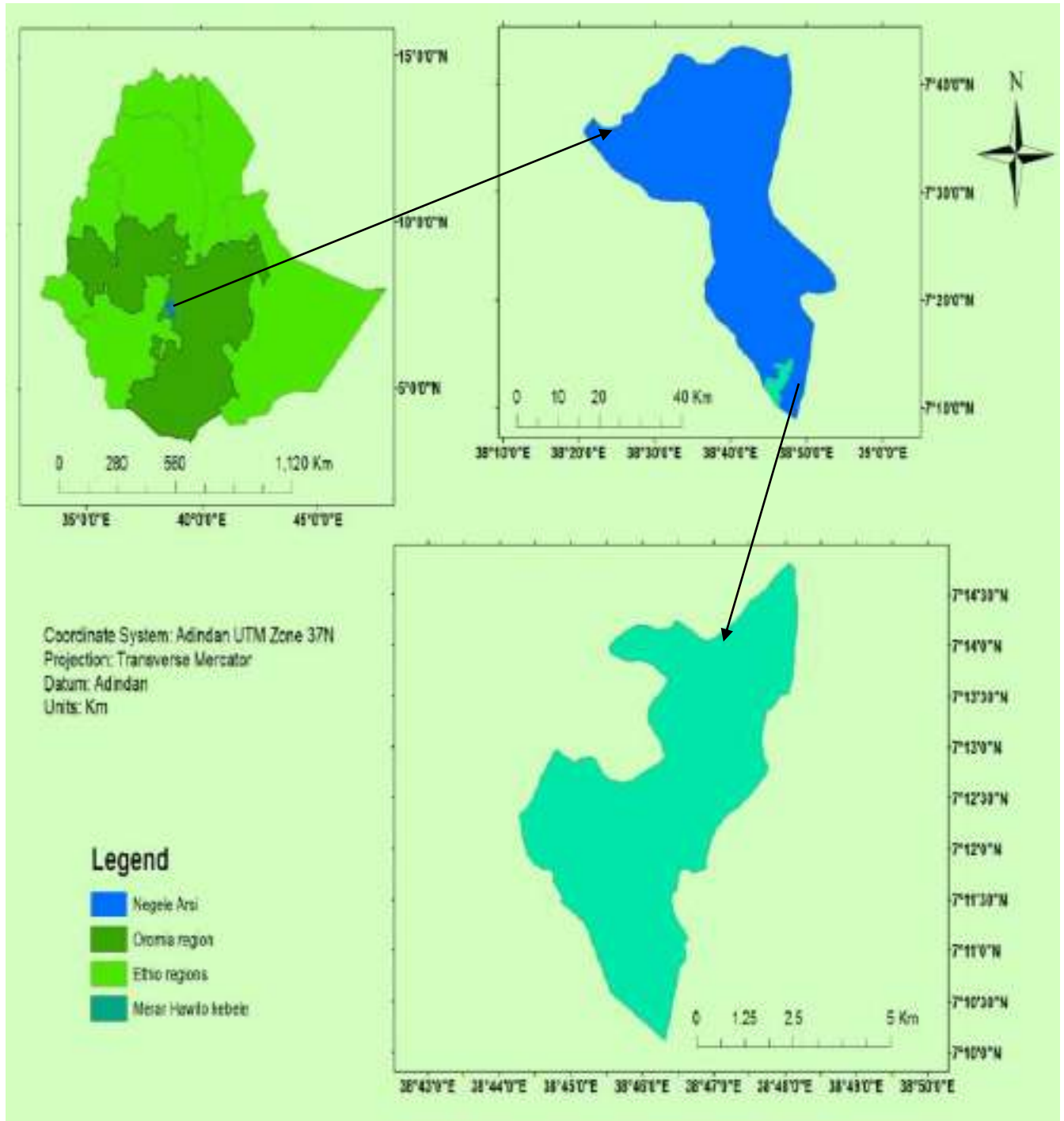


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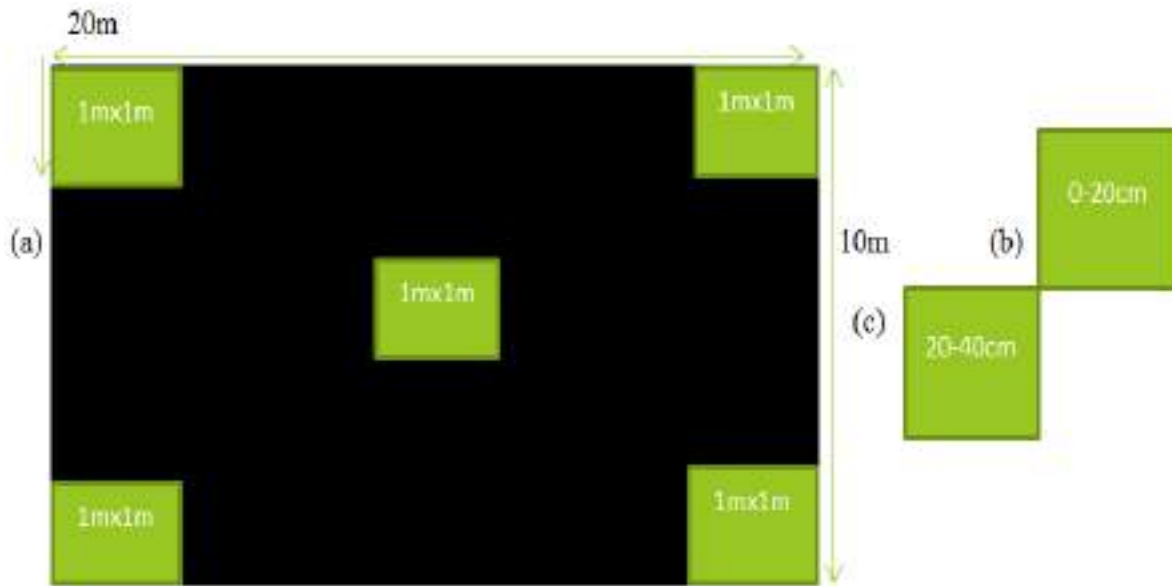


APPENDIX

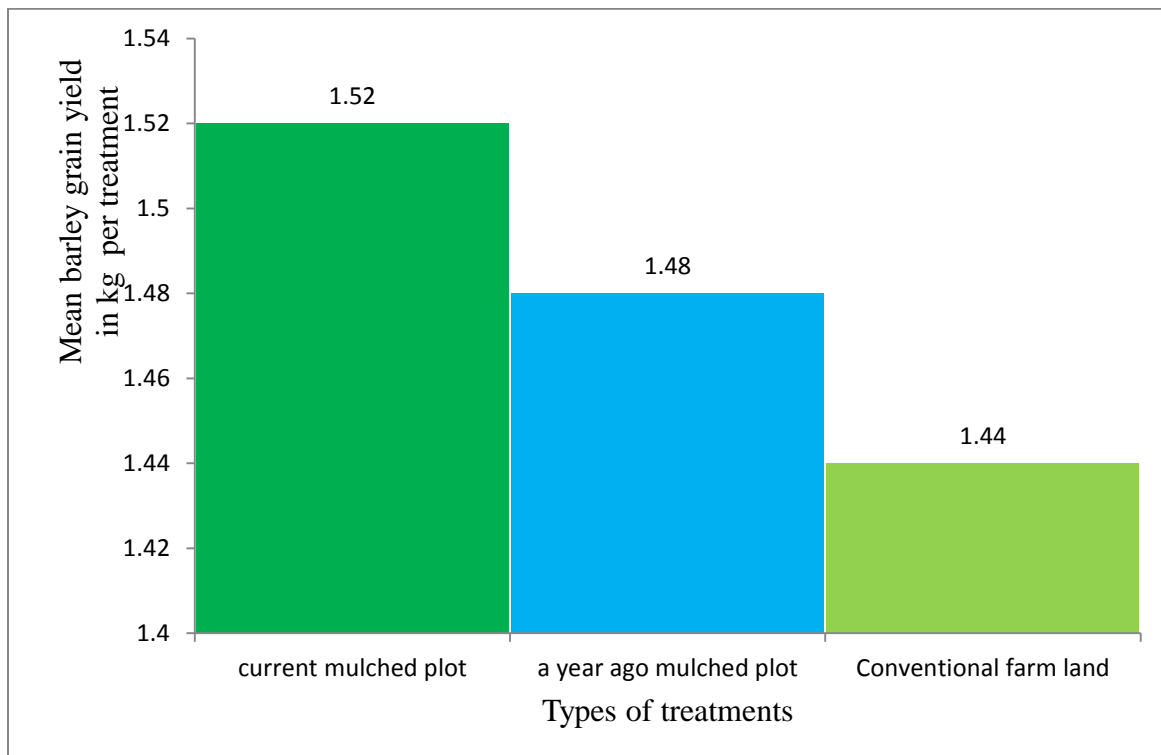
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**Fig 1: Location Map of Meraro Hawilo kebele located between 7°10'0" - 7°14'30"N, and 38°43'0"- 38°50'0"E.**



**Fig 2: Field plots establishment procedure for barley and soil physiochemical properties (at depth of 0-20cm and 20-40cm) measurement**



**Fig 3: Mean yield in kilogram per treatment of conservation agriculture verses conventional farm land from experimental plots**

**LIST OF TABLES****Table 1: Mean (( $\pm$ standard deviation) of the soil physical properties across the treatments (0-40cm)**

Response variable	Soil depth (cm)	Treatments			overall
		Current mulch plot	Year ago mulched plot	Conventional farm plot	
Sand%	0-20	63.6a $\pm$ 3.85	59.6ba $\pm$ 5.37	59.6ba $\pm$ 3.85	60.93 $\pm$ 4.53
	20-40	59.6ba $\pm$ 5.18	54.8bc $\pm$ 5.40	49.6c $\pm$ 8.99	54.67 $\pm$ 7.55
	Overall	61.6a $\pm$ 4.79	57.2a $\pm$ 5.67	54.6a $\pm$ 8.38	
Clay %	0-20	12.0c $\pm$ 2.83	10.8c $\pm$ 2.28	16.0bc $\pm$ 3.16	12.93 $\pm$ 3.45
	20-40	16.4bc $\pm$ 5.18	22.0ba $\pm$ 6.78	26.0a $\pm$ 9.06	21.47 $\pm$ 7.80
	Overall	14.2a $\pm$ 4.57	16.4a $\pm$ 7.59	21.0a $\pm$ 8.29	
Silt %	0-20	24.4b $\pm$ 1.67	29.6a $\pm$ 3.85	24.4b $\pm$ 3.29	26.13 $\pm$ 3.82
	20-40	24.0b $\pm$ 6.00	23.2b $\pm$ 1.79	24.4b $\pm$ 3.58	23.87 $\pm$ 3.89
	Overall	24.2a $\pm$ 4.16	26.4a $\pm$ 4.40	24.4a $\pm$ 3.24	
BD(g/cm <sup>3</sup> )	0-20	0.44b $\pm$ 0.05	0.468ba $\pm$ 0.13	0.57ba $\pm$ 0.11	0.49 $\pm$ 0.11
	20-40	0.48ba $\pm$ 0.04	0.55ba $\pm$ 0.17	0.59a $\pm$ 0.07	0.55 $\pm$ 0.11
	Overall	0.46a $\pm$ 0.05	0.51ba $\pm$ 0.15	0.58b $\pm$ 0.08	
MC%	0-20	20.04b $\pm$ 1.71	18.08b $\pm$ 2.56	17.59b $\pm$ 1.35	18.57 $\pm$ 2.11
	20-40	20.86ba $\pm$ 0.62	19.31ba $\pm$ 2.98	18.69ba $\pm$ 1.07	19.62 $\pm$ 1.97
	Overall	20.45b $\pm$ 1.29	18.69ba $\pm$ 2.69	18.15a $\pm$ 1.29	

The mean values followed by the different letters across rows are significantly different ( $p < 0.05$ )

**Table 2: Pearson correlation matrix for soil physiochemical properties (0-40cm)**

	%OC	k(ppm)	p(ppm)	pH	% sand	% clay	% silt	BD	MC%
%OC	1								
k(ppm)	0.385*	1							
p(ppm)	0.437*	0.081	1						
pH	0.339	0.234	-0.079	1					
% sand	0.569**	0.042	0.116	0.049	1				
% clay	-0.734**	-0.294	-0.298	-0.126	-0.847**	1			
% silt	0.371*	0.473**	0.351	0.148	-0.169	-0.380*	1		
Bulk density	-0.511**	-0.420*	0.069	-0.29	-0.514**	0.557**	-0.14	1	
MC%	-0.489**	-0.430*	0.08	-0.269	-0.444*	0.488**	-0.133	0.961**	1

\*\* Correlation is significant at the 0.01 level (2-tailed), \* Correlation is significant at the 0.05 level (2-tailed)

**Table 3: Mean ( $\pm$ standard deviation) of the soil chemical properties across the treatments (0-40cm)**

Response variable	Soil depth (cm)	Treatments			overall
		Current mulch plot	Year ago mulched plot	Conventional farm land plot	
OC%	0-20	6.74a $\pm$ 1.057	5.76a $\pm$ 0.89	4.39b $\pm$ 0.65	5.63 $\pm$ 1.29
	20-40	4.09bc $\pm$ 1.62	2.88cd $\pm$ 0.69	2.40d $\pm$ 0.32	3.12 $\pm$ 1.20
	overall	5.41a $\pm$ 1.90	4.32ab $\pm$ 1.69	3.39b $\pm$ 1.15	
K(PPM)	0-20	368.60a $\pm$ 276.82	396.00a $\pm$ 156.36	167.40a $\pm$ 145.99	310.67 $\pm$ 214.71
	20-40	263.40a $\pm$ 187.04	190.00a $\pm$ 169.11	165.80a $\pm$ 179.92	206.40 $\pm$ 171.06
	overall	316.00a $\pm$ 229.52	293.00a $\pm$ 188.05	166.60a $\pm$ 154.47	
P(PPM)	0-20	5.70a $\pm$ 1.77	4.75a $\pm$ 1.35	5.57a $\pm$ 3.69	5.34 $\pm$ 2.35
	20-40	4.43a $\pm$ 6.49	2.87a $\pm$ 3.02	3.21a $\pm$ 1.99	3.50 $\pm$ 4.03
	overall	5.06a $\pm$ 4.53	3.81a $\pm$ 2.42	4.39a $\pm$ 3.06	
TN%	0-20	0.58a $\pm$ 0.09	0.49a $\pm$ 0.07	0.38b $\pm$ 0.06	0.49 $\pm$ 0.11
	20-40	0.35bc $\pm$ 0.14	0.25cd $\pm$ 0.06	0.21d $\pm$ 0.03	0.27 $\pm$ 0.10
	overall	0.47a $\pm$ 0.16	0.37ab $\pm$ 0.15	0.29b $\pm$ 0.09	
pH	0-20	6.08a $\pm$ 0.42	6.01a $\pm$ 0.24	5.91a $\pm$ 0.10	6.00 $\pm$ 0.27
	20-40	6.18a $\pm$ 0.36	5.91a $\pm$ 0.28	5.82a $\pm$ 0.48	5.97 $\pm$ 0.39
	overall	6.13a $\pm$ 0.37	5.96a $\pm$ 0.25	5.87a $\pm$ 0.33	
SOC(mg/ha)	0-20	59.54a $\pm$ 12.61	52.32ba $\pm$ 6.74	49.64ba $\pm$ 11.05	53.83 $\pm$ 10.59
	20-40	40.12bc $\pm$ 18.13	30.27c $\pm$ 3.95	28.59c $\pm$ 3.49	32.99 $\pm$ 11.38
	overall	49.83a $\pm$ 17.93	41.29a $\pm$ 12.74	39.12a $\pm$ 13.52	

The mean values followed by the different letters across rows are significantly different ( $p < 0.05$ )



## LEGAL BASIS FOR THE FORMATION OF VOCATIONAL MEDICAL EDUCATION

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### ANNOTATION

*The article examines the role of regulatory framework in the training of medical personnel. It also analyzes the activities aimed at ensuring the quality of medical education, increasing cooperation with foreign universities, raising the prestige of the university.*

**KEYWORDS.** *Health system, international education standard, medical care, quality of medical education*

### INTRODUCTION

Particular attention is paid to improving the social protection and health care system, improving the quality of medical services, training qualified medical personnel. The "Action Strategy" for the five priority areas of development of the Republic of Uzbekistan for 2017–2021 states that "... first and foremost, to further reform its primary link, the system of emergency and urgent care." (Decree of the President of the Republic of Uzbekistan. *et al.*, 2017). Today the issue of providing the medical sector with modern-minded, well-educated, responsible and mature personnel is being addressed at the state level. The development of any industry depends primarily on the potential of personnel trained in this area.

### MAIN PART

Although the most modern techniques, the latest technologies are introduced into the industry, the buildings are reconstructed and a perfect management system is formed, if there is a delay in staff training, the expected result in the development of the industry will not be. During the meetings with representatives of the health sector on January 5 and February 7, 2017, as well as in video conferences during 2017-2020, chaired by the President, the issue of training health workers, in particular, the study of international experience, the need to prepare proposals for further improvement of medical education. It is not in vain that it has been mentioned separately.

As part of the implementation of measures to reform the health care system in the country,





certain results have been achieved in the formation of a modern system of medical care, training of qualified medical personnel

First, the legal and regulatory framework for medical services and training of medical personnel has been improved;

Second, a number of practical measures have been taken to improve the quality of higher medical education quality management, update its content, improve the quality level, bring the system of higher education standards and quality indicators at all levels to a level comparable to world standards.

Third, a social and moral environment that supports democratic values in the management of medical education has been created, and corruption in the field has been curtailed.

Fourth, the legal basis for the establishment of a separate medical higher education institution for the training of highly educated personnel in the field of public health and sanitary-epidemiological control services has been created.

Today, the issue of providing the medical sector with modern-minded, well-educated, responsible and mature personnel is being addressed at the state level.

President of the Republic of Uzbekistan Shavkat Mirziyoyev at an enlarged meeting of the Cabinet of Ministers on the main results of socio-economic development of the country in 2016 and the most important priorities of the economic program for 2017 "Critical analysis, strict discipline and personal responsibility (Mirziyoyev SH.M. *et al.*, 2017). in his report on the subject. He stressed the need to develop a set of measures aimed at creating an effective system for training and retraining of doctors and medical staff, both in our country and in leading foreign clinics. He also touched upon this issue in his meetings with health professionals. Over the past period, our state and government have made great strides in this area, changes in the system.

As a result of the reforms, the classification of medical education fields and specialties operating in the country is constantly being improved and meets modern requirements.

The list of fields of study of medical higher education institutions for bachelor's and master's specialties required in principle and independent inventory of higher education institutions themselves. The analysis and restructured internal structures put on the agenda to ensure the formation of this list in accordance with the material and technical base and scientific and pedagogical potential of each higher education institution. Due to the lack of specialized teachers (especially in the newly opened areas), substandard laboratory equipment and overwork of teachers (filling out paperwork), the quality of training in some areas has declined. Improving the list of specialties for each higher education institution

and at the same time increasing the contingent in areas that are justified in society has been an important factor in improving the quality of education at no extra cost.

Free reform of the internal structure of higher education institutions, the fact that the reforms are not linked to the goals, the specificity of the profile and the lack of positive world experience in this area have significantly reduced the quality and efficiency of the educational process.

In accordance with the Decree of the President of the Republic of Uzbekistan dated May 5, 2017 "On admission to higher educational institutions of the Republic of Uzbekistan in the 2017-2018 academic year", from 2017-2018 academic year, targeted admission has been established. Now, according to the orders of the Council of Ministers of the Republic of Karakalpakstan, regional and Tashkent city government, admission to the bachelor's degree on the basis of a state grant will be carried out for regions with high demand for medical personnel.

At the initiative of President Islam Karimov, the Termiz branch of the Tashkent Medical Academy was opened on February 1, 2018. This day made a new change in the life of the oases, the dream of the people was realized. In cooperation with the Tashkent Medical Academy, online lectures on the basis of innovative technologies were organized for students to become highly qualified doctors. Well-known professors and doctors of the Tashkent Medical Academy in the country teach students in various fields (Khayrullayev Ch.K. *et al.*, 2020).

It should be noted that over the past period, special attention was paid to the training of masters in the system of training specialists on a two-stage basis. There are well-known problems with the training of masters, and simply put, the field has not been very successful. The main reason for this was the lack of acceptance, the lack of consumer demand for a narrow range of specialties, and the fragmentation of specialties into extremely small parts. In the context of the formation of the bachelor's degree, shortcomings and deficiencies in the training of masters have significantly reduced the status of national education. The participation of only 3-5 masters in each course of specialties does not encourage the full conduct of lectures and other classes.

The master's degree is, in fact, based on the teacher's individual work with the student, but the master's skills of independent work are not fully formed, and the teachers lack consistency and principles in individual work with the masters. It is no coincidence that during the meetings with representatives of the health sector, chaired by the President on January 5 and February 7, 2017, as well as in a video conference on March 30, 2017, the issue



of training medical personnel was highlighted. Although the most modern techniques, the latest technologies are introduced into the industry, the buildings are reconstructed and an excellent management system is formed, if there is a shortage of personnel, the expected result in the development of the industry will not be. As a result of reforms in the field of medicine, the ministry is now responsible for the retraining of health professionals, as well as the training of highly qualified scientific and pedagogical medical staff, the involvement of professors, bachelor's and master's students in research in modern areas of medicine.

In the field of medical education, the transition to a reduced education system in the field of medical work, improvement of teaching hours and targeted admission will cover the shortage of medical personnel by 15%, targeted budget spending, as well as medical education in line with international standards.

In order to further improve the system of training highly qualified medical personnel for the Aral Sea region, increase the quality and scope of medical services provided to the population, ensure strong integration of medical practice with education and science, introduce advanced achievements and innovations in the treatment and diagnosis process. In accordance with the concept of development of the higher education system of the Republic of Uzbekistan until 2030, the Karakalpak Medical Institute was established by the Decree of the President of February 14, 2020 on the basis of the Nukus branch of the Tashkent Pediatric Medical Institute.

The training of highly educated personnel in the field of public health and sanitary-epidemiological services is being improved. Resolution of the President of the Republic of Uzbekistan ID-17215 "On improving the training of higher education in the field of public health and sanitary-epidemiological services" (Khayrullayev Ch.K., Khayrullayeva Z.Ch. *et al.*, 2020). was submitted for discussion on April 28 and ended on May 13.

## CONCLUSION

It should be noted that the training of highly qualified and competitive specialists for various socio-economic sectors of the Republic of Uzbekistan is the basis of the reform "University 3.0" envisaged in the Action Strategy and the Concept of Higher Education Development in five priority areas of development of the Republic of Uzbekistan in 2017-2021. To this end, a number of systematic measures are being taken to further improve the higher education system, develop research and innovation activities in the regions and expand international cooperation.

## USED LITERATURE

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4. Resolution of the President of the Republic of Uzbekistan No PP-4310. (May 6, 2019) "On measures to further develop the system of medical and pharmaceutical education and science"
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# STUDY ON ETHANOLIC LEAF EXTRACT OF *PASSIFLORA EDULIS SIMS* IN ALBINO RATS FOR ANTIULCER ACTIVITY

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## ABSTRACT

Now a day, traditional medicines are used for the most types of diseases. In this study, Ethanolic extraction of *Passiflora edulis sims* extract is used for anti-ulcer activity. This plant extract is also used in treating different types of diseases. It is mainly used for gastric ulcer. This Extract showed 85.58% ulcer protection in ethanol induced model, 89.97% in pylorus ligation and 74.40% in swim stress model. *P. edulis sims* treatment increases the gastric pH and may reduce the ulcer index in both ethanol and aspirin induced rats. It also decreases the lipid peroxidation and reduces the glutathione level.

**KEYWORDS:** Traditional medicines (*Passiflora edulis sims*), Gastric ulcer, albino rats.

## 1. INTRODUCTION

Ulcer may define as a breakdown of tissue into the stomach. In some cases, peptic ulcer may be formed. It may penetrate the performance, hemorrhage and obstruction.<sup>1,2,3</sup> It may manifest the gastric mucosa by acid and pepsin. Many NSAID drugs is been used for the healing of ulcer, type C gastritis, treatment of small and large intestinal injury.<sup>4,5,6</sup> For the evaluation of gastroprotective activity, Pylorus ligation method, Ethanol induced model and Swim stress. Ethanol when use for the treatment of acute it may increase the oxidative stress, DNA damage etc.<sup>7,8,9</sup> Aspirin induced ulcer may damage the free radicals. It may produce the hydroxy fatty acids from hydroperoxyl. For protection from ulceration oxygen derived free radicals are used. It may protect from acute and chronic ulceration.<sup>10,11</sup> Now a day, Herbal medicines are used. It plays most important role in ulceration. Plant and plant extract are safer medicines due the presence of natural ingredient. It has not any side effect on any part of the body.<sup>12,13</sup> Identification of new antiulcer drugs from natural sources are been renewed. *Passiflora edulis sims* is obtained from vines and passion flower. It belongs to the family *Passifloraceae*. It is used for the gastrointestinal conditions, neurological,

cardiovascular, inflammation and anxiety. All part of this plant is used for medicinal purpose. In this study, extract is used to perform the *in-vitro* and *in-vivo* process. For this process, animal models are used.<sup>14,15</sup>

## 2. MATERIALS AND METHODS

### 2.1 Preparation of Plant Extract

The plant were collected from local farm behind NCP, Erode District, Tamil nadu. The plant material was identified as *Passiflora edulis sims* (family Passifloraceae). The leaves were washed and air dried for five days and pulverized into coarse powder. The coarse powder was packed tightly in the Soxhlet apparatus and extracted with 500 ml 95% ethanol at 55 °C for 72 hours by continuous hot percolation method.

### 2.2 EXPERIMENTAL ANIMAL

All experimental animals used were male albino rats (*Rattus norvegicus*) weighing between 180-250g and were obtained from the animal house of Nandha College of pharmacy and Research Institute. They were fed using standard laboratory rodent chow diet feed and given water *ad libitum*.



### 2.3 EXPERIMENTAL DESIGN FOR ANIMAL STUDY

Twenty-four (24) albino rats were used for every model of ulcer induction for the experiment; four groups of rats were used for antiulcer activity study and the following treatments were taken, namely; control, standard, EEPE200 mg/kg extract, and EEPE 400 mg/kg extract. Four (4) groups of rats were used for anti-diarrhoeal study namely; group 1 (treated with: 0.5%w/v CMC vehicle control), group 2 (treated with loperamide (5 mg/kg,) as standard drug), group 3 (treated with EEPE 200 mg /kg), group 4 (treated with EEPE 400 mg/kg). All groups consisted of six animals each. The extract was administered orally. Anthelmintic activity was carried out on earthworm, *Pherithema posthuma*. 7 groups used for study, group 1 for control and 3-3 group used for standard and extract, under doses of 10, 30 and 50 µg/ml.

### 2.4 ETHANOL INDUCED ULCERATION

After 12 h of fasting, Wistar Albino rats were divided into 4 Groups of six animals each. Group 1 served as Normal control (vehicle) received 0.5% CMC, and the Group 2 was treated with Sucralfate (100 mg/kg). The remaining two Groups received 200 and 400 mg/kg of extract of *Passiflora edulis sims*. All are administered orally. One hour after treatment, all rats received 1ml of absolute ethanol to induce gastric ulcer After 5 h, the animals were killed and lesions in the gastric mucosa were scored. After identification of ulcer areas, the length of the ulcer was measured along the greater diameter and the mean ulcer index was calculated. The ulcer were graded as follows,

(0= normal coloured stomach, 0.5= red colouration, 1= spot ulcers, 1.5= haemorrhagic streaks, 2=ulcers  $\geq 3$  but  $\leq 5$ , 3=ulcers  $> 5$ )

### 2.5 PYLORUS LIGATION INDUCED ULCERATION

In this model Wistar Albino rats of either sex weighing about 180-250g (pregnancy was excluded) were selected and divided into four groups containing 6 animals in each group. Group 1 served as vehicle control 0.5% CMC (p.o.), Group 2 received omeprazole 20 mg/kg (p.o.). Group 3 and group 4 received 200 mg/kg and 400 mg /kg (p.o.), of extract of *Passiflora edulis sims* respectively daily for 3 days. The rats were taken in the individual animal cages and fasted (water allowed) for 48 hours prior to pyloric ligation, care being taken to avoid coprophagy. Under light anaesthesia (ketamine hydrochloride 50 mg (IP) the abdomen was opened by a small midline incision below the xiphoid process; pyloric portion of the stomach is slightly lifted out and ligated avoiding traction to the pylorus or damage to its blood supply. The stomach is replaced carefully, and the abdominal wall was closed interrupted sutures. The drugs are

administered orally two hours prior to pyloric ligation. They are deprived of both food and water during the postoperative period, and are sacrificed at the end of 6 hr. after operation. Stomach is dissected out and the contents are drained into the tube and this is subjected to analysis for pH and for free and total acidity. The stomach is then open along the greater curvature and is examined for any ulceration. The degree of ulceration is graded from zero to five depending on the size and severity of ulcers.

### 2.6 SWIM STRESS INDUCED ULCERATION

The swim Stress ulcers were induced by forced swimming in glass cylinder (height 45 cm, diameter 25 cm) containing water to the height of 35 cm and maintained at 25 °C for 5 hr. the animals were fasted for 24 hr. prior to the experiment and divided into 4 groups of 6 animals in each group. Group 1 served as vehicle control and received 0.5% CMC (p.o), and group 2 received 20 mg per kg (p.o), of ranitidine as standard. Group 3 and 4 received extract of *Passiflora edulis sims* (200 mg per kg and 400 mg per kg, p.o) respectively. After the drug treatment animals were allowed to swim in water for 5 hr. then animals were sacrificed and the stomach was opened. The ulcer index and percentage inhibition of ulcer was determined.

## 3. RESULT AND DISCUSSION

The antiulcer activity of ethanolic extract of *passiflora eduli sims* was carried out by Ethanol induced ulcer model (Fig.1). *passiflora edulis sims* showed 200mg/kg and 400mg/kg dose produced an ulcer index of (5.96±0.23 & 3.56±0.29) and percentage protection (64.93 & 85.58). (table 2). This shows the significant decreased in ulcer index and increased in % ulcer protection compared to standard drug Sucralfate (100mg/kg) ulcer index (2.99±0.27) and % ulcer protection (86.01) (table 1).

The antiulcer activity of ethanolic extract of *Passiflora edulis sims* was carried out by Pylorus ligation induced ulcer model (fig4). *Passiflora edulis sims* showed doses of 200 mg/kg and 400 mg/kg produced an ulcer index of (3.13±0.0744 & 2.39±0.198) and % protection (84.10 & 89.97) (table 3). This shows the significant (p<0.01) decreased in ulcer index and increased in % ulcer protection compared to standard drug Omeprazole 20mg/kg ulcer index (1.84±0.0838) and % ulcer protection (91.04) (table 2).

The concentration of total hexoses at the dose of 200 mg/kg and 400 mg/kg group was found to be 323.50±2.19 µg/ml and 349.80±5.01 µg/ml which shows significant (p<0.01) increase when compared

with Omeprazole treated group ( $374.58 \pm 5.22 \mu\text{g/ml}$ ) (table 3).

The concentration of hexosamine at the dose of 200 mg/kg and 400 mg/kg group was found to be ( $417.64 \pm 2.71$ )  $\mu\text{g/ml}$  and ( $466.05 \pm 4.56$ )  $\mu\text{g/ml}$ . It shows the significant ( $p < 0.01$ ) increase of hexosamine content when compared to Omeprazole treated group ( $470.19 \pm 7.27$ )  $\mu\text{g/ml}$  (table 3).

The concentration of fucose at the dose of 200 mg/kg and 400 mg/kg group was found to be ( $130.26 \pm 3.70$ )  $\mu\text{g/ml}$  and ( $72.47 \pm 4.02$ )  $\mu\text{g/ml}$ . This shows the significant ( $p < 0.01$ ) increase of fucose content when compared to Omeprazole treated group ( $185.70 \pm 3.11$ )  $\mu\text{g/ml}$  (table 3).

The volume of acid secretion at the dose of 200 mg/kg and 400 mg/kg group was increased ( $3.58 \pm 0.18$  &  $2.59 \pm 0.18$ ). and total acidity

( $34.25 \pm 0.61$  &  $27.77 \pm 0.8$ ) and free acidity ( $18.54 \pm 1.2$  &  $24.17 \pm 0.915$ ) was decreased and pH ( $3.47 \pm 0.166$  &  $4.76 \pm 0.348$ ) of the gastric juice was increased. This shows the significant ( $P < 0.01$ ) compared to ulcer control group.

The antiulcer activity of ethanolic extract of *Passiflora edulis sims* was carried out by Swim stress induced ulcer model (fig.10). *Passiflora edulis sims* showed doses of 200 mg/kg and 400 mg/kg produced an ulcer index of ( $5.14 \pm 0.30$ ) and ( $3.44 \pm 0.17$ ) and % protection (60.79) and (74.40). This shows the significant ( $p < 0.01$ ) decreased in ulcer index and increased in % ulcer protection when compared to standard drug Ranitidine 20 mg/kg ulcer index ( $2.7 \pm 0.18$ ) and % ulcer protection (79.40) (table 4).

### 3.1 Ethanol induced Ulcer Model

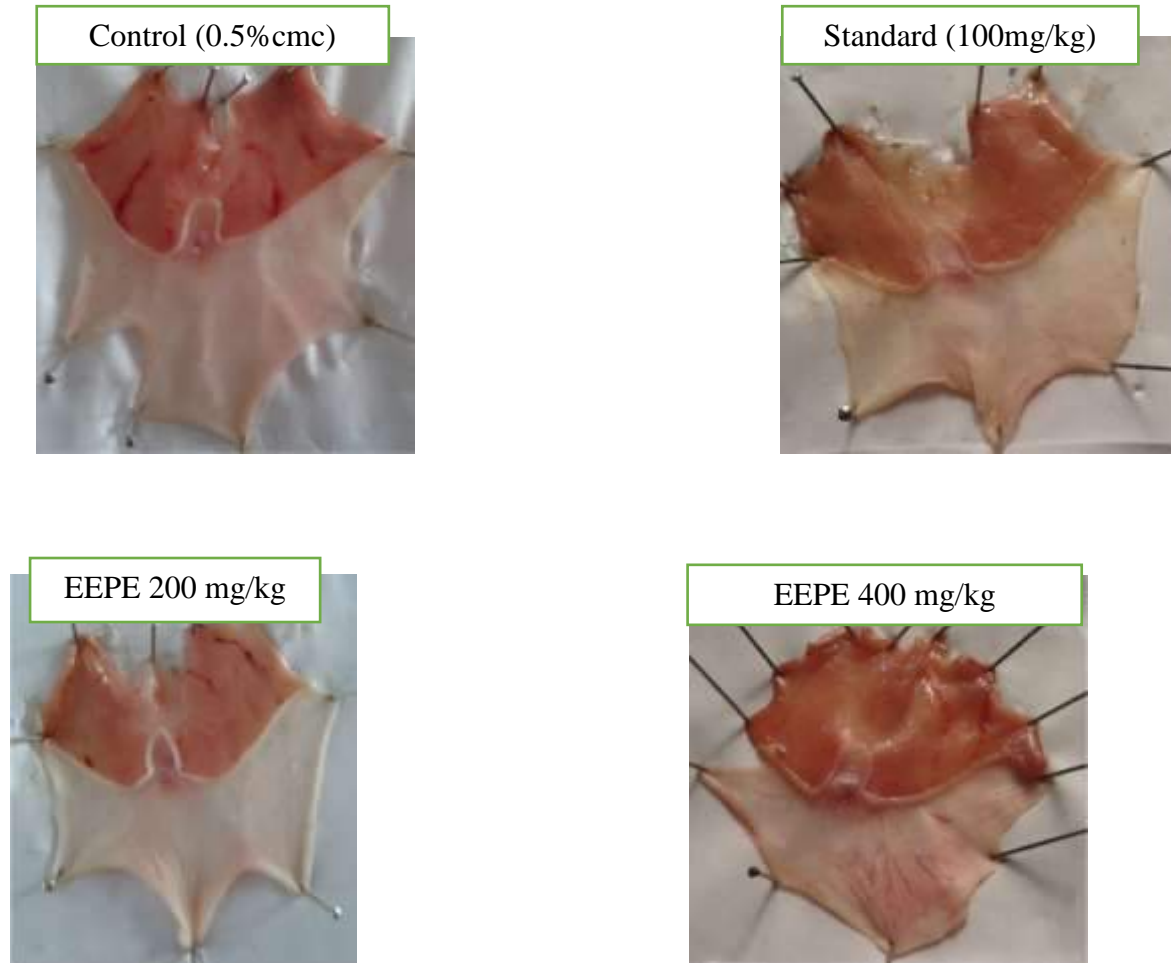
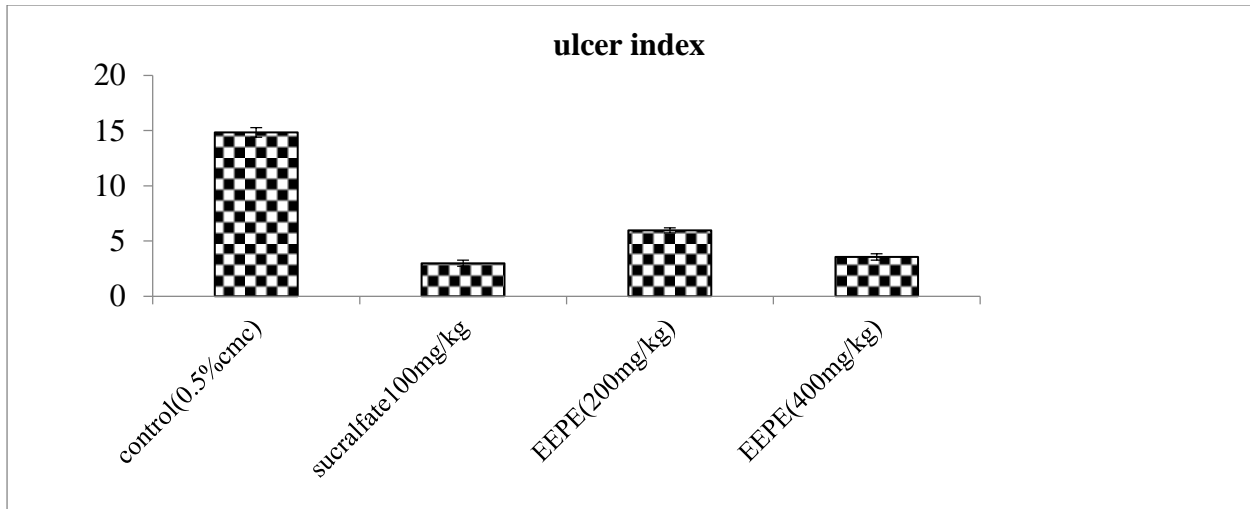
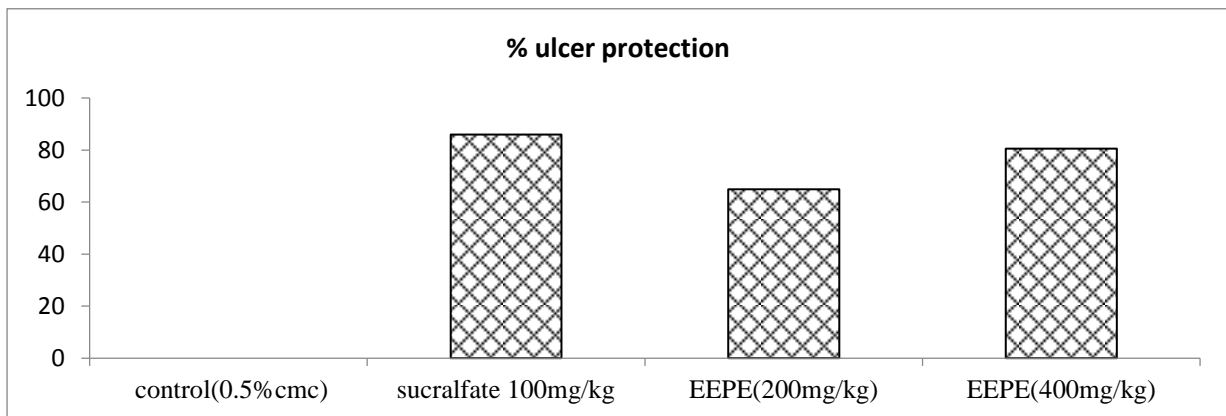


Figure 1. Effect of *passiflora edulis sims* on Ethanol induced Ulcer Model.



**Figure 2.**Effect of ethanolic extract of passiflora edulis sims on Ethanol Induced Ulcer Model Indicating Ulcer index



**Figure 3.** Effect of ethanolic extract on percentage (%) of ulcer protection in Ethanol Induced Ulcer Model

Sl no	treatment	Ulcer index	% of ulcer protection
1	Control 0.5% (1ml/kg)	14.83±0.43	
2	Sucralfate 100mg/kg	2.99±0.27**	86.01
3	EEPE 200mg/kg	5.96±0.23**	64.93
4	EEPE 400 mg/kg	3.56±0.29**	85.58

Values are mean ± SEM; No. of animals in each group = 6 \*\* P value <0.01 compared with the corresponding control

**Table 1.** Effect of ethanolic extract of passiflora edulis sims on Ethanol Induced Ulcer Model Indicating Ulcer index & Percentage Ulcer Protection

### 3.2 Pylorus Ligated (SHAY) Rat Model

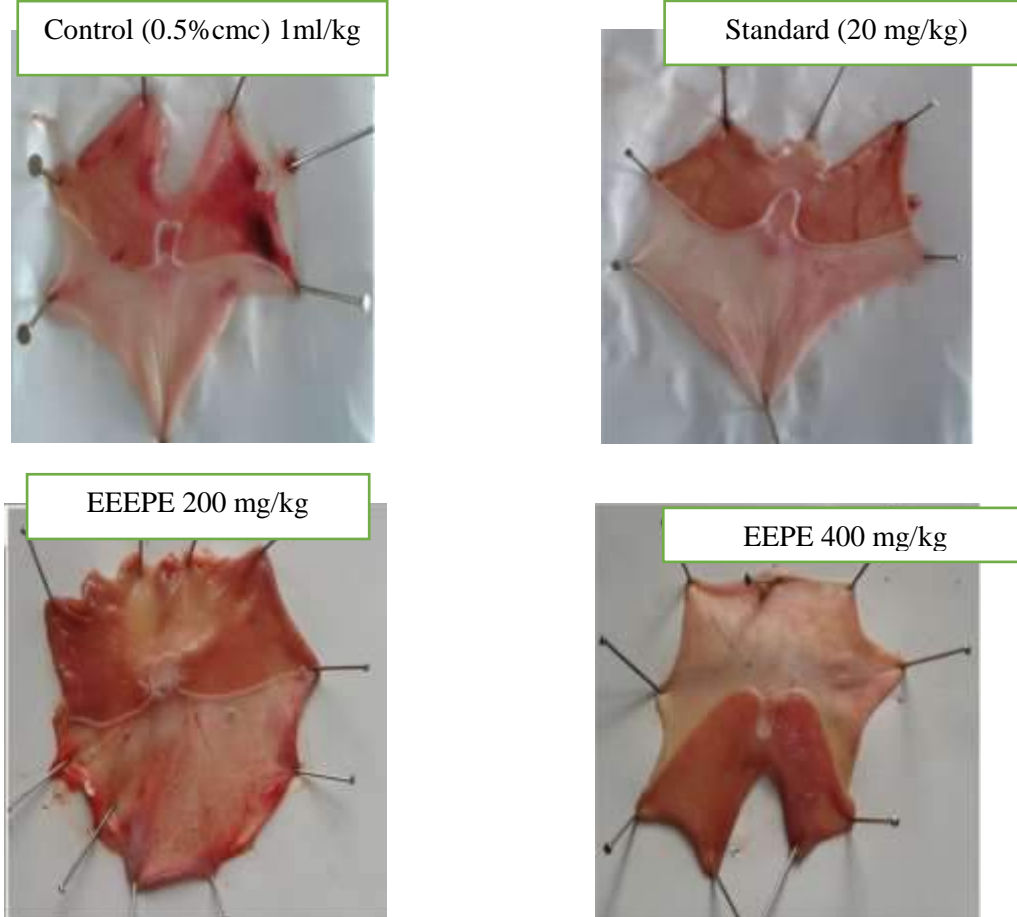


Figure 4. Effect of *passiflora edulis* sims on the Ulcer induction by Pylorus Ligated (SHAY) Rat Model.

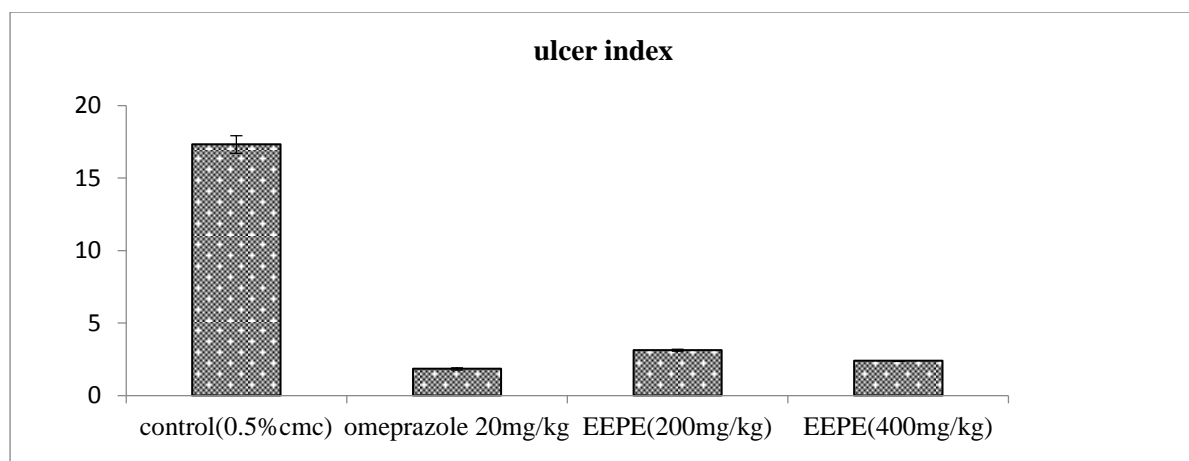
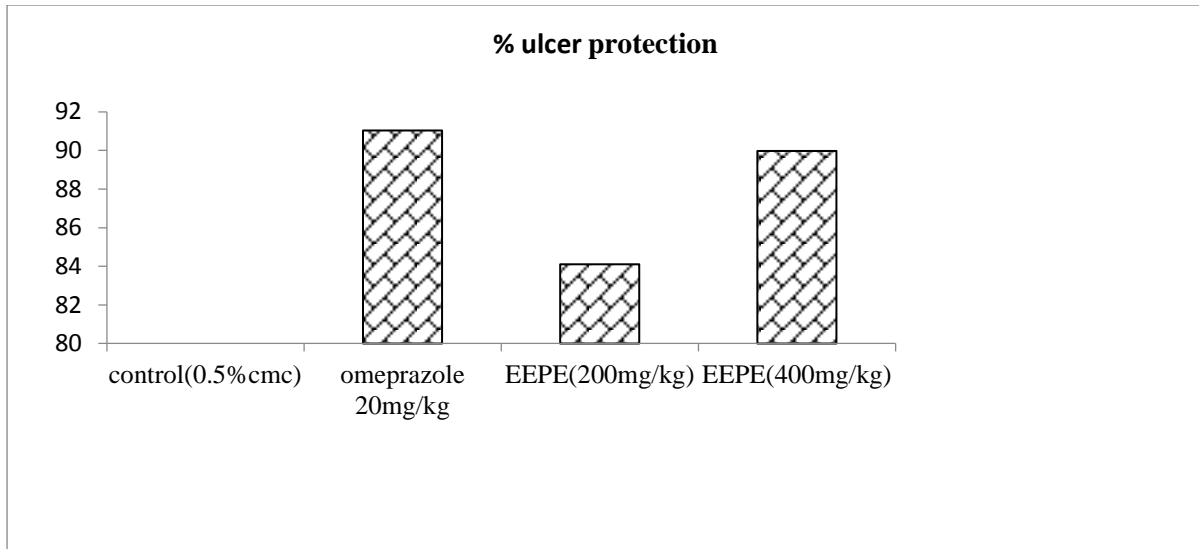
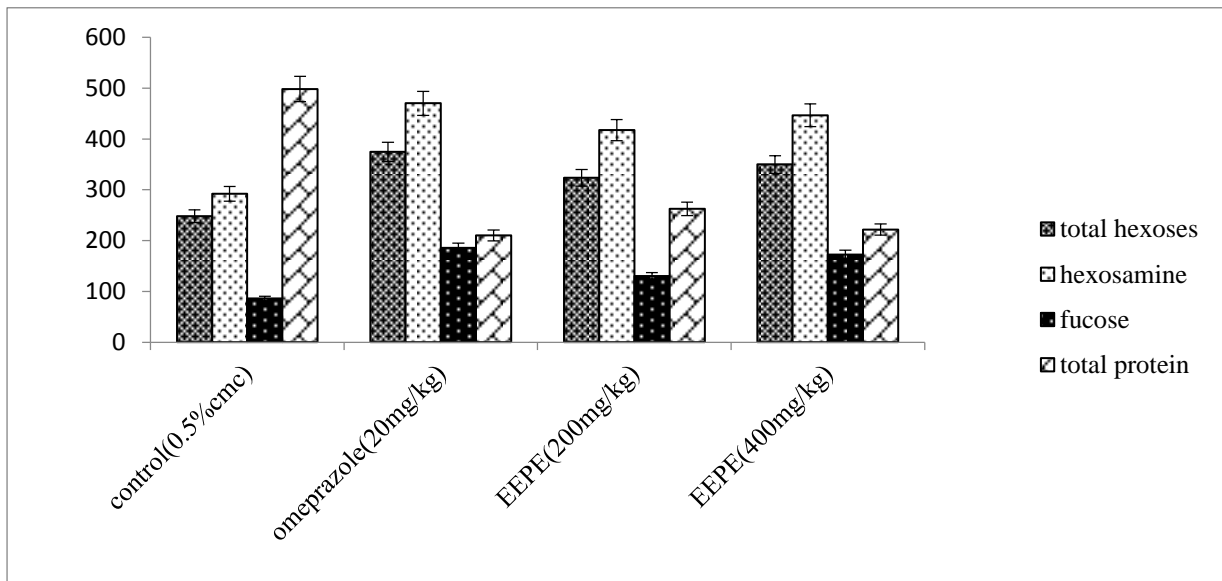


Figure 5. Effect of *Passiflora edulis* sims on Pylorus Ligated (Shay) Rat Model Indicating Ulcer index

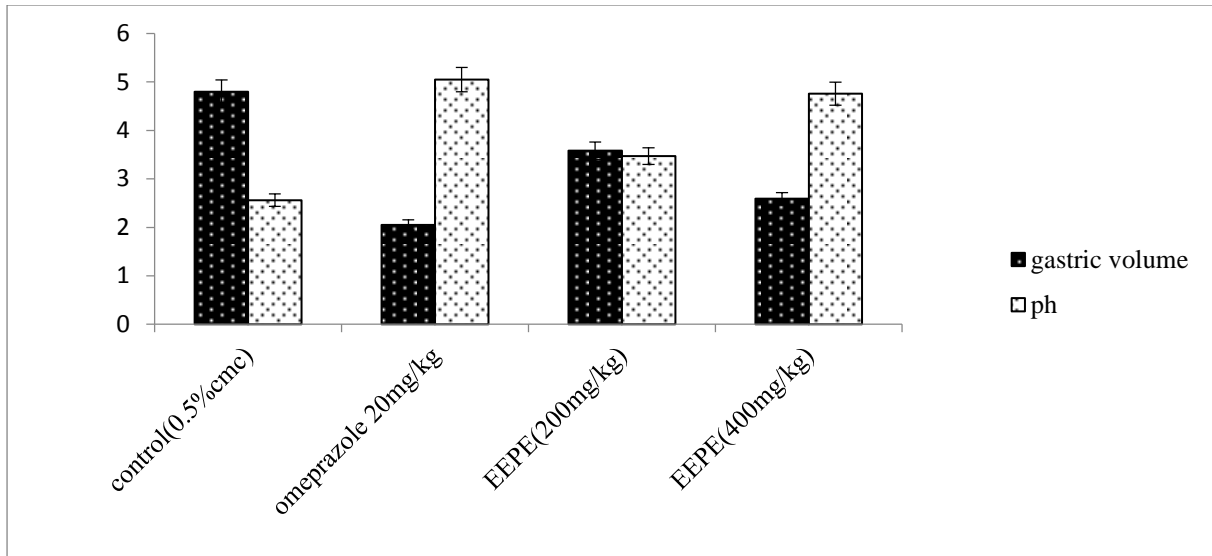


**Figure 6. Effect of Passiflora edulis sims on percentage (%) of ulcer protection in Pylorus Ligated (Shay) Rat Model.**

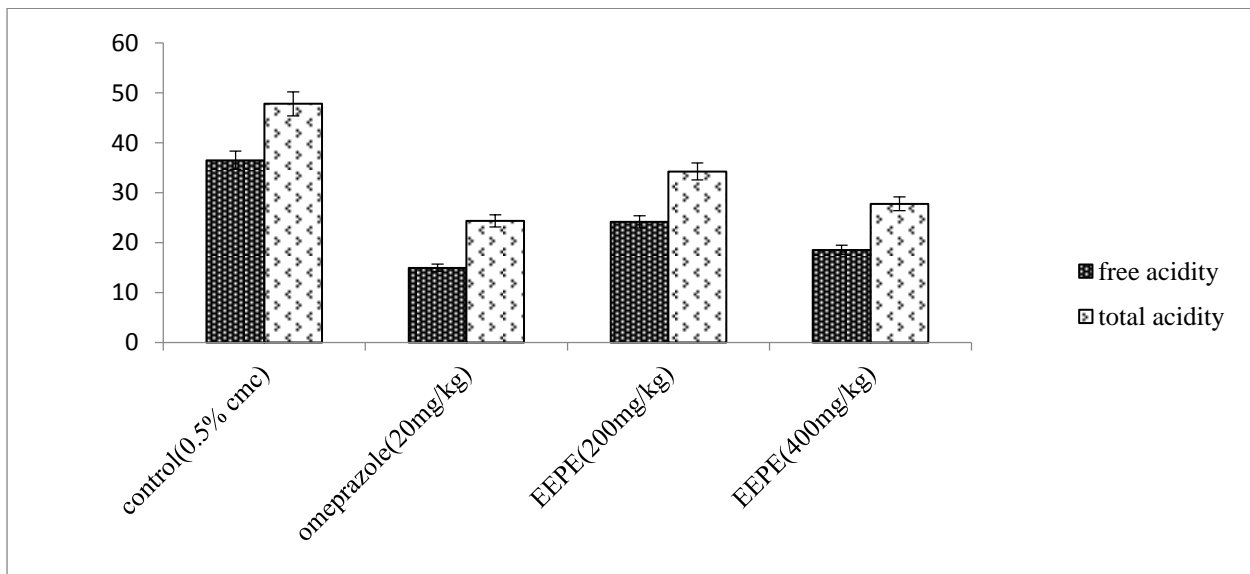


**Figure 7. Effect of Passiflora edulis sims on Pylorus Ligated (Shay) Rat Model indicating Total Hexose, Hexosamine, Fucose and Protein**





**Figure 8. Effect of Passiflora edulis sims on Pylorus Ligated (Shay) Rat Model Indicating gastric volume, and pH**



**Figure 9. Effect of P.edulis sims on Pylorus Ligated (Shay) Rat Model indicating free acidity and Total acidity of gastric juice**

Sl no	treatment	Ulcer index	% of ulcer protection
1	Control 0.5% (1ml/kg)	17.32±0.6120	
2	omeprazole 20mg/kg	1.84±0.0838**	91.04
3	EEPE 200mg/kg	3.13±0.0744**	84.10
4	EEPE 400 mg/kg	2.39±0.0198**	89.97

Values are mean ± SEM; No. of animals in each group = 6 \*\* P value <0.01 compared with the corresponding control

**Table 2. Effect of Passiflora edulis sims on Pylorus Ligated (Shay) Rat Model Indicating Ulcer index & Percentage Ulcer Protection**

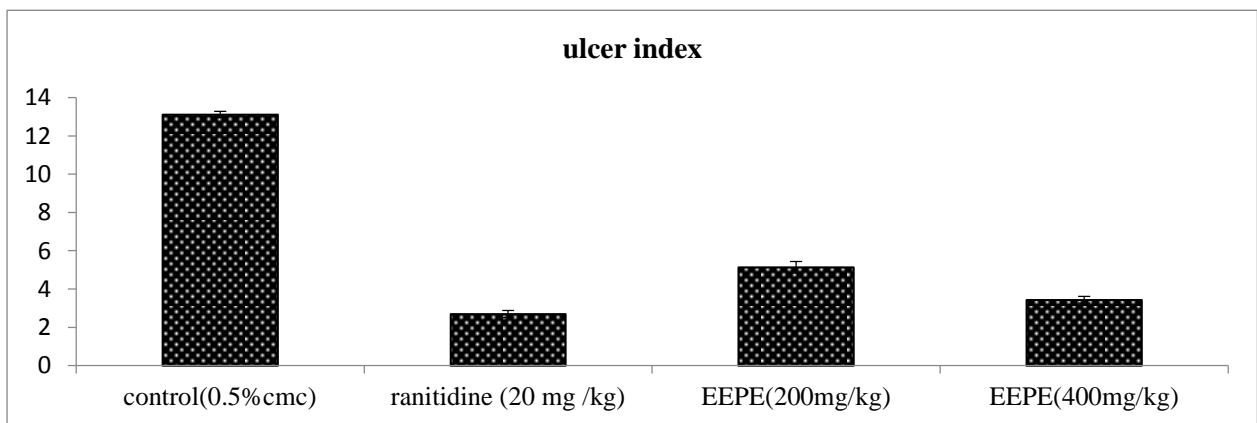
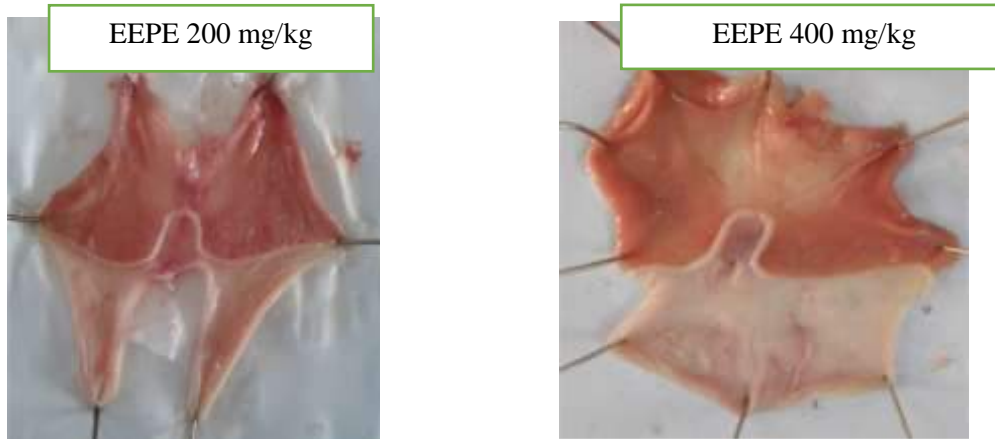
sn	treatment	Total hexose	Total protein	fucose	hexosamine
1	Control 0.5% cmc	248.10±3.36	148.62±2.15	85.88±3.27	292.08±2.15
2	Omeprazole 20mg/kg	374.58±5.22**	564.92±4.93**	185.70±3.11**	470.19±7.27**
3	EEPE 200 mg/kg	323.50±2.19**	523.79±3.38**	130.26±3.70**	417.64±2.71**
4	EEPE 400 mg/kg	349.80±5.01**	553.87±3.91**	72.47±4.02**	466±4.56**
	Treatment	Gastric volume	pH	Free acidity	Total acidity
5	Control 0.5% cmc	4.8±0.262	2.56±0.93	36.97±0.51	47.80±1.13
6	Omeprazole 20 mg/kg	2.05±0.133**	5.05±0.122**	14.95±0.72**	24.32±0.59**
7	EEPE 200 mg/kg	3.58± 0.18**	3.47±0.166**	24.17±0.915**	34.25±0.61**
8	EEPE 400 mg/kg	2.59±0.18**	4.76±0.348**	18.54±1.25**	27.77±0.85**

Values are mean ± SEM; No. of animals in each group = 6.\*\* P value <0.01 compared with the corresponding control.

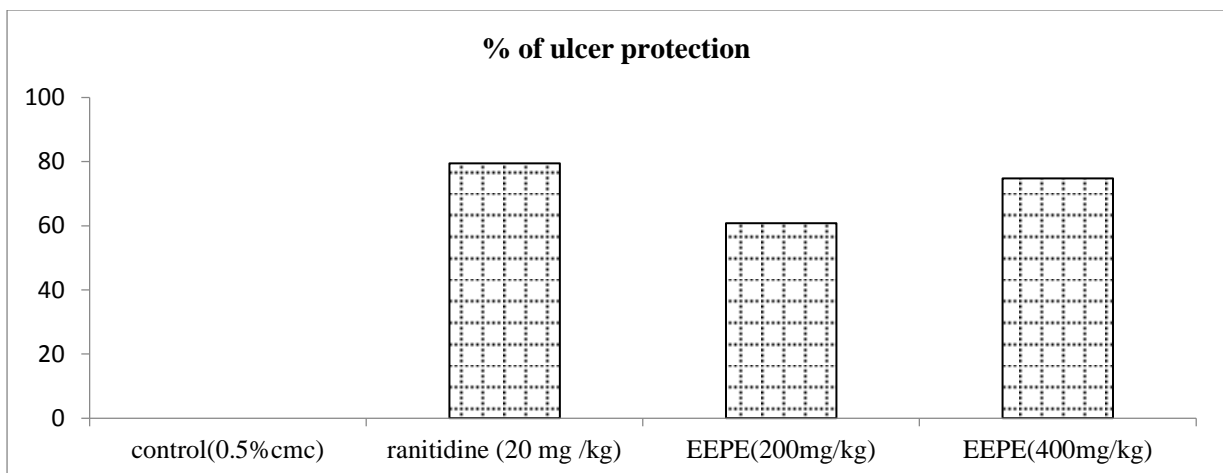
**Table 3.** Effect of Passiflora edulis sims on Pylorus Ligated Rat Model Indicating Total Hexose, Hexosamine, Fucose & Total Protein gastric volume, pH, free acidity and total acidity.

### 3.4 SWIM STRESS (SS) INDUCED ULCER MODEL





**Figure 10. The Effect of Passiflora edulis sims on Swim stress Induced Ulcer Model Indicating Ulcer index**



**Figure 11. The Effect of Passiflora edulis sims on Swim stress Induced Ulcer Model Indicating % of ulcer protection**



Sn	Treatment	Ulcer index	% of ulcer protection
1	Control 0.5 % cmc	13.11±0.17	
2	Ranitidine	2.7±0.18**	79.40
3	EEPE 200 mg/kg	5.14±0.30**	60.79
4	EEPE 400 mg/kg	3.44±0.17**	74.40

Values are mean ± SEM; No. of animals in each group = 6\*\* P value <0.01 compared with the corresponding control

**Table 4.** The Effect of *Passiflora edulis sims* on Swim stress Induced Ulcer Model Indicating Ulcer index & Percentage Ulcer Protection

#### 4. DISCUSSION

The present study is to explain the anti-ulcer activities of the ethanolic extract of leaves of *Passiflora edulis sims*.

Ethanol induced gastric damage ranging from endothelial microvascular damage to development of macroscopic gastric mucosal lesions, which is attributed mainly to the inhibition of biosynthesis of cytoprotective PG resulting in overproduction of leukotrienes and other products. These agents break the mucosal barrier, provoke an increase in gastric mucosal permeability to H<sup>+</sup> and Na<sup>+</sup> ions reducing the transmucosal potential difference and induce formation of erosions and ulcers. In this model *Passiflora edulis sims* extract was able to produce a dose dependent significant reduction of the gastric mucosal damage, indicating a probable local increase in PG synthesis. The ulcer protective action of 400mg/kg dose was nearly closer to that of standard drug sucralfate.

In aspirin plus pylorus ligation model, ulcer index parameter was used for the evaluation of anti-ulcer activity since ulcer formation is directly related to factors such as gastric volume, free and total acidity. In vehicle control group animals pylorus ligation increased the acid secretion, which in turn caused increase in gastric volume, low pH, increased free and total acidity resulting in higher ulcer index. The extract of *Passiflora edulis sims* reduced the gastric volume, free acidity, total acidity and hence ulcer index showing the anti-secretory mechanism.

Water immersion stress model provides both emotional stress as well as physiological stress to the animal. The extract showed significant (P<0.001) ulcer inhibition. The anti-ulcer effect observed in the present study might be due to a possible relationship between protection of mucosal injury, inhibition of acid secretion and the antioxidant nature of *Passiflora edulis sims*.

The extract possesses antisecretory, cytoprotective and proton pump inhibition mechanism. This study indicates that *Passiflora edulis sims* extract has a potential antiulcer activity. The secondary metabolites identified may also have

been flavonoids, tannins and triterpenoids are the possible constituents behind the anti-ulcer activity of *passiflora edulis sims*. as flavonoids, have been reported to possess antiulcer activity in activity in various experimental models of ulcers.

#### 5. CONCLUSION

The result of this study confirms the use of the ethanolic extract of leaves of *passiflora edulis sims* in traditional management of peptic ulcer effect. Further study is required to isolate the active phytochemical constituents present in the extract and pharmacological studies on the healing action of drug on chronic ulcer as well as on the possible side effects. The investigation on mode of action may pave way for establishment of new anti-ulcer therapy regimen.

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## FEATURES OF TRANSLATION OF THE CONCEPTS "DUTY / CONSCIENCE" IN THE STORY BY M. DOST "A SHORT MUSTAFA" INTO RUSSIAN

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### ANNOTATION

*The article substantiates the relevance of referring to the latest achievements in the field of translation studies, as applied to translations of concepts. The axiological concepts "duty and conscience" are considered as system-forming units, as dominants of the work. As a unit of M. Dost's artistic picture of the world, they reflect the individual author's understanding and figurative embodiment of the essence of the "man of the earth" through the representation of the concepts of "duty / conscience". Dynamic translation assumes the "concept deployment" technique, which is illustrated in a number of translation situations.*

**KEY WORDS:** *translation-dynamic system, concepts "duty and conscience", situation, conceptological analysis, concept "man of the earth", discourse, intercultural competence, mentality.*

Современные исследователи в области переводоведения (Л.В.Кушникова, Н.К.Гарбовский, Н.Г.Коршунова, К.И.Леонтьева, Ю.П.Сологуб, Ш.С.Сафаров и др.) выработали принципы и критерии, среди которых доминируют категория смысла, гармоничность в понимании смысла текста оригинала и перевода. Одной из главных проблем современного переводоведения является вопрос антропо-ориентированности: «...назрела необходимость создания теории перевода с истинно «человеческим лицом» антропо-ориентированность которой бы не просто декларировалась, а действительно реализовывалась» [8, С.149]. Называя переводчика «медиатором культуры», который в идеале знает язык, культуру, обычаи, ритуалы и т.д. А. Вержбицкая, Т.А.Фесенко и другие ученые подчеркивают, что «неотъемлемым свойством языковой личности переводчика является межкультурная компетенция, так как переводчик должен быть погруженным в культуру страны оригинала текста. Представляется важным акцентировать то, что русскоязычные переводчики, рожденные в Узбекистане, могут

«заглянуть внутрь текста и сформировать его индивидуальное видение», не нарушая образную составляющую текста оригинала, что доказывает перевод В.Коткина повести М.Доста «Кроткий Мустафа». Л.В.Кушникова подчеркивает главную, на наш взгляд, проблему значимости национальной культуры и сознания у автора и переводчика: «Переводчик преломляет смысл исходного текста таким образом, что он является носителем как национальной, так и иноязычной культуры, он создает собственную переводческую картину мира, которая формирует его сознание билингва» [7, С.86].

Повесть «Мустафа» входит в цикл произведений М.Доста «Галатепинцы». Повесть «Кроткий Мустафа» в переводе В.Коткина как бы сохраняет авторскую позитивную модальность, выраженную в гимне человеку труда, умеющему вкладывать душу в любое дело, создавать материальную красоту: «Конские потники, которые делает Мустафа славятся на всю округу... умеет мастерить крепкие седла для ослов, конские покрывала... шьет себе и жене мягкие кауши». [3, С.11] Мустафа, на наш взгляд,



является самым типичным представителем концепта «человек земли», при этом истинным галатепинцем. Он - труженик, хозяин своего сада и земли: «...сплошная живая изгородь. Этим и красив теперь двор Мустафы: войдешь – и глазам радостно» [3, С.7].

Автору необходим рассказ о занятости своего героя, кротости его характера, чтобы обосновать частотность концептов «долг/совесть» в разных пластах текста. Аксиологическая ценность данных концептов есть прямая аттестация личности М.Доста: «Своеобразие авторской личности проявляется как в системе характерных для него концептов (некоторые из которых становятся ключевыми), так и в средствах их репрезентации и способах приобщения к ним читателей... Однако не только фактор частотности ключевых слов оказывается важным, но и осознание их идейно-художественной значимости в тексте на основе использованной автором системы их эстетической актуализации. [2, С.467]. Поэтому считаем, что «идейно-художественная значимость» концептов была принята В.Коткиным за основу при переводе.

Во-первых, частотность употребления концептов проявляется в характеристике Мустафы другими персонажами, его жена первая отмечает: «...хоть бы, когда дурное слово сказал. Совесть, значит, есть у старика» [4, С.12]

Во-вторых, концепты отражают психологическое состояние и нравственную позицию: герою часто бывает «стыдно... просить совестно». Даже в молодые трудные годы мужчине на поле «было совестно показать свою слабость». Однако, даже друзья требуют от Мустафы твердости: «Да будьте вы хоть раз мужчиной... Чего вы стесняетесь?» [4, С.53]. Для самого героя критерием порядочности является совестливый человек. Л.В.Кушникова словно оценивая подобную работу, пишет: «...переводчик только тогда создает эквивалентный текст, когда «увидит его» как некое организованное целое, представит, «образует» тот образ текста, который обретет в тексте свою языковую объективацию» [6, с.21].

Отметим, как В. Коткин создает образ «кроткого Мустафы». Известно, что заглавие является «сильной позицией текста». Считаем, что типично русское определение «кроткий» может образно реализоваться в данной ситуации: «Мустафа со шкурой в руках молча направляется в дом. Голова у него опущена вниз, да и весь он будто уменьшился в размерах, грустный такой идет... Старуха удивленно взирает на него.

Мустафе стыдно, он старается не встретиться с женой взглядом. И старуха молчит. [3, С.16]

*Мустафо бошини хам қилиб, терини уйга олиб киреди. Кампири унга ҳайрон бўлиб тикилади. Лекин Мустафо қўзларига қарамайди, уялади... Кампир ҳам индамайди. [4, Б.12].*

Прямой репрезентации концепта «совесть» в подлиннике нет, но концепты могут быть выражены вербальными и невербальными средствами. Известны слова Ю.С.Степанова: «Концепт-это понятие с «расширением».

Номинативное поле концепта «совесть» в этой ситуации расширяет за счет тропа, действие и позы персонажа (опущена вниз, грустный идет, ...) Перевод стереотипа образно соответствует оригиналу, что допустимо в «гармоничном переводе». Принимая утверждение Л.В.Кушниковой за основу «Перевод есть система транспонирования смыслов текста одной культуры в текст другой культуры», приведем в качестве примеров ряд ситуаций, которые можно определить, как проявление ментальности героя. Продуктивно для концептуального анализа выделить ситуации, в которых проявляются национальные особенности ритуала, контекстно называется концепт.

Первая ситуация центрирована на этническом представлении о долге отца и дочери: «Мустафа вдруг умрет, не простив дочери. Ведь это тяжко: лишиться благословения отца! Кем доволен отец, тем и сам аллах доволен. Не дай бог, если Мустафа умрет, так и не помирившись со своей дочерью. Та уже раскаялась во всем, живет, пришибленная позором. Это раньше она ходила с гордо поднятой головой, веселая, неприступная. Где теперь те времена!.. Похудела, осунулась, стала точно лучинка, в глаза людям не осмеливается смотреть... Еще четверо детей у нее, и о них думает, бедняга, боится, как бы проклятие отца не коснулось ее детей... [3, С.62].

*Ота рози - худо рози. Агар Мустафо кизининг гуноҳидан кечмай қўз юмса, мундан баттари бўлмас. Қизи тавбасига таянган, илгариги керилиб юришлари қайда!.. Энди у гаплар йўқ, одамнинг қўзига тик қаролмайди, чўндай озиб кетган. Уёги турт-бешта чуғурлаган боласи бор, шуларни уйлайди. Отам рози бўлмаса, дуои бади шуларга урмасин, деб қўрқади. Хар келганда кампирга йиғлаб тармашади. [4, Б.47].*

Как видим, две цитаты имеют общий центр: традиционная мусульманская установка: Кем доволен отец, тем и сам аллах. Ота рози - худо рози.

Вторым центром считаем этническое понимание жизни в коллективе «в глаза людям



не осмеливается смотреть...», одамнинг кўзига тик қаролмайди.

Переводчик данного произведения не пошел по пути «простой эквивалентности и адекватности». Не нарушая образности, авторской пластики повествования, он работает с ситуацией, где-то чуть-чуть расширяя ее, внося корректный комментарий, дополняя ритуальный ряд. Расширить в переводе эмоциональную сторону текста, не изменяя сути, он вправе.

Можно согласиться с К.И.Леонтьевой, которая предлагает «семиотику перевода как перевода дискурса»: «семиотика дискурса заставляет нас рассматривать перевод как деятельность...но уже с позиций парадигмы «живого зрения», так как деятельность активной и пристрастной личности, в единстве индивидуального и социального, ментального, чувственного и телесного, во взаимодействии со средой, в которой он опосредует образ мира-достоиние этой личности» [8, С.150]

В.Коткину важно передать в тексте проявление национального мышления Мустафы, следование им этическим нормами жизни в кишлаке; поэтому каждый поступок герой сверяет с мнением окружающих, даже сватовство дочери: «Очень совестно было с первого же разу согласиться, вдруг люди подумают, будто Мустафа рад избавиться от своей дочери...» [3, С.29].

*Бирда куда бўлайлик, деб эдим, лекин сиз кўнмадингиз. Мустафо қизи Санобарга Назар Махсумнинг совчи бўлиб келганини эслайди... [4, Б.21.]* Учитывая частотность употребления концепта “совесть” для характеристики кроткого Мустафы, дополнительная прямая репрезентация в переводе не выглядит инородной.

В ситуации сватовства племянника Мустафы происходит как бы закрепление «ролей» (сваты, мать невесты, невеста) и соответственно тому отмечен поведенческий рисунок в рамках развития концептов «долг/совесть/стыд».

«Самого хозяина дома не застали, вышла его дочь, та самая, которую они решили сватать, вышла, позабыв всякий стыд, закричала: — Убирайтесь вон, я не собираюсь замуж. Мустафа повернулся было уходить, но мулла Данияр, добрая душа, его не пустил. [3, С.39].

Мустафе пришлось последовать за ним. Войдя во двор, они направились к маленькому супу. Она оказалась голой, без паласа. Хозяйева даже не удосужились ведерком воды смахнуть с

нее пыль, хотя и знали, что появятся сваты. [3, С.40].

*Эртаси куни мулла Дониёр билан Мустафо Тилланинг уйига совчи бўлиб боришиди. Тиллани топишолмади. Ҳалиги қизнинг ўзи пешвоз чиқди, шармни унутиб: “Кетаверинглар, менга эр керакмас”,- деб айтди. Мустафо ортига бурилиб, ҳовлидан чиқмоқчи эди, лекин мулла Дониёр қуймади. (б.30).*

*Мустафо ноилож унинг ортидан эргашиди. Келиб, уй олдидаги супага ўтиришиди. Совчиларнинг хабари ўзларидан олдинроқ келган эди. Мустафо супага ақалли икки челек сув урилмаганини кўриб, тагин айтди..... [4, Б.31].*

В данной сцене писатель подчеркивает, что материальные предметы могут стать в контексте ситуации для национального сознания знаковыми индикаторам «позитива или негатива».

Показателем неуважения и нарушением долга гостеприимства является не убранная супа. Очевидно, что В.Коткиным была проделана основательная предпереводческая работа над текстом оригинала, так как акценты на главные эмотивные центры им выделены: «...предпереводческий анализ текста включает лингвистический, литературоведческий, когнитивный, прагматический, культурологические аспекты. Концептуальный анализ и учитывает, и предполагает включение всех перечисленных аспектов» [1, С.20].

Если для узбекского читателя данный факт (не убранная супа) есть негативный индикатор неуважения к гостям, подчеркнутое «не гостеприимство», то переводчику необходимо акцентировать, развернуть знак в ритуал. Тот же самый прием «развертывание концепта» В.Коткин использует дальше в переводе этой ситуации: “Мулла Данияр был человеком ученым, не зря десять лет проучился в бухарском медресе, он умел говорить с людьми, помнил все обряды, знал, когда как надо поступать. Он развязал узелок со сладостями и двумя лепешками. Но жена Тилло тоже была не дура, она знала: отведать хлеба другого, значит, во веки веков быть у него в долгу. Она принесла свой дастархан и разломила свою лепешку. [3, С.40].

*Мулла Дониёр мадраса кўрган одам эди, расмини қилиб, белбогига ўралган иккита нонни ўртага қуйди. Лекин Тилланинг хотини ”ўзининг дастурхонини келтириб, ўзининг нонидан ушатди. [4, Б.31].* В.Коткин разворачивает ситуацию, дополняя эмоциональные и модальные оценки персонажам, судя по их поступкам: “Давай





разломим теперь эту лепешку, и пускай одна ее половина останется у твоей дочери, а другую мы возьмем с собой и отнесем к будущему жениху... [3, С.40].

...“*Қизинга нон сундирсак Ойпарча.....*” [4, Б.31].

В данной сцене писатель подчеркивает, что материальные предметы могут стать в контексте ситуации для национального сознания знаковыми индикатором «позитива или негатива». В.Г.Зусман справедливо пишет: «Национальный культурный мир не открыт иностранцу, который видит в чужой национальной культуре лишь поверхностные явления» [5, С.40].

В.Коткин уточняет и расширяет в тексте оригинала «культурный модус», чтобы его значение было адекватно принято при переводе.

Показателем неуважения и нарушением долга гостеприимства является необработанная супа. Вторым материальным показателем нарушения традиции являются два дастархана. Сваты принесли свой дастархан со «сладостями и двумя лепешками». Мать невесты знает, что «ответить хлеба другого, значит, во веки веков быть у него в долгу» [3, С.40], поэтому она разломилась свою лепешку.

В этом же плане подчеркнута национальная традиция поведения девушки перед сватами. Переводчик использует логично слово из номинативного поля концепта «совесть»: «Ты хоть немного устыдила бы свою дочь, — попросил мулла Данияр. — Научи ее, чтоб не показывалась она при сватах-то. Должна же невеста немного робеть перед сватами!.. [3, С.42].

“*Қизинга айт, Ойпарча, - деди мулла Дониёр. – Совчи турган жойда кўп турмасин, биздан сал уялсин...*” [4, Б.31].

В примирительной речи Мустафы звучат традиционные прогнозы идеальной свадьбы: «позовем все одиннадцать кишлаков вокруг Галатепе». Нарушение всех этических норм поведения мгновенно становится достоянием общности, исключением данной семьи из коллектива: «...пять лет просидела в родительском доме. Не только свои, но даже из тех одиннадцати кишлаков вокруг Галатепе никто не пришел ее сватать... Кроме отца с матерью, никто из галатепинцев не поехал на ее свадьбу» [3, С.43].

М.Дост создает ряд эпизодов, поведение в которых характеризует Мустафу как человека долга и совести, даже по отношению к классовому врагу. Приказ похоронить курбаши формально выполнен, но «...ему стало жалко

Акбаша, ведь того даже не омыли, не отпели, бросили в яму...» [3, С.33]. Вновь концепт «долг» совестливого человека В.Коткин не вербализует, но все действия Мустафы не только дают все этапы его следованию мусульманскому обряду, но и выполнения человеческого долга в противовес социальному: «Мустафа вернулся к рабату, выкопал рядом новую могилу, глубокую с широким сводом сбоку... обложил холмик камнями, потом даже прочитал аят, стоя у могилы на коленях» [3, С.33]. Так же воспринимается концепт «совесть», которую переводчик передает индигнационно как «муки совести»: «долго-долго не мог забыть...ему все казалось, будто он поступил с мертвецом не так, как полагается» [3, С.33].

*Сўнг Мустафога кетмон бериб, Оқбошни кўмасан деб буюрди. Мустафо ноилож кўнди, ўликни эски кигизга ўраб, эшакка орди-да, қабристонга борди, лекин мазорнинг мутасаддиси Карим Ғалча оёғини тираб туриб олди. “Элдан чиққанни қайтиб элга кўймайман”, деб айтди. Мустафо кўрбошини Қизилтошга элиб кўнди. Ташиландиқ работнинг чеккасидан гўр қазиди, ўликни кўйди, устидан тупроқ тортиб бўлиб, ўйлади: “Тагин келган бир жондор гўрни очса нима бўлади, ҳарна бўлсаям одам-ку!..” Мустафо удумини қилди: гўрни яхишлаб шибабалаб, атрофда ётган тошлардан келтириб, устига бостирди.*

*Оқбошни кўмгани кўп вақтларгача эсидан чиқмай юрди, кейинроқ, ўликни ҳамқишлоқлари қазиб олиб кетганини эшитиб, кўнгли сал осойиш топди. [4, Б.24].*

Как видим, В.Коткин не нарушая информативное поле перевода, адресно для русскоговорящего читателя, расставляет правильные акценты в действиях Мустафы. Достаточно обратить внимание на два синонима могилы, но с разным эмоциональным наполнением: “бросили в яму” и “новая могила”, сделанная по всем правилам.

Отметим, что концепт «совесть» в повести «Кроткий Мустафа» встречается часто, подчеркивая психологическое состояние героя, порой синонимически близкими понятиями. Считается, что концепт «стыд» входит в концептуальное поле «совести»: ««Она стыд потеряла» [3, С.58] или «...из-за нее столько лет выпрямиться не могу, смотреть людям в глаза стыдно» [3, С.62].

Автор в конце повести дает еще две разновидности концепта «долг», отражающее национальное мировоззрение человека, живущего в коллективе. В.Коткин создает



невербализованный концепт «долг» жителя перед односельчанами: «...иногда со стариком Хуччи и Ибадулло Махсумом ходит на свадьбы или на похороны, но все это, как говорится, дань тому, что ты человек и живешь среди себе подобных. [3, С.31].

*Баъзида Ғуччи чол билан Ибодулло Махсумга қушилиб, қишлоқнинг тўйига боради, азасига боради, ўзи ҳам бир узру баҳона билан элга ош улашади. Лекин буларнинг барисини қишлоқчилик, элчи чиқмасликнинг важидан.* [4, Б.23].

Долг односельчан проведать «умирающего» Мустафу: «...Потом один за другим стали приходиться односельчане. Разные люди пришли. Все говорили о неизбежности конца, воздавали хвалы Мустафе, прощались и благословляли. Люди шли до самого вечера... [3, С.77].

*Кейин қишлоқдошлар келди. Турфа одам келди. Ўлимнинг ҳақлиги муқаррар эканидан гапиришди. Мустафони мақташди, розилик тилашди. То кечгача одам узилмади.* [4, Б.51].

Таким образом, в переводе данной повести «Кроткий Мустафа» используются концепты «долг/совесть/стыд» в их узусуальном значении, а также учитывая концептуальные элементы национальной культуры (традиции, ритуалы) в их «расширенном значении», вне вербализации. Обращаясь к терминологии В.Л.Кушниной, можно считать, что-«поле автора, отражающее модальный смысл, образующийся в предтексте», и «поле переводчика, отражающее индивидуально-образный смысл,» необычайно близки в художественном произведении на русском языке «Кроткого Мустафы». Согласимся с Л.В.Кушниковой: «Переводчик должен сознавать, что текст перевода принципиально не может быть идентичен тексту оригинала, он обладает иными качествами и становится столь же неповторимым и уникальным, как и сам оригинал.» (Кушникова,2014, с.19). Перевод В. Коткина данной повести является, на наш взгляд, примером синергетического перевода, когда раздвигаются границы «адекватности и эквивалентности», уступая место творческому, гармоничному и свободному процессу «транспонирования смысла».

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## TRANSLATION METHODS IN LITERARY TRANSLATION

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### ABSTRACT

*This article examines the problems arising in the linguistic analysis of translations. The translation process is creative and does not follow the strict analytical rules of any of the models, however, knowledge of these models can greatly facilitate the translator's solution to difficult translation problems. Translation transformations are translation techniques that consist in replacing regular correspondences with contextual correspondences, as well as the semantic constructions themselves, resulting from such techniques.*

**KEY WORDS:** *modern linguistics, theory of translation, models, translation problems.*

### DISCUSSION

One of the characteristic distinctive features of modern linguistics is the desire of linguists to study the problems that arise in the linguistic analysis of translations. A huge number of various scientific works, monographs, reports and scientific articles are devoted to these problems. An invaluable contribution to the development of the linguistic theory of translation was made by such famous scientists as O. Kade, Yu. Naida, A. Neubert, V.N. Komissarov, Ya. I. Retsker, A.V. Fedorov and many others.

In the course of the development of such a science as the theory of translation, some patterns were revealed in solving translation problems, which in turn were formed into certain models and principles of translation, which made it possible to at least partially objectify the translator's intuition and support it with data from linguistic analysis.

Despite the fact that any translation model is purely conditional, since it does not reflect the actual manipulations of the translator, they can be used to describe in some detail the logical sequence of actions used in translating a specific text.

Of course, the translation process is creative and does not follow the strict analytical rules of any of the models, however, knowledge of these models can greatly facilitate the translator's solution of difficult translation tasks. The description of the translation process using translation models implies such aspects as the general characteristics of the

model with an indication of the scope of its application, as well as the types of translation transformations used within this model. In the course of research in the field of translation studies, situational - denotative and transformational - semantic translation models were formed. The situational-denotative translation model describes the translation process as the translator's identification of the linguistic units of the original text with the linguistic units of the translated text known to him, the interpretation of their meaning in the context, the ratio of the realities described in reality. The transformational-semantic model consists in the analysis and simplification of the initial syntactic structures of the FL, the transition to the nuclear structures and semantic components of the FL, as well as restructuring, i.e. transformation on the TL from the nuclear level into the final structures and units of the original.

Translation of a work of art requires not only a thorough knowledge of languages, but also the ability to skillfully convey the images of the original in "consonance" with the author.

For a long time, linguists, when assessing the quality of translation, used concepts such as "equivalence" and "adequacy", which were practically indistinguishable and followed from one another. But by the 60s of the 20th century, the concept of "translation adequacy" acquired an independent status and was differentiated from the concept of equivalence.



Linguists I.I. Revzin and V.Yu. Rosenzweig understood the adequacy of the translation as a "full-fledged translation" that fully conveys the content of the original text by equivalent means. For the first time, a strict separation of the concepts of "equivalence" and "adequacy" occurred in the theory of Skopos (from the Greek. Skopos - the goal of any activity), developed by German linguists Katharina Rice and Hans Fermeer. The theory, however, caused a number of criticisms, since the criteria formulated in it were quite specific and led to confusion. The essence of Skopos' theory consisted in the equal distribution of attention, both to the original message and to the target one, i.e. translated, be it interpretation or translation. The main subject of this theory was the translation process itself as a type of activity that has its own purpose, addressee or audience. As a rule, these parameters are set by the customer, who informs the translator about his needs and requests. Guided by the task, the translator chooses a translation method that reproduces the original, deviates from it, or completely neglects it. The concept of "adequacy", accordingly, refers directly to the translation process. Thus, this theory allowed its developers to attribute to translation not only literary translation, but also such manipulations with the text as abstract, free, abbreviated translation, as well as translations performed for certain ethnic or religious groups, in which certain parts of the text are omitted. moral or ethical considerations.

It was this theory that made it possible to separate the concept of "adequacy" of translation from "equivalence", because "equivalent" is a translation in which the connection between the source text and the target text is preserved, while an "adequate" translation meets the set goal regardless of the chosen translation method. The concept of "equivalence" refers to the translation result and characterizes the functional correspondence of the target text to the original. V.N. Komissarov proposed a theory of levels of equivalence, which is a model of translation activity based on the assumption that equivalence relations are established between similar levels of the original and translated texts. This model consists of the following levels:

- The level of the goal of communication, which is to express the speaker's emotions. The language translation facilities at this level do not match the original language facilities.
- The level of description of the situation. The general part of the content of the original text and the translation, in addition to conveying one goal of communication, reflects a similar language situation.

- The level of utterance, at which the components of the content are stored, as well as a significant part of the syntactic structures of the FL, while there is no equivalence at the word level.
- The level of the message. At this level, the information contained in the structure of the original text is included in the general content of the translation text.
- The level of language signs. At this level, the maximum possible equivalence of content between the texts of FL and TL is achieved.

"Adequacy" of a translation implies that the translated text is adequate for the purpose for which the translation is being created, and not for the original text. This concept covers the correspondence of stylistic features, accuracy of translation and selection of analogues for idioms and phraseological units, semantic fidelity and preservation of the pragmatic aspect.

To create an equivalent translation, you must choose an adequate translation method. At the moment, linguists have not been able to come to a common opinion regarding the description of the algorithm for finding the optimal translation solution, and therefore the experience and intuition of the translator remains his only assistant on the path of creating the target text.

When performing a translation of a literary work, it is not possible to maintain full equivalence without losing artistic imagery. To accomplish this task, linguists have developed a method of translation transformations.

Literary translation is fundamentally different from other types of translation, since in the final text it is necessary to convey not only the semantic load, but also preserve the style of the author's writing, the structure of the artistic concept. The information contained in a literary text and subject to decoding has a dynamic, mobile character, in connection with which it is possible to observe several translations of the same literary work. It is this feature that underlies the problem of identifying criteria for assessing the quality of translation of a literary text.

If we consider a literary text as a kind of reflection of reality or a fictional reality formed by the author under the influence of a particular culture, then the primary task when performing a literary translation is to convey the artistic meaning of the work. When trying to translate individual linguistic units at different levels of equivalence, the most important informational component of the literary text is lost, since the reality depicted in the text consists of many interconnected images. Reproducing the images of the original text in the



target language, the translator is forced to consider the translated text from the point of view of culture, traditions of the original language, in order to then restore the artistic meaning using the expressive means and traditions of the target language. It is quite obvious that the quality of translation of a literary text is formed from two components: adequacy, related to the reproduction of the message function in the translated text, and equivalence, which implies "the maximum linguistic closeness of the original and translated texts" [ 2]. Equivalence is secondary in importance in relation to adequacy. Literary translation presupposes a certain artistic and aesthetic impact on the reader, which is often achieved by rejecting the linguistic proximity of the original and translated texts. The adequacy of the translation of a literary text is influenced not only by knowledge of a different culture, but also by the interaction of the worldview, the mental field of the second and the translators of his texts, namely, their personal characteristics of perception of real and fictional reality.

One of the ways to achieve translation adequacy can be translation transformations. As V.N. Komissarov, knowledge of the rules and techniques, as well as the ability to apply them, helps the translator in difficult situations when there is not enough time to quickly find the best translation option. Translation transformations are translation techniques that consist in replacing regular correspondences with contextual correspondences, as well as the semantic constructions themselves, resulting from such techniques. Linguistic scholars have made a huge contribution to the study of translation transformations, due to which today there are several classifications.

The rationale for applying translation transformations is to increase the equivalence of the translated text to the original, much more than using regular matches. In addition, translation transformations can reduce, or avoid, the negative consequences of using regular correspondences in some contexts. The use of translation transformations is advisable in order to avoid literal translation, if necessary, idiomatize the translation, bring it closer to the norms of the target language, to overcome the linguistic differences between FL and TL when translating homogeneous members of a sentence, if necessary, get away from the cumbersomeness, ambiguity, illogicality of the translation, to convey the semantic message of the artistic concept, as well as for the transmission of hard-to-translate wordplay, figurative expressions, stylistic means.

In order to assess the quality of the translated text, it is necessary to conduct a detailed analysis of the text, which includes literary analysis, and then a structural and semantic analysis of the original text

and the translated one. Then one should compare the characteristics of the two texts, and analyze how expediently and adequately these or those translation transformations were used. Since it is the adequacy that is the main criterion for assessing the quality of the translation, then it is necessary to assess the compliance of the translation with the conditions and requirements of a specific act of interlanguage communication.

The degree of equivalence between the translation and the original is the most objective factor for assessing the quality of the translated text, since it can be made on the basis of a comparative analysis of two texts. To carry out such an analysis, it is necessary to identify and classify translation errors, namely, content inconsistencies with the original text.

For literary translation, the problem of translatability is relevant, with which the concept of "adequacy" was also associated, which has been highlighted more than once in the works of Russian and foreign linguists. Indeed, in the original language there are features, or combinations of these features, which are hardly transferred into the target language. As a rule, the group of untranslatable units includes dialectisms, social jargon. The object of literary translation is fiction, and its specificity is the figurative and emotional impact on the reader, which is achieved through the use of numerous expressive means, such as epithets, metaphors, and a special rhythmic-syntactic structure of sentences. When performing literary translation, it should be borne in mind that this type of text decoding is intercultural, cultural-ethnic and artistic communication, "for which the text itself is an intrinsic value as a significant semantic value and an object of artistic representation and perception" [Nelubin 2003: 247]. Due to the specificity of the translated materials, literary translation is of particular importance among other types of translation.

Summing up the results of the chapter, we can conclude that the problem of finding and shaping translation transformations has existed for more than a dozen years. Over the years of researching this problem, scientists have formed various classifications, the common feature of which was the division of all translation transformations into lexical and grammatical ones with some different nuances. For a long time, the concepts of "adequacy" and "equivalence" were associated by linguists as interchangeable. But after the 60th of the last century, there was a clear separation of these concepts. Linguists have defined "equivalence" as the relative commonality of the translation and the original, while the degree of proximity of the texts can be different, and the equivalence itself is established at different levels. Under "adequacy" they began to take the method of finding the optimal translation solution



when performing a specific act of intercultural communication. The concept of equivalence cannot be applied to the translation of a literary text, since literary translation is fundamentally different from other types of translation and has its own specifics.

For literary translation, the most important parameter is the preservation of the figurative and emotional impact on the reader, which is achieved using various stylistic and expressive means. Also, for literary translation, such a concept as a "unit of translation" is important, which can be either a single word or a whole phrase, a sentence, and even, in some cases, a whole text. Only the concept of "adequacy" can be applied to the translation of a literary text, and only an adequate translation can be considered complete. The adequacy of any text, especially an artistic one, is achieved with the help of a reasonable application of translation transformations.

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# COMPARATIVE TYPOLOGICAL STUDY OF THE FUNCTIONAL AND SEMANTIC CATEGORY OF POLITENESS

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## ABSTRACT

*The subject of research in the third chapter is the directive speech acts, which in the literary text as depicted communication simulate real communication situations. As the analysis of the pragmatic aspect of these directive speech acts has shown, the modeling of communication between communicants belonging to different social groups includes a number of factors, such as the distribution of primary and secondary communicative roles "between participants in direct speech; the distribution of social roles between the communicants; the nature of interpersonal relations, which is determined depending on the degree of socio-psychological distance between the communicants; the attitude of the communicants to the potential action.*

**KEYWORDS:** *politeness, lexical means of politeness, semantic comparison, category of politeness*

## DISCUSSION

Comparative analysis showed that Uzbek and French languages are characterized by similarities in the frequency of use of the above constructions for the implication of the imperative. In the English language, there is a less frequent use of one-part sentences and at the same time - an abundance of conditionals as imperative statements. The most widely represented in the English language is the implication of the imperative through the logical-semantic presupposition. The English language is generally more characterized by polite forms, as well as speech actions of a hint or half hint. The English language is distinguished by the wide use of verb constructions in such conditions and units of communication in which native speakers of Uzbek or French prefer verbal ones.

The analysis of the varieties of statements found in the practical material that objectify the imperative semantics, as well as the analysis of the situations themselves, made it possible to establish that in the texts of literary works in the compared languages, three main types of directives:

1) Prescriptive, that is, prescribing the execution of an action;

2) Requisite, that is, encouraging action performed in the interests of the speaker;

3) Suggestive - expressing advice.

Each type of directive speech acts is characterized by its own set of indicators. Prescriptives objectify the sign of obligatory action, the priority of the speaker's status. Requests objectify the priority of the addressee's status, non-ligatory and beneficial action for the speaker. Suggestions objectify the priority of the speaker's status, non-ligatory and beneficial action for the addressee. These combinations of pragmatic features can be called the pragmatic context of directive speech acts that simulate real communication situations.

Analysis of practical material for all compared languages shows that the choice of a speech act of one form or another in a literary text to a certain extent depends on whether the simulated situation in which the implementation of this speech act takes place has some sociopragmatic limitations - regulations.



In a literary text, the same restrictions apply as in real communication. Due to the fact that the activity, role structures are more primary than the status systems mediated by ethical norms through culture and morality, the regulations enjoy a privilege - the right of decisive vote in relation to etiquette. This phenomenon can be called the principle of priority of regulations. According to the social-role parameters acting in a literary text, two types of regulatory regulation can be distinguished and, accordingly, two types of situations represented in it:

1) closed type of regulation, operates in the sphere of relations between members of the same team, connected by a boss-subordinate relationship;

2) open type of regulation, which regulates the interaction of employees of a given corporate association with others, for example, with those who apply in order to realize specific social functions inherent in this institution.

In the course of a sociopragmatic analysis of real communication, one can note the mutual influence of social and psychological roles and statuses. We see the same picture in a literary text. Thus, close informal (family, friendship) relations of communicants can, in comparison with their official status, play a decisive role in the choice of means of communication, even in the presence of regulations. In those cases, if the regulation does not affect and determines the construction of speech acts, then social etiquette comes to the fore - the observance of a certain ritual that involves politeness and gaining trust. The concept of etiquette is inseparable from the concept of the pragmatic principle of politeness, which defines the form of requests and suggestions. Most of the corpus of speech acts related to jubilant, i.e. limiting the freedom of action of the addressee, are DRA, namely: orders, requests, advice, challenges, proposals, RA, which assert some desire of the addressee in relation to the addressee or his property.

The theory of "saving face" prescribes that it is necessary to infringe on the rights of another as little as possible, but it is extremely difficult to avoid this in speech acts, therefore communicants try, as a rule, to clothe those who compel undesirable actions in the most respectful form. The more the speech threatens the addressee's face, the more the addressee will want to choose a strategy that will compensate for the loss of face or reduce its risk, thereby choosing an indicator of "positive" or "negative" politeness. Positive politeness in the DRA is designed to show that the addressee approves and takes into account the need to keep the addressee's positive face. There are a number of positive politeness strategies:

1) Approval of a common platform (claim "common ground"), that is, common views, opinions,

attitudes, knowledge, belonging to the same group with the addressee;

2) Statement that both communicants are cooperating parties;

3) Fulfillment of the addressee's needs for the sake of common activity, i.e. the addressee assists the addressee.

In English language:

- Excuse me, would you mind if I opened the window?

- I am sorry, never meant to hurt you.

- Sorry that all this happened

- Sorry, what did you say?

In French language:

- Si vous désirez assister à une opération, vous constaterez par vous-même que le patient ne souffre pas. Non? Alors, allons voir les résultats. (Boulle)

Negative politeness is focused on compensating for the negative person's need for self-determination and preserving his personal space. In both real and depicted communication, the addressee can use the following techniques in order to explicate negative politeness:

1) Giving the addressee a choice not to perform the called action;

2) The use of indirect means of expressing imperative intentions;

3) The desire to remove their intentions from the life sphere of the addressee, "depersonalizing" for this addressee and addressee.

In English:

- Well, then, - she asked, - will you cancel the date you've made and spend your holiday with me? (Anderson)

Il pressa un timbre, attendi, tourné vers la porte.

- Mademoiselle Vague, voulez-vous avoir l'obligeance de m'apporter une des enveloppes qui servent pour les fournisseurs? (Simenon)

In addition to the social factor that determines the speech behavior of native speakers as members of national-cultural communities, it should be noted that three extralinguistic factors are considered as the basic ones that determine the communicative context of directive speech acts:

1) Role relationships;

2) The relationship of socio-psychological distance;

3) Communication environment.

Defined by the role prescriptions enshrined in a given culture, the rules of verbal behavior exist in any society. Depending on the socio-cultural situation, the persons participating in communication perform different functions in the production hierarchy, from which the speech roles, respectively, turn out to be different.





In regulatory situations modeled in a literary text, French-speaking communicants show the highest degree of compliance with the rules of the rules, while Uzbek speakers often violate these rules. English-speaking communicators in etiquette situations use the largest number of requisite RAs, accompanied by formulas of politeness. The next step in the application of courtesy rules is the francophones. The poorest choice of structures that soften the exultant effect is noted in the Uzbek language. Accordingly, the least frequent use of requisites is recorded here. Most of the formulas for courtesy of the Uzbek language are outdated and are not used in modern Uzbek; the same is observed in textual material.

In the compared languages in speech, the meaning of quantity can also be nominated by interjections, however, for an adequate interpretation of the meaning of quantity, it is necessary to know the pragmatic situation of the utterance.

In the languages being compared, certain morphemes are used to express the meaning of quantity: poly-, multy, many-, mono-, solo-, macro-, micro-, poly-, multi-, multi-, mono-, solo-, macro-, micro -.

With the help of word-formation means in the Uzbek and English languages, verbs are formed, denoting the singularity or repetition of an action: read, look, drink, sparkle, knock.

French subjects of directive acts have the greatest freedom in choosing the type of DRA, which allows them more often than Uzbek and English-speaking communicants to resort to prescriptive forms to express imperative intentions. Uzbek-speaking and English-speaking subjects use mainly indirect means of objectifying imperative intention, widely using speech strategies to mitigate the exultant effect.

Native English and French speakers are less likely to use requisites and courtesy formulas when communicating with service personnel. Thus, they regard such communication situations as situations with free-type regulations. Uzbek-speaking communicants in most cases choose polite forms.

In real communication, which takes place in the personal and intimate zones of the subjective space, Uzbek speakers are distinguished by a tendency to impose their own opinions, which is confirmed by the frequent use of suggestive DRA. In other communicative situations, speakers of the compared languages find insignificant differences in the choice of one of the main types of DRA. These proportions were shown by the calculation of the DRA in the literary text.

The application of the principles of the sociopragmatic approach and the performance of content analysis of directive speech acts made it

possible to reveal a direct connection between the nature of speech actions of speaking (writing) native speakers, their social status and intentions realized in each act of speech communication, and their display in the texts of fiction.

The communicative-pragmatic situations modeled in a literary text, in which directive speech acts are used, are characterized by varying degrees of freedom in choosing the source of speech for the means of objectifying the semantics of the imperative. The plurality of linguistic means of objectification of imperative semantics, noted in each of the compared languages, provides in the process of constructing a text of a work of art the possibility of differentiating the nuances of the meaning of an utterance and changing the nature of the effect of the addressee of speech on its addressee.

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# THE HERITAGE OF KAZAKH POETS AND ZHYRAUS (BARDS) IN THE TERRITORY OF KARAKALPAKSTAN

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## ABSTRACT

*There are analyzed characteristic features of Kazakh folklore which are performed by poets and zhyraus (bards) in the territory of Karakalpakstan. In this article we tried to analyze characteristic features of Kazakh folklore which are performed by poets and zhyraus (bards) in the territory of Karakalpakstan. The aim of this article is to reveal the peculiarities of coexistence and relations between Kazakh, Uzbek and Karakalpak folklore and literature on the base of studying the development of tutor-apprentice traditional methods of poetical and performing skills of Kazakh poets and zhyraus (performers of folk creative works-poems, eposes, etc. in the own accompaniment in dombra, a national two-stringed musical instrument) in Karakalpakstan.*

**KEYWORDS:** *Kazakh poets and zhyraus; folklore; comparative analyses; national literature; regional literature; world literature; culture; interrelations; eposes and etc.*

## INTRODUCTION

Nowadays the method of comparative analysis dominates in the comparative-typological study of literary relations and literary interaction over the world. This method, often called "Veselovsky method", revealed literary traditions in many national literatures of the world are historically and genetically interconnected and developed in the context of mutual creative dialogue.

Indeed, advanced scientific and theoretical concepts of comparative literature allow to determine the literary relations of the fraternal peoples of the Central Asian region, including the principles of development of Kazakh folklore and literature living outside their historical homeland.

In today's world literature, the term "Kazakh folklore and literature" refers not only to Kazakhstan, but also to the whole literary and artistic heritage created by Kazakhs living in China, Mongolia, Turkey, Iran, Afghanistan, Uzbekistan, including Karakalpakstan. Therefore, the creative heritage of Kazakh poets living in Karakalpakstan plays a

special role in the formation and development of such a whole literary and cultural heritage.

As a result of the synthesis of Eastern and Western literary relations and the study of the interaction of literary traditions in world literature, it was found that the literary heritage of each nation included the concepts of "national literature", "regional literature" and "world literature". The periodization and systematization of inter-literary relations laid the foundation for the formation of the theory of literary influence and creative assimilation. Such new theoretical views became the basis for identifying the area types of national literature, including the comparative-typological study of the literary heritage of the Kazakhs living in Karakalpakstan with the literature and folklore of the main region inhabited by this ethnos. Although the oral and written literature of the Kazakhs in the territory of Karakalpakstan is conditionally called by this name, in fact it is one of the local manifestations of the system of spiritual values that emerged on the basis of artistic and aesthetic thinking of the Kazakh people.



The historical and genetic basis of Kazakh folklore and literature is clarified through the comparative-typological study of the literary heritage of the Kazakhs of this region with the folklore and literature of the Turkic peoples living in the Aral Sea region.

## MATERIALS AND METHODS

The policy of interethnic harmony, religious tolerance and solidarity pursued by the leadership of the Republic of Uzbekistan during the years of independence, including 2017-2019, is reflected in the socio-cultural life of these peoples. Due to the great opportunities created for all peoples living in our country to develop their national customs and traditions, receive education in their native language, and also literature, culture, language, folklore of every nation and people are widely studied and promoted. Indeed, "our focus will be on further developing the mutual friendship and solidarity that prevails in our society, ensuring equal rights for all citizens, regardless of nationality, religion or creed" [1]. The findings of the study of the literary heritage of the Kazakh people living in Karakalpakstan also serve to further develop friendship and cooperation between the fraternal peoples of the region.

It is well known that the principle of literary traditions and the role of literary relations have been increased during last years. The works of researchers as K.Mambetov, K.Kurambaev, K.Jumajanov, K.Aralbaev, G.Esirkepova, A.Bijanov, P.Allambergenova, K.Makhmudov, G.Gurambaeva and O.Geylyaev related to this topic have been studied and investigated.

It should be noted that Oqpan Aytek uli, Seydali Jumabek uli, Kazan zhirau, Karasay Kali uli, Tileumagambet Amanjolov, Lepes zhirau Amanturli uli, Zhakip zhirau, Jalgasbay Aralbaev, Kulkar Ametov, Serimbet, who lived and worked in Karakalpakstan in the second half of XIX century, and zhirau Muratbay Shonqaraev and more than thirty Kazakh poets and writers have not been studied yet from the point of view of literary heritage. Studying the relationships, traditions and individual poetic skills in Karakalpak-Kazakh poetry and jazz creativity will allow to cover the ways, genres, forms and artistic features of Kazakh literature in Karakalpakstan.

## RESULT AND DISCUSSION

In this research there were analyzed the historical, national, spiritual and aesthetic bases of the formation of the heritage of Kazakh poets and bards in the Karakalpak land who had lived and created their masterpiece since the end of the XIX<sup>th</sup> century and until the 60s of the XX<sup>th</sup> centuries. The literary heritage of the Kazakh poets living in the

land of Karakalpakstan also took nourishment from that common source and developed.

The historical, national-spiritual, aesthetic roots of Kazakh folklore and literature in the territory of Karakalpakstan are the common literary and folklore heritage of the Turkic-speaking peoples. We confirm that the folklore and literature samples in the region have been studying are an ethno-areal, regional view of literature with Kazakh national folklore that has undergone various stages of development since the second half of the 19<sup>th</sup> century. Both history and fiction deny that the people of the region have lived together since the time of the ancient Sak-Massaget, the Turkish Khanate, the Oguz-Pecheneg-Kipchak, the Golden Horde, the Nogai Horde.

The ancient brotherhood and friendship of the Kazakh-Karakalpak peoples began to become more visible in the history of the XVI-XVIII centuries. For example, since the second half of the 16<sup>th</sup> century, a large part of the Karakalpaks living in the middle and lower reaches of the Syrdarya became politically dependent on the Kazakhs. That period friendly relations were strengthened between Kazakh and Karakalpak people.

Professor K.Maksetov noted that in the XVI-XVII centuries, due to the long-standing historical destiny, traditions and language of the Karakalpak-Kazakh peoples were developed and flourished. As a proof of this, we can see that there are many similarities in legends, fairy tales, fables, riddles and also in national songs - betashar, wedding traditions and elegies [5].

Having characterized this situation, academician R.Berdibaev said, "Most of poets and bards lived in the territory of Syr Darya and Amu Darya, namely in Karakalpakstan. Here the art of "bakhshi" was well-developed and as "epic region" Karakalpakstan was a place of a pure stream that provides very interesting, vital materials for Karakalpak folklorists [3].

We note that the legacy of the Kazakh poets and jiraus of Karakalpak region refers to the types and genres that already-existed core of Kazakh folklore and literature. They are based on the lyrics of traditional Kazakh folklore and literature dedicated to Navruz, Ramadan songs, badik (song type), wedding traditions, jar-jar, betashar, competitions, songs of farewell, fairy tales, legends, rhetoric, myths, epic genres ("Alpamis batyr", "Qoblandy batyr", "Er Targyn", "Kambar batir"), love epics ("Kozi Korpesh - Bayan sulu", "Qiz Jibek", "Ayman-Sholpan").

Apparently, many of these types of folklore are also presented in other peoples in the region. But they also have certain differences in each nation. Based on this, it is necessary to study in a typological direction the genres in the works of poets and jiraus



of the region, their repertoire, music and art of speech, their traditions and heritage in terms of the synthesis of folklore and literature. Interestingly, the terms used to describe folk performers in Karakalpakstan (jirau, poet, baxshi, qissaxon, janapayshi (student)) are the same in Kazakh.

It should be noted that the number of Kazakh poets who lived and worked in Karakalpakstan in the early nineteenth and early twentieth centuries is more than 30, but depending on the scope of research, we can focus only on the most famous of them. For this reason, we approached the works of Seydali Jumabek ulu (1839-1928), Karasay Qali ulu (1848-1926), Tileumagambet Amanjol ulu (1860-1935) only on the basis of comparative analyses.

Karasay Qali ulu is one of the talents who led the art of poetry and bakhshi at once. He was born in 1848 in a place called "Samatay" near Manqishlak. When Karasay grows up, he becomes a pupil of well-known bakhshis like Akkiyiz and Erman. Owing to them he learnt the art of bakhshilik. Well-known epic poems «Qoblandi Batir», «Qalmambet», «Alpamis» were performed in masterly fashion by him.

The lifelong friendship of Karasay Qali Ulu and Nurabulla and the similarities in their performances can be shown in these lines of Karasay to Nurabylla:

Odan a'ri sorasan',  
Alladan uris sorag'an.  
Jerine kelgen dushpannin',  
Moyinlarin burag'an.  
Qanin suday ag'izg'an,  
Qaraqipshaq Qobilandini,  
Ba'rin ayt ta, birin ayt.  
Nurabulla, shirag'im,  
Qarasaydan qalg'an so'z.  
El qorg'ag'an erlerdi ayt,  
Erlerdin' erlik jirin ayt.

Seydali Jumabek ulu (1839-1928) was one of the bards (jirau) who gradually increased the art of baxshi to the status of pure poetry.

The poet not only became a compatriot of the Karakalpak poets of the time, but also collaborated with them. Seydali also praised the work of Karakalpak poets, whom he considered a teacher, and praised them:

A'jiniyaz – jitdin' du'ldili,  
Berdaq – o'mir bu'lbili,  
Tin'lap o'stim jasimnan,  
Haliq u'nindey ha'r kuni.

Outstanding Karakalpak poets Berdaq, O'tesh, A'jiniyaz influenced to literary career of Seydali. Friendship between different nations (Karakalpak, Kazakh and Uzbek) are the topic in his works. For example:

Qaraqalpaq balasi,  
A'yemdegi haliq edi,  
O'zbek penen tag'dirles,  
Bizin' qazaq balasi,  
Dostina berik jan edi.

K. Jumajanov, a researcher of Kazakh literature in the Karakalpak region, noted these features of Seydali's work, saying that Kunkhoja, Ajiniyaz, Berdaq, and Otesh were his teachers after his uncle Eshim Axun, and listed them in tables with his photos [4].

According to K. Allambergenov, a leading scholar in the field of Karakalpak literature, the influence of Ajiniyaz's speech with Qiz-Men'esh is watched in all of Seydali's speeches [2].

However, the aytis (word-competition) between Seydali and Altyn was appeared after the aytis between Ajiniyaz and Kyz-Mengesh (1861-1862). So, the aytis between Altyn and Seydali was nearly in 1869-1870. There are similarities in their structure, plot, and even some of the verses in this narration.

1. Aytis between Ajiniyaz and Qiz-Men'esh:

Astima mingen atim sur qara ker,  
Sorg'alap sur qaradan ag'adi ter,  
Mollalar ko'risiudi sunnet deydi,  
Hojeke, ko'riseyik qolin'di ber.

2. Aytis between Seydali and Altin:

Astima mingen atim sur qara ker,  
Ag'adi sur qaradan sorg'alap ter,  
Korispek, qol alispaq – mindet, deydi,  
Jolaushim, koriseyik, qolin'di ber.

The utterances of Kazakh poets in the region can be studied in three thematic areas:

1. The utterances of Kazakh-Karakalpak poets. It was called as "Friendship Talks" by K.Allambergenov;

2. Investigations by T.Tebergenov;

3. Inter-ethnic disputes (aytis) which include aytises "Kunkhoja and Sherniyaz poet", "Qiz-Men'esh with Ajiniyaz", "Yrysty with Ajiniyaz", "Dame with Mansur", "Qulim with Tynim", "Seydali with Altin". These aytises are an invaluable phenomenon in Kazakh-Karakalpak literary relations.

It would be reasonably to confirm through the Kazakh folklore and literature being created and developed in the territory of the neighboring Karakalpak territory have not lost their national features and remained to be a competent property of the Kazakh people. That's why we made a particular accent to the problems of traditions, heredity, national colours and intercultural literary correlations and on the base of solving these important problems we succeeded to confirm that the whole literary and cultural inheritance of Kazakh poets and zhiraus of the above-mentioned period is the integral part of the Kazakh folklore and literature. So, we cannot



imagine the Kazakh folklore and literature without the enormous part created by Kazakh poets and zhiraus during the time of nearly two centuries in the territory of Karakalpakstan. The fact is also confirmed by the national spiritual-aesthetic peculiarities of these popular genres which are considered as a wealthy literary and cultural inheritance of the whole Kazakh people. New historical circumstances and new literary-cultural environment have had its proper voice; own style of writing, there were appeared new wordsmiths.

Taking into account these progressive factors, we have analyzed the examples of the Kazakh literature in the Karakalpak territory and the basic factors motivating the occurrence of this, literary phenomenon i.e. creative activities of Kazakh poets and zhiraus that have become the integral part of the whole Kazakh national literature.

In general, the main novelty is revealing the Karakalpak literary and cultural areas as the birth place of the part of the Kazakh literary world which includes a number of well-known masters of Kazakh artistic word as Kharasay Khaliy uli, Seydaliy Jumabek uli, Tilewmaghambet Amanjol uli and etc., who made a great contribution to this important course.

## CONCLUSION

As a result of medieval historical and ethno-cultural processes, the folklore performance and creativity of the Kazakh population, which settled in the region, has undergone a process of renewal in its genre structure, ideological and artistic features and poetic context under the influence of Karakalpak and Uzbek bakhshis;

The practical results of the study include:

- it was found that the heritage of Kazakh poets and jiraus of Karakalpakstan reflected not only the example of literary values that enriched the whole Kazakh literature, but also the harmony of folklore and individual creativity;

- the genre structure of the literary heritage of the Kazakh poets is classified and based on the enrichment of their epic repertoire under the influence of the epics performed by the Karakalpak bakhshi-zhiraus;

- the process of formation of a series of works based on a common epic plot as a result of the interaction and master-student relations of the epic singers of the Kazakh, Karakalpak, Uzbek and Turkmen peoples;

So, new information about the life and literary heritage of the Kazakh poets who lived and worked in the second half of the XIX century and the first half of the XX century have been introduced into scientific circulation.

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# **A STUDY OF NON-PERFORMING ASSETS OF ICICI BANK: PRE-MERGER AND POST-MERGER ANALYSIS**

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## **ABSTRACT**

*The purpose of this paper is to examine the impact of mergers and acquisitions (M&A) of Industrial Credit & Investment Corporation of India (ICICI Bank) and Bank of Rajasthan on non-performing assets (NPAs) of Industrial Credit & Investment Corporation of India (ICICI Bank). The analysis consists of two stages. The methodology adopted in the study is based on descriptive research wherein secondary data was collected from the official websites of ICICI bank. By using MS Excel 2016 software, the data was analysed by using the ratio analysis approach, to determine the variation in the current position and secondly, the change in the efficiency of the banks during the pre-merger and post-merger periods by using descriptive statistics in the context of non-performing assets.*

**KEYWORDS:** *Non-performing Assets, Merger Acquisition, Pre-merger and Post-merger, CAGR (Compounded Annual Growth Rate), Earning per share.*

## **1. INTRODUCTION**

A bank is a financial institution that accepts deposit from the public and create demand deposit. It can perform lending activities directly or indirectly through capital markets. Banking evolved in fourteen Century as a modern concept. It made headway in the prosperous cities of Renaissance Italy but in many ways was a continuation of ideas and concepts of credit and lending that had their roots in the ancient world.

Bank is termed as a financial institution works as a mobiliser of funds because it moves money from

surplus areas to deficit areas. In general terms banks is a corporation which was authorised by the government to deal with the deposits of money, giving loans to different financially deficit areas and keep investing in government securities. From the economical point of view, a bank helps in the growth of an economy and expansion of the economy by giving loans for investments. With the changing environment, many policies was adopted by financial institutions to survive but the main strategy of financial institutions was merger of banks which



helps them to increase their efficiency and profitability.

We have seen that many banks have been already merged to achieve strength economies of scale in India. In 1921, one bank named as Imperial Bank of India was formed after amalgamation of three presidency banks viz. The Bank of Calcutta, The Bank of Madras and The Bank of Bombay afterwards this bank becomes State Bank of India in year 1955. After that many mergers have been done in banking sector just to make them survive.

ICICI bank which was a multinational financial institution head quartered in Mumbai, Maharashtra was established by the name of Industrial Credit and Investment Corporation of India initially in 1995. ICICI bank is the second largest bank in terms of assets and market capitalization having subsidiary in many countries. The bank has a network of 4882 branches and 15101 ATMs across India and has a presence in 17 countries including India. ICICI bank is one of four big Indian Banks which provides many services like Retail banking,

corporate banking, investment banking, wealth management, mortgage loans, credit cards, finance and Insurance.

Bank of Rajasthan is a Private banks having 458 offices. It was founded by Late Seth Shri Govind Ram Seksaria (chairman) at Udaipur in 1943, with an initial capital of INR 10 lacs. The Bank was included in the Second Schedule of the Reserve Bank of India in the year 1948. The Bank was among the first banks to introduce the concept of mobile branches, with the opening of its first mobile branch in Jaipur on 5th August, 1960.

ICICI Bank is a strong bank which was merged with the Bank of Rajasthan in 2010 after the approval of boards of both the banks. Under this deal ICICI Bank would give 25 shares for 118 shares (1:4.72) of Bank of Rajasthan. All branches of the Bank of Rajasthan will now function as the branches of the ICICI Bank. Reserve Bank of India approved the deal between both the banks for Rs 3000 crores.

## 2. LITERATURE REVIEW

S. No	Year	Author	Objective	Research Methodology	Findings
1.	Apr-Jun 2016	Dr.Neha Chabbara Roy, Vyshnavi, Ravikindi Pushpa,	1. To find the factors promoting mergers and acquisitions in banking sector. 2. To do Pre and Post-merger Valuation on ICICI Bank and Bank of Rajasthan. 3. To forecast profitability of merged firm.	Secondary data is collected from the Capitaline Database and RBI database.  Data from 2007-2014 financial statements analysis using DCF techniques.	1. Improved profitability of the ICICI bank. 2. Increased the number of branches and ATM's and it has been beneficial for both the banks. 3. Share price of Bank of Rajasthan has appreciated by 77% but the price of ICICI fell by 1.7%
2.	Jan-Jun 2019	Sujit Kumar Patra, Ajitabh Dash	1. To study the reasons behind the merger of SBI with its five associated banks 2. To analyse the employee productivity of SBI 3. To analyse the branch productivity of SBI 4. To analyse the post-merger performance of SBI	2014-2018 secondary sources which includes the Annual Reports of the SBI  RBI Database Profile of Banks -various issues; research publications (CAGR, T-Test, Employee & Branch Productivity ratios)	1. The deposits and advances of SBI post-merger grew by 11.92 % and 12.54% as against 13.22% and 18.97 %; profits have recorded a CAGR of 1.56 % as against pre-merger CAGR of 21.30%. 2. The number of employees increased by 20% during the post-merger period and its CAGR was in negative during the pre-merger period 3. The number of branches increased by 4.04% as against 3.17 % during the pre-merger





					period
3.	Jan 2019	Neelam Tandon, Deepak Tandon, Navneet Saxena	1. Analyse the proposed merger using EPS method for determining the advantages of merger 2. Analyse the balance sheet of bidder bank pre and post-merger 3. Study the advantages offered by the merger and the problems related to the merger.	Earnings per Share (EPS) method, Secondary Data, balance sheets of SBI have been analysed	No of branches increase, Post-merger, the total liabilities of SBI are expected to rise by approximately 26%, whereas the total assets are expected to rise by only 22% and the total profit by 17%, Expensive Task due to reallocation of resources.
4	2016	Rao, K.S; Kumar, K Phani	Case study presentation	Kotak Mahindra Bank and ING Vysya Bank	
5	2018	Miss. Anjali Prava Mishra Mr. Muna Sahoo	1. To study the financial performance of SBI and its associates 2. To measure the impact of NPAs on profitability of SBI and its associates	Statistical tools and techniques such as percentages, ratios, Regression Model and ANOVA are used in this study. Statistical packages like SPSS, NumXL and XLSTAT are used for the data processing, Hypothesis Testing(2004-05 to 2016-17)	1.The amount of NPA has increased from Rs. 63629 million to Rs. 969322 million whereas Net Profit of SBI and its associates have decreased from Rs.56759 million to Rs.-13827 million during the period (2005-2017). 2.Increase in Net NPA of SBI and its associates do not have any significant impact on its net profit, Return on Equity, Return on Investment, Return on Advances and Net Interest Margin
6	2019	Bisma Afzal Shah And Khursheed Ahmad Butt	1. To analyse the impact of mergers and acquisitions on the operating performance of the sample companies 2. To assess the impact of mergers and acquisitions on the financial performance of the sample companies 3. To analyse the impact of mergers and acquisitions on shareholder's return.	Secondary data collected from the repository of Centre for Monitoring Indian Economy (CMIE). two sample paired t-test  The financial ratios used to analyse the impact of a merger or acquisition	There are finally growth in assets, reduction in expenses, increase in profitability margins, and returns to the shareholders
7	2019	S. Narasimha Chary, Mohd Fasi	1. To analyse the Gross NPA and Net NPAs of selected public sector banks 2. To assess the trends of NPAs of selected public sector banks 3. To analyse the impact of non-performing assets on the performance of	The data is collected from RBI publications, annual reports of banks, journals, official records and other published sources.	1. Unable to bring back the bad loans or the unproductive loans to the banks, 2. Non-performing assets are seriously affecting the banking system, resulting in lower profitability, loss and inconsistency in financial performance of



			public sector banks		Indian banking system in general and public sector banks in particular.
8	2014	Abbas, Hunjra, Saeed, Ul-Hassan, and Ijaz	1. Examined the performance of banks during pre and post M&As in Pakistan by evaluating 10 banks		1. no significant improvement in the banks' financial performance 2. a decrease in profitability, efficiency, liquidity, and leverage ratios were also reported.
9	2012	Mahesh and Prasad	The financial performance of these on the post-merger and acquisition, within 2005-2010 period of time were analysed	Interest coverage, dividend per share, net profit margin, earning per share, and return on equity were the variables used for the study. Besides, paired sample t-test	The results show insignificant improvements in the dependant variables undertaken for the study
10	2016	Toumil Hassen Fakhri, Amouri Bilei, Touili Nassim, Hamidi Faouzi	The profitability of European private Banks	M.E and S.E Estimation	Gain in Efficiency, increase in long term profits in terms of ROA and ROE.
11	Nov,2010	Dr. Neena Sinha, Dr.K.P.Kaus hik, Ms. Timcy Chaudhary	Measuring Post Merger and Acquisition Performance: An Investigation of Select Financial Sector Organizations in India	a. Sample Description b. Wilcoxon Signed Rank Test Methodology c. Ratio analysis	1. More than half of the merging firms showed improved financial performance in the post-merger time period 2. Significant change in Debt- Equity Ratio
12	Aug 2012	Gordon M. Phillips  Alexei Zhdanov	R&D and the incentives from merger and acquisition activity	1. Regression Analysis 2. Acquisition Activity and Industry Demand and Supply 3. Summary Statistics	1. Possibility of an acquisition amplifies the potential gains. 2. merger and acquisition activity strongly increases firms' incentives to conduct R&D.
13	Dec 2005	Myeong-Gu Seo N. Sharon Hill	Understanding the Human Side of Merger and Acquisition	Various theories and frameworks	There are ways to acquire a firm other than a merger
14	2006	Susan Cartwright  Richard Schoenberg	30 years of mergers and acquisitions research: recent advances and future opportunities	Symposium	1. Executives are undertaking acquisitions driven by non-value maximizing motives 2. The prescriptions from the academic research have not reached the practitioner Community 3. The research to date is



					incomplete in some way.
15		Vassilis M. Papadakis	To investigate what actually influences a merger and acquisitions (M&As) successful implementation.	1. Hypothesis testing 2. Reliability and validity testing	1. Comparing both accounting and stock return 2. Testing more detailed models of M&A performance.
16	Feb, 2013	Stephen P.Ferris Narayanan Jayaraman Sanjiv Sabherwal	CEO Overconfidence and International Merger and Acquisition Activity	Correlation Regression Poisson regression Logistic Regressions	1. it is unclear whether results obtained for U.S. mergers will hold globally. 2. overconfidence is related to a variety of merger characteristics.
17	2018	1. Josua Tarigan 2. Alfonsis Claresta 3. Saarce Elsy Hatane	Analysis of merger & acquisition motives in Indonesian listed companies through financial performance perspective	Descriptives Statistics Normality Test Hypothesis Testing	1. companies undergoing M&A in the period of 2009 until 2012 focus more on growth strategy, shown by the increase of liquidity ratio. 2. Solvency had also increased significantly
18	October 2017	1. V. M. Lakhwani 2. S. Tiwar 3. S. Jauhar	Mergers and acquisitions' impact on financial performance: An evaluation with perspective of time	EXPERIMENTAL	1. there is improvement in the performance of 18 companies after merger. 2. ROA of only six companies has shown significant effect in terms of improvement
19	2019	MAUREEN KIMETTO	EFFECT OF SYNERGY THROUGH MERGERS AND ACQUISITIONS ON A FIRM'S FINANCIAL PERFORMANCE IN KENYA: A CASE OF SIDIAN bank	Correlation Analysis of Variance (ANOVA) Regression Coefficients case study	1. operation synergy had a significant effect on the financial performance of bank. 2. improved financial performance in terms of profitability for the banks
20	2011	Yelena V. SMIRNOVA	Motives for Mergers and Acquisitions in the Banking Sector of Kazakhstan	Case study	1. motives for M&A deals in 2009 were different from the prior. 2. Some mergers and acquisitions in Kazakhstani banking sector were driven by internal impellent.

**3. OBJECTIVE OF THE STUDY**

The following are the objectives of the study:

- 1) To study the pre-merger and post-merger impact of merger and acquisition on the Non-performing assets of Industrial Credit & Investment Corporation of India (ICICI Bank)
- 2) To study the pre-merger and post-merger impact of merger and acquisition on the profitability of Industrial Credit & Investment Corporation of India (ICICI Bank).
- 3) To study the pre-merger and post-merger impact of merger and acquisition on the



number of branches of Industrial Credit & Investment Corporation of India (ICICI Bank).

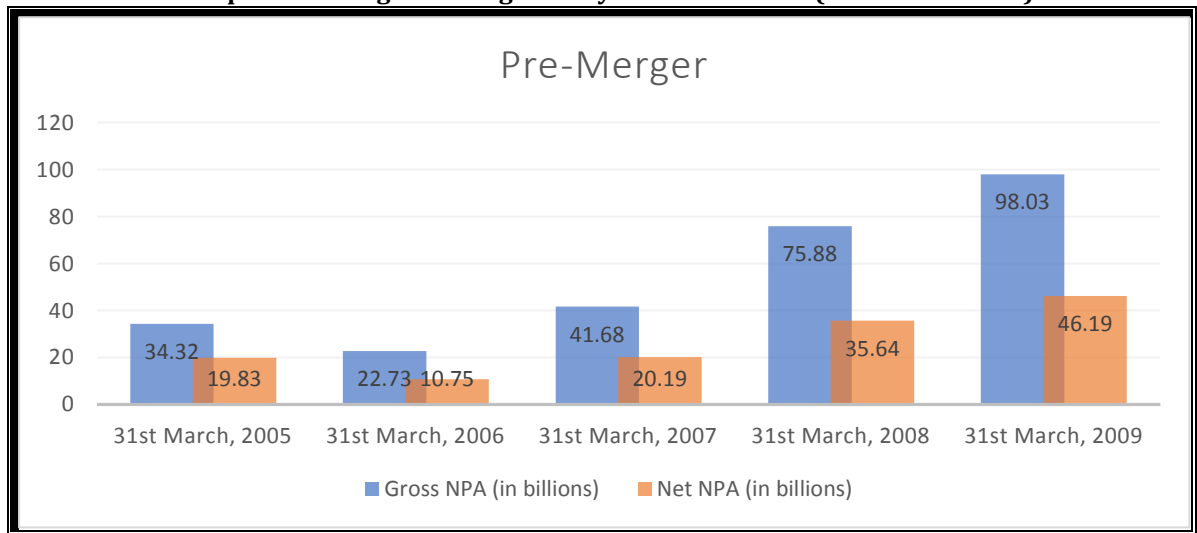
**4. DATA AND METHODOLOGY**

Data for the study has been taken from Official website of ICICI Bank and analysed through the use of Excel-2016. Secondary data related to Non-performing Assets from Year 2006-2015 has been taken from ICICI Bank Database.

**TABLE : 1 Showing the Gross and Net NPAs from 2005 to 2009  
PRE-MERGER :**

Date	Gross NPA (in billion)	Net NPA (in billion)
31st March, 2005	34.32	19.83
31st March, 2006	22.73	10.75
31st March, 2007	41.68	20.19
31st March, 2008	75.88	35.64
31st March, 2009	98.03	46.19
Date	(%) Change in Gross NPA	(%) Change in Net NPA
31st March, 2005	-33.77%	-45.79%
31st March, 2006	83.37%	87.81%
31st March, 2007	82.05%	76.52%
31st March, 2008	29.19%	29.60%
31st March, 2009	-1.80%	-15.54%

**Graph 1 Showing Pre-merger analysis of ICICI Bank (Year 2005-2009)**



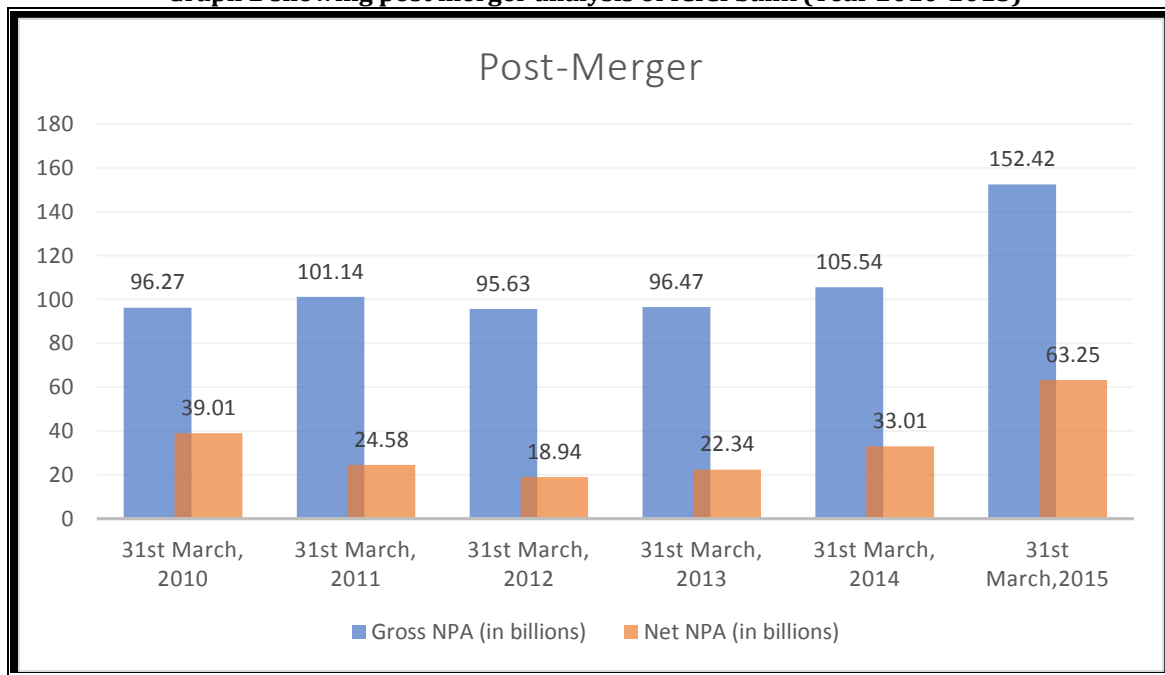
- ICICI Bank and Bank of Rajasthan were merged in the year. Therefore, the data of year 2010 is used in post merger analysis.



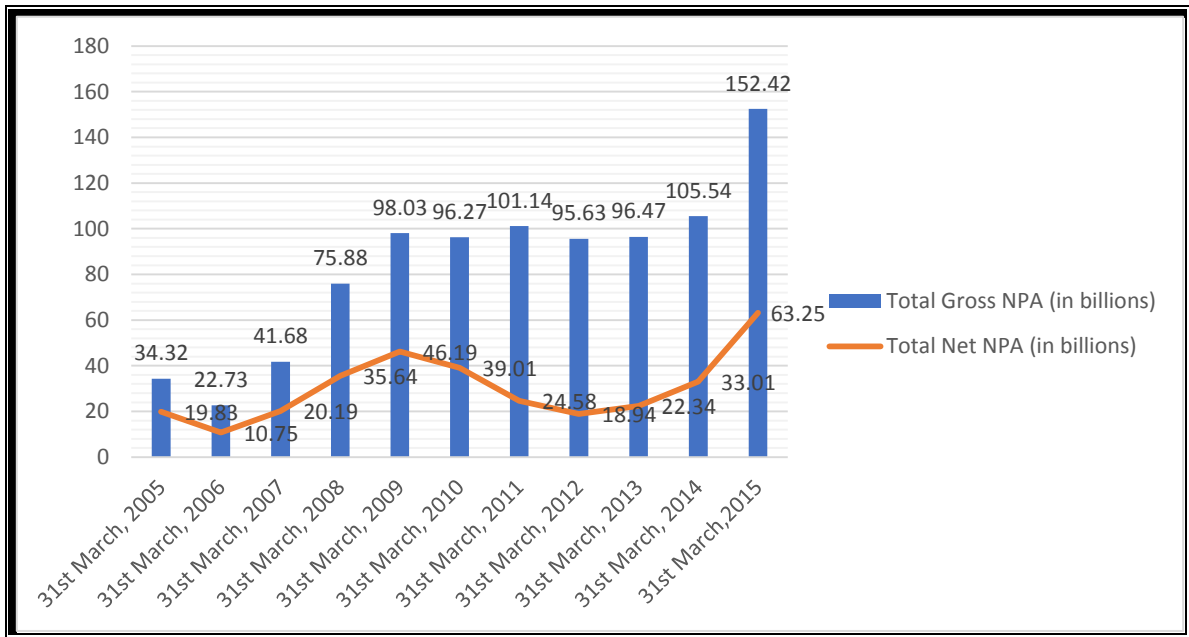
**TABLE : 2 Showing the Gross and Net NPAs from 2010 to 2015.**

Date	Gross NPA (in billions)	Net NPA (in billions)
<b>31st March, 2010</b>	<b>96.27</b>	<b>39.01</b>
31st March, 2011	101.14	24.58
31st March, 2012	95.63	18.94
31st March, 2013	96.47	22.34
31st March, 2014	105.54	33.01
31st March, 2015	152.42	63.25
Date	(%) Change in Gross NPA	(%) Change in Net NPA
<b>31st March, 2010</b>	<b>5.06%</b>	<b>-36.99%</b>
31st March, 2011	-5.45%	-22.95%
31st March, 2012	0.88%	17.95%
31st March, 2013	9.40%	47.76%
31st March, 2014	44.42%	91.61%

**Graph 2 showing post merger analysis of ICICI bank (Year 2010-2015)**



**Graph 3: Showing the (value in billion) of Gross and Net NPAs from 2005 to 2015.**



Combined Analysis of table 1 & 2:

- Table 1 shows Non-performing Assets of ICICI Bank in Absolute Terms whereas Table 2 shows Non-performing Assets in Relative Terms.
- From Table 1, it is concluded that an increase in overall trend of Non-performing Assets of ICICI Bank was there except for the years 2006, 2010 and 2012. This three years have a negative ratio which means Non-performing Assets of this years has been decreased from the last year.
- NPAs were decreased from 34.32 billion to 22.73 billion in Year 2005 and 2006.
- Bank has 98.03 billion NPA in 2009 and in 2010 NPA were decreased to 96.27 billion.
- In 2011 ICICI Bank has Gross NPA of 101.14 billion which were decreased to 95.63 billion which means bank has recovered approx. 6 billion of Gross NPAs.
- IN 2015, ICICI has the highest NPA of 152.42 billion of Gross NPA which was 105.54 billion in the last year. An increase of approx. 47 billion Gross Non-performing Assets in just one year.
- The Bank has approx. 50% of their Gross Non-performing Assets as Net Non-performing Assets.
- ICICI Bank's NPA was less than 100 billion in each year before the merger but after the merger of both the banks NPAs crossed 100 billion and in 2015 it becomes 152 billion. But they are able to collect the bad loans and balance it.
- After 2010, ICICI Bank has stable increase in NPA till 2014, but with increase in branches and products of ICICI Bank, increase in NPA is lower.
- It is also concluded that ICICI Bank is efficient in coping up with the Non-performing Assets.

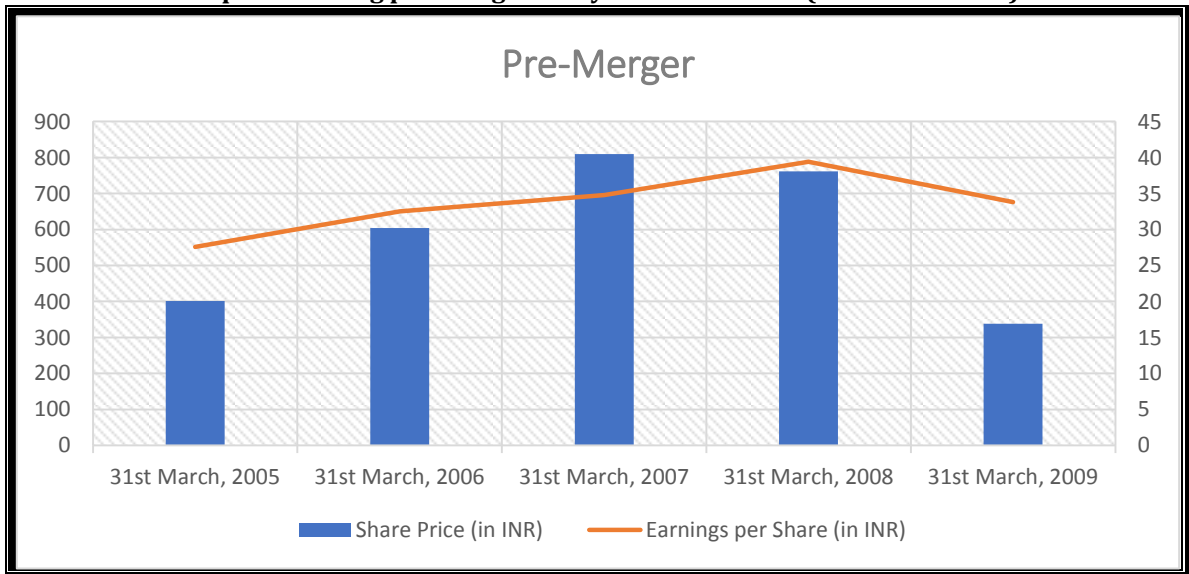
**TABLE 3 : Showing the value of share price (in INR) from 2005 to 2009. Pre-Merger :**

Date	Share Price (in INR)	Earnings per Share (in INR)
31st March, 2005	401.48	27.6
31st March, 2006	603.77	32.5
31st March, 2007	809.34	34.8
31st March, 2008	761.16	39.4
31st March, 2009	338.45	33.8

(SOURCE : NSE and <https://www.icicibank.com/aboutus/annual.page>)



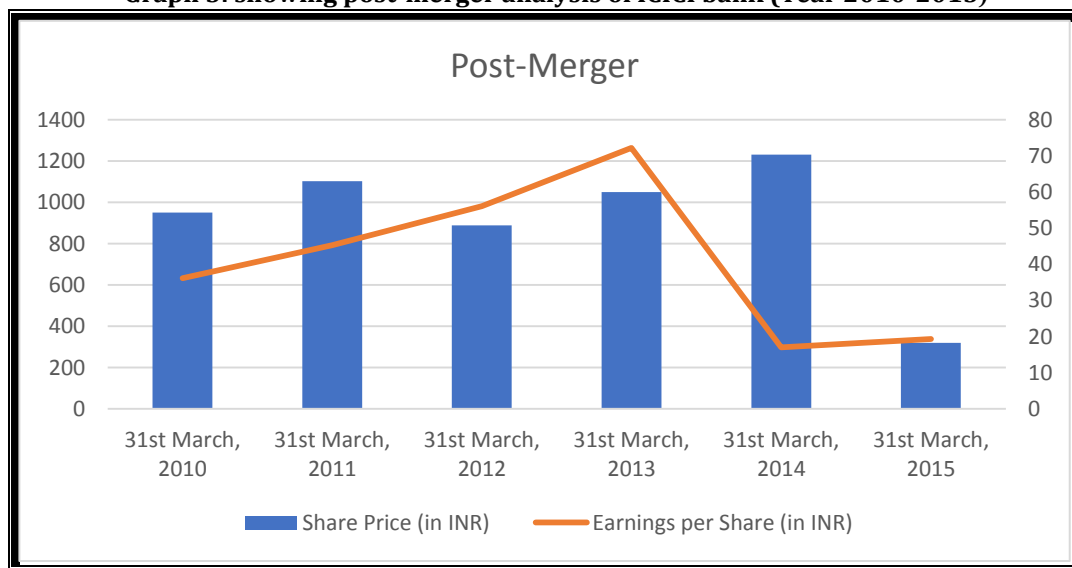
**Graph 4 showing pre-merger analysis of ICICI bank (Year 2005-2009)**



**TABLE 4 : Showing the value of share price in INR from 2010 to 2015. Post-Merger :**

Date	Share Price (in INR)	Earnings per Share (in INR)
31st March, 2010	950.92	36.14
31st March, 2011	1,103.14	45.27
31st March, 2012	888.47	56.11
31st March, 2013	1,049.70	72.2
31st March, 2014	1,231.68	17
31st March, 2015	319.63	19.32

**Graph 5: showing post-merger analysis of ICICI bank (Year 2010-2015)**

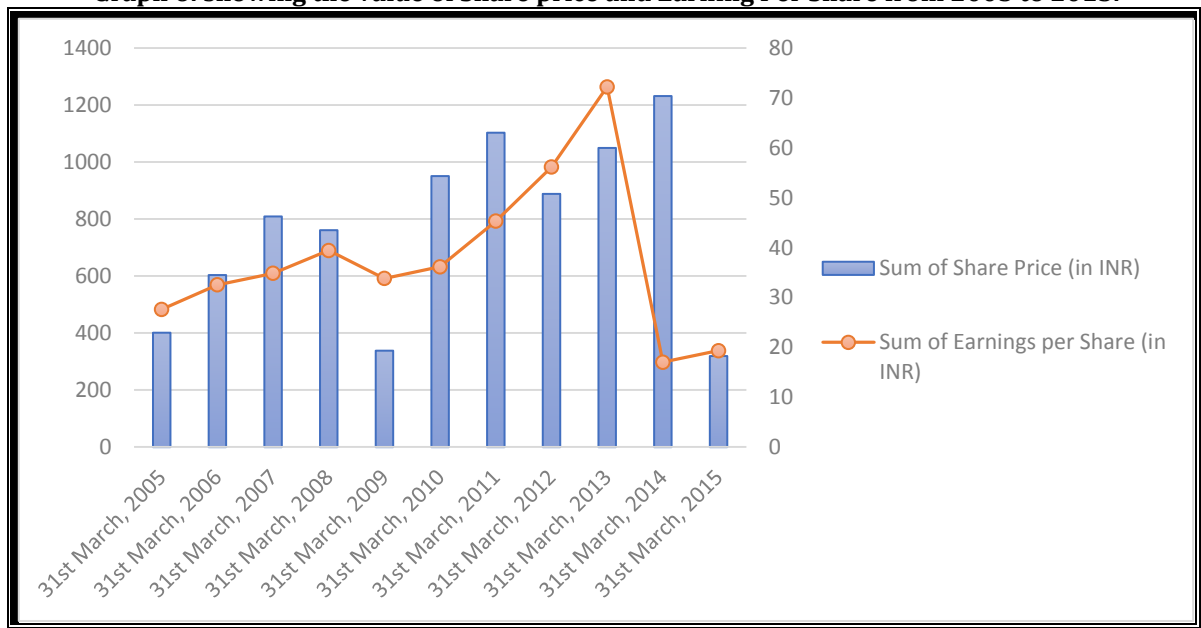




Combined Analysis of table 3 and table 4:

- Before 2010, ICICI has EPS which ranges between INR 20-40 and a continuous increment in EPS was reported except for the year 2009. In 2009, EPS was INR 33.8 which was decreased from INR 39.4 in 2008.
- In 2010, EPS again increased and becomes INR 36.14 which again increased in Year 2011 to 45.27 INR.
- EPS was decreased to INR 17 in year 2014 which was INR 72.2 in 2013 which was highest in all 11 years.
- In 2014, ICICI Bank created a benchmark of INR 1,231.68 and in year 2015 Share price is at lowest (INR 319.63)
- ICICI has many fluctuations in the share price over the years.

**Graph 6: showing the value of Share price and Earning Per Share from 2005 to 2015.**



## CONCLUSION

- ICICI Bank's NPA was less than 100 billion in each year before the merger but after the merger of both the banks, NPAs crossed 100 billion and in 2015 it becomes 152 billion. But they are able to collect the bad loans and balance it.
- After 2010, ICICI Bank has stable increase in NPA till 2014, but with increase in branches and products of ICICI Bank, increase in NPA is lower.
- Before 2010, ICICI has EPS which ranges between INR 20-40 and a continuous increase in EPS was there except for the year 2009. In 2009, EPS was INR 33.8, which was decreased from INR 39.4 in 2008.
- Since ICICI Bank was able to recover the bad loans which also shows that overall there was no huge impact of merger on EPS of the bank.

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# THE ROLE OF GOVERNMENT IN SUSTAINABLE DEVELOPMENT

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## ABSTRACT

*The level of awareness and performance in implementing environmental, economic and social based projects is increasingly debated in the construction industry. Not only in developed countries, but Malaysia which is considered an aggressive developing country with infrastructure development also faces this challenge. Sustainable construction or green construction that is gaining attention among construction industry players is a construction concept that promotes environmentally friendly, economic, and social development. By using mean analysis, the level of designer knowledge, awareness and application are identified. The result shown that, the level of designers to eco-friendly is at a low level. Thus, stakeholders such as the government need to play a more proactive role so that sustainable development can be practiced more effectively, especially in the application of eco-friendly concepts. In addition, the systematic process is also a key pillar in ensuring the smooth implementation of infrastructure construction either under the supervision of the government or the private sector. There are several construction procurement systems commonly used in construction projects, including conventional systems, design and construction, project management and also systems based on cooperative relations*

**KEYWORDS:** *Sustainable development, environmentally friendly, government role, designer*

## INTRODUCTION

The level of awareness and performance in implementing environmental, economic and social based projects is increasingly debated in the construction industry (Termeer, Dewulf & Biesbroek, 2017). Not only in developed countries, but Malaysia which is considered an aggressive developing country with infrastructure development also faces this challenge (Salet & de Vries, 2019; Hawkins, Krause, Feiock & Curley, 2018). Sustainable construction or green construction that is gaining attention among construction industry players is a construction concept that promotes environmentally friendly, economic, and social development (Hasif Rafidee, Mohd Nazaruddin & Mohd Nasrun, 2018; Huang, Lings, Beatson & Chou, 2018).

However, the implementation of this concept also faces challenges and requires strong support from various parties (Echebarria, Barrutia, Eletxigerra, Hartmann & Apaolaza, 2018). This is clear because sustainable construction requires certain practices in construction especially in terms of selection of materials that have been labeled green, environmentally friendly resources, construction methods as well as design (Patterson & Huitema, 2019). It is also important in ensuring that efforts to improve performance, reduce project load on the environment, reduce waste of resources and more environmentally friendly construction can be achieved holistically (Minkman, Letitre & van Buuren, 2019).



In addition, the systematic process is also a key pillar in ensuring the smooth implementation of infrastructure construction either under the supervision of the government or the private sector (Turcu, 2018). There are several construction procurement systems commonly used in construction projects, including conventional systems, design and construction, project management and also systems based on cooperative relations (Chuang & Liao, 2018). Therefore, this study tries to identify what role has been played by stakeholders in creating sustainable development with an environmentally friendly concept.

## LITERATURE REVIEW

Sustainable development refer to development that meets current needs without neglecting the ability of future generations to meet their needs. The concept of Sustainable Development is based on three main pillars, namely economic, environmental and social. To ensure sustainable development projects, economic prospects alone are not enough and even the development must be environmentally friendly as well as meet social responsibilities and needs (M € obius & Althammer, 2020; Uittenbroek, Mees, Hegger & Driessen, 2019; Gustafsson, Hermelin & Smas, 2019; Mohd Nazarruddin et al, 2018).

In the chemical industry for example, the Institute of Chemical Engineers (IChemE) UK has introduced a guideline known as Sustainable Metrics to assess the sustainability of chemical plant operations. Similar guidelines have also been introduced by the American Institute of Chemical Engineers (AIChE) in collaboration with world-renowned companies such as Air Products, Akzo Nobel, Ashland, BASF, Celanese, Dow Chemical, DuPont, Eastman Chemical, LyondellBasell, and Praxair and Rohm and Haas. These guidelines were introduced to ensure the sustainability of chemical plant operations from economic, environmental and social aspects (Hasan, Evers, Zegwaard & Zwarteveen, 2019; United Nation, 2018; Manzannti, 2018; Song, Olshansky, Zhang & Xiao, 2017). Assessing the prospects of multi-dimensional development is not easy, let alone if there is a discrepancy between the three main pillars.

However, this evaluation is important to ensure that the planned development is implemented more responsibly and provides long-term benefits (Suprayoga, Witte & Spit, 2020). World leaders, both national and international, are aware of this fact (Ribeiro, Fonseca & Santos, 2020). Therefore various policies and initiatives are developed as the impact of this concept increases the productivity as well as stakeholder confidence (Graafland & Bovenberg, 2019; George & Reed, 2017). According to Aisyah

and Zainora (2017), environmental awareness is one of the basic components in strengthening sustainable development in every country. Awareness and understanding enable an individual to act to deepen their understanding of sustainability (Chen, Zhang, Huang & Zheng, 2018; Birdsall, 2018). Environmental awareness in oneself can lead to an increase in national capacity towards sustainable development (Korbee, van Halsema & Seijger, 2019; Jamilah, Hasrina, Hamidah & Juliana, 2016).

Emanuel and Adams (2018) conducted a study related to students' perceptions of sustainable campus development in Alabama and Hawaii colleges. They stressed that students' understanding and perception of sustainability can reflect the pattern of their involvement in practicing sustainable practices in the daily life of the students. Environmental awareness is essential to achieve the goal of environmental sustainability (Madsen, 1996). It is a term used to describe environmental knowledge based on facts, affective attitudes and behaviors towards environmental problems as well as values related to the environment (Landauer, Juhola & Klein, 2019; Arcury & Johnson, 1987).

Madsen (1996) asserts that all levels of society need to have the basics of environmental awareness and sustainability. Meanwhile, organizational leaders, including in the field of environmental studies should not only have knowledge and understanding of environmental problems, but also need to have awareness of ways to solve those problems (Madsen, 1996).

## METHODOLOGY

This study focuses on the quantitative method approach. To achieve the objectives of this study, the instrument used is a questionnaire. Therefore, the population for this study consists of individuals involved in the construction sector. Population refers to the whole human being in a group, phenomenon or thing that interests the researcher. Samples are a subset of the population and are necessary to save time, expenses, energy and human resources, especially those involving large populations. Thus, the analysis unit or respondent is the individual involved in the field of interior decoration.

Other than that, this study focus on mean analysis to identify level of designer awareness of environmentally friendly concept.

## RESULT AND DISCUSSION

Table 1 shows the mean values for eco-friendly design that is for the elements of knowledge, awareness and application. It was found that the mean value obtained was below 3.00. This proves that the level of knowledge, awareness and application of designers to eco-friendly is at a low



level. Because of this, stakeholders such as the government need to play a more proactive role so that sustainable development can be practiced more

effectively, especially in the application of eco-friendly concepts.

**Table 1**  
**Mean for Eco-friendly Design Elements**

Item	Mean
Knowledge	1.30
Awareness	1.38
Application	1.52

Typically, the selection of a procurement system depends on the needs of the client, the type of project, the level of risk borne by the client, the resources and organizational structure involved in the construction project. It can be said that most construction projects in the government sector use conventional procurement methods by open tender, selective or direct negotiations. The main feature of conventional and phased conventional acquisition methods between the design and construction processes is seen as a major factor in the duration of this procurement process to be long and long. The communication gap between the consultants and the contractors involved also contributes to the occurrence of disputes in construction projects that use this conventional procurement system. Based on this situation, government green procurement (Government Green Procurement) has been introduced to overcome the problem in conventional procurement, especially in the government sector. The government's green procurement guidelines to be strengthened are the government's efforts in promoting the use of green or sustainable products and services in the country.

Apart from that, it is also one of the government's steps in achieving the main thrust in the Construction Industry Transformation Plan (CITP) 2016-2020 towards more sustainable development. Government green procurement for selected products and services was introduced in Malaysia in 2012 by the Ministry of Energy, Green Technology and Water which is in line with the establishment of the National Green Technology Policy which is the catalyst for the growth of green technology in the country. In 2018, the GGP 2.0 guidelines were published to act as the latest reference, covering 20 GGP criteria for green products and services, such as ICT equipment, air conditioning systems, and cleaning services. With the existence of this government green revenue, it is expected to signal to all industry players that the need to emphasize the concept of green is important to address the problem of environmental pollution that occurs as a result of development processes that do not care about previous environmental impact.

The implementation of procurement of products and services based on needs is also an effort

to prevent waste from continuing to occur. The government's efforts to strengthen this innovative procurement practice should be commended. It clearly proves that the government is serious about improving the quality of environmental conservation and community life in a comprehensive manner. This initiative not only focuses on the environment but also encourages the effective use and production of green products. In addition, the 11th Malaysia Plan (11MP) also states that the government's green procurement is able to encourage the development of the local green industry.

Therefore, the local industry has the opportunity to continue to compete in the production based on green products and services. Indirectly, it also helps local manufacturer's market innovative green products locally and abroad more widely. Various initiatives have been introduced towards realizing the implementation of the government's green procurement in supporting Malaysia's direction towards sustainable development. The Construction Industry Master Plan 2006-2015 has outlined the importance of conserving the environment in implementing a development. In addition, the National Green Technology Policy, MyHijau Procurement, and pH-JKR are among the government's efforts in ensuring that green procurement can be implemented effectively. Not only that, the Malaysian Construction Industry Development Board (CIDB) has also drawn up various plans and plans in support of the implementation of this government's green procurement.

Among them, in 2010, a Technical Committee for the Best Practices of Green Technology in the Construction Industry was established consisting of professionals in the construction industry. The establishment of this committee assists the Malaysian Construction Industry Board (CIDB) in providing manuals, guidelines and Construction Industry Standards related to green technology in the construction industry. To further complement this effort, programs related to green technology are increasingly being carried out by CIDB including the green labeling program for construction products known as CIDB Green Label. Its main objective is to encourage the production of green or eco-friendly



building products by building materials manufacturers in the country.

## CONCLUSION

Despite the reality, the government's green procurement has not yet been formally applied in any construction project in Malaysia, but this initial effort needs to be upheld consistently and comprehensively. In the early stages it may be a little 'awkward' to practice, but over time it will become a 'common allergen.' Efforts to place Malaysia on par with developed countries such as the United States, United Kingdom, Australia, Japan and Singapore adopting this environmental, economic and social based construction, close cooperation from the government, industry players, and academics needs to be further strengthened. This is important to overcome obstacles in an effort to strengthen the government's green procurement practices in the country more effectively.

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# ASSESSING THE UTILITY & IMPLICATION OF MARKETING RESEARCH IN MANUFACTURING INDUSTRY

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## ABSTRACT

*The fact that Marketing is pivotal to the success of an organization along with other core functions like Finance, Production, Human Resource Management and Information Technology, need not be reiterated. Yet, it is the most complex to understand because it operates in such a dynamic and volatile environment. Its orientation needs to be handled carefully and its integration with other aspects of an organization dealt with carefully. One aspect of the Marketing strategy is the increasing focus on marketing research. A company's strategies are devised on the basis of consumer's requirement and search for avenues to satisfy them quickly and efficiently. This requires that Marketing Research must aim at extensive data collection in areas such as consumer needs and requirements and gathering marketing intelligence in the current environment to help formulate better and more effect marketing strategies. The primary aim of this paper is to assess the utility of Marketing Research approach in Manufacturing Industry in India. This paper uses secondary data to empirically examine the impact of Marketing Research on the overall strategy of the company and consequently on the performance and productivity of organizations in the Steel Industry business. The study proposes to study two large Steel businesses for the purpose. Since Steel Authority of India Ltd. (SAIL) occupies an important place in the public sector undertakings and Tata Steel (formerly Tata Iron and Steel Company-TISCO) in the private sector, therefore these undertakings have been selected for the study. This study seeks to understand the use and applicability of Marketing Research with reference to the Steel Manufacturing industry. The study contributes to the existing literature on Indian Steel Sector by using existing data to throw light on the extent and quality of market research used by these companies. For example, can Marketing Managers determine optimum strategies; estimate the capital requirements for expansion or maintenance and profit maximization strategies of the organization as a whole with the help of Marketing Research strategies.*

**KEYWORDS:** *Manufacturing Industry, Marketing Research, SWOT Analysis, Steel Industry*

## INTRODUCTION

In the contemporary world marketing research is central to the marketing system of an organization as it facilitates management decision making by providing relevant, timely and precise information. Every situation requires different type of information and relevant and effective strategies can be developed with the help of relevant information

using marketing research. Marketing Research is essential for carrying out three important functions:-

- Analysis of market opportunities
- Planning of marketing efforts
- Control of marketing performance

SAIL and Tata Steel are two of the largest steel manufacturing companies in the Public and Private sector respectively in India. The products



which they manufacture include hot rolled sheets, cold rolled sheets, galvanized sheets, etc. and some byproducts of the manufacturing process. In order to maximize sale revenue and decrease the cost of main products, these by-products are also sold, but these by products possess high market value and need special efforts to be saleable. That is where the marketing department begins to play a significant role. SAIL and Tata steel follow market trends for most of their marketing decisions including price although there are other factors like demand and stock also which must be studied as they play a vital role in price determination.

### Tata Steel

Tata Steel is one of the largest integrated steel plants in the private sector. Tata Steel produced 18.21 million ton(mt) crude steel in FY20. Tata Steel manufactures a wide variety of products, which includes flat and long steel, bearings, ferrous-alloys and minerals, etc. While in terms of size, Tata Steel ranks among the best in the world. Tata Steel had also acquired Anglo-Dutch firm Corus for over 12 billion dollars. The Plant of Tata Steel is located in Jamshedpur (Jharkhand) and captive iron ore mines in the proximity, therefore Tata Steel has a distinct competitive advantage. The main plant at Jamshedpur manufactures great amount of flat and long products, and it also acquired Singapore-based Company, NatSteel Asia. NatSteel Asia manufactures steel across Singapore, China, Philippines, Malaysia and Vietnam.

### SAIL

Steel Authority of India Limited (SAIL) is state-owned Indian steel making company with headquarters in New Delhi, India. It is a public sector undertaking which is owned and operated by the Government of India and has shown an annual production of 16.30 mt in FY20. Incorporated on 24 January 1974, SAIL has 68,742 employees (as of 01-Jun-2020). With an annual production of 16.30 million metric tons, SAIL is the 20th largest steel producer in the world. SAIL operates and owns 5 integrated steel plants at Bhilai, Rourkela, Durgapur, Bokaro and Burnpur (Asansol) and 3 special steel plants at Salem, Durgapur and Bhadravathi. It also owns a Ferro Alloy plant at Chandrapur. (SAIL Annual Reports). As a part of its global ambition, the company is undergoing a massive expansion and modernization programme involving upgrading and building new facilities with emphasis on state of the art green technology. It also has R&D centre for Iron & Steel (RDCIS), centre for Engineering in Ranchi, Jharkhand

### Challenges faced by Steel Industry and Utility of Marketing Research

- The gap between demand and supply of steel is increasing. The challenge before the company is to fulfill the customer needs through increased production and the customer needs can be ascertained to a great degree with the usage of Marketing Research.
- The manufacturing sector is based on to the 4 P's of marketing viz. price, product, promotion, and place. All these factors have their own importance and all are inter-related with each other. In any manufacturing industry, all factors like Product, price, place, promotion are carefully formulated to gain competitive advantage in the market. It is very important for business analyst to evaluate the modern trend and market position. In the other hand it is vital for business operation to know the need and desire of customer which can be effectively accomplished by Marketing Research.
- To prepare an effective marketing strategy, a company must use Marketing Research to neutralize the threat of competitors. A firm should maintain good relation with their distributors and retailers keeping in view competitive orientation through Marketing Research.
- The information through Marketing Research will prove beneficial in taking proactive action for combating competition. This information is very useful and important as it explores facts about the competition, their product penetration, product demand, promotion policy, and the whole program of Marketing Research gives an overview where the company needs to improve.
- Different set of customers are attracted by different features of the products. Some customers are mainly interested in the cost of a product, and as per the information generated by the marketing research; the organizations strive to position themselves to offer the lowest price.
- Within every sector, there is usually a segment of the market which buys a product taking into consideration the aspect of lowest cost. So the organization should carefully after doing all the research strives to customize the product and become the low cost producer.
- Quality can be bifurcated into product quality and process quality. The level of quality in a product's design and process design will vary with the amount of market research.





## SWOT ANALYSIS

The SWOT analysis of the company refers to the strengths, weaknesses which are internally present in the organization while the opportunities & threats are faced by them from the environment, which may be present external to the organization.

SWOT analysis is the base of the Marketing Research process which ultimately facilitates the attainment of the strategic objective of the organization. SWOT analysis has been done in order to have a better understanding of the organization.

## SWOT of Tata Steel

### Strengths:

- One of the largest and lowest cost producers of coal based sponge iron in the country.
- Total backward integration ensuring steady stream of profits
- Captive mining of iron ore and coal with coal washery facility
- Captive power generation
- Identifying projects and business opportunities.
- Expertise in project implementation at low capital cost and within the schedule time.
- Lowest cost producer of sponge iron (coal based in the country).
- Huge reserve of iron ore and coal in mines.
- The world's longest rail developed in the factory brightens company's future outlook. It is backed by the 140-year old TATA dynasty, one of Asia's oldest and most respected conglomerates.
- It is the world's sixth largest steel manufacture. It also has a global presence.
- Very low operating costs by global standards, therefore the margins enjoyed by the brand are huge.
- Dedicated management and workers, Tata has never had a strike in 65 years

### Weakness:

- Domestic consumption of steel dependent on infrastructure spending by GOI.
- It is located in the eastern region of India; however, much of the market for steel is on the west coast. Hence, its freight absorption costs very higher above average.
- It is located 250 KM from the nearest port, which adds to its costs when importing raw materials and exporting steel products.

### Opportunity:

- Forward integration into value-added Products, Rails & Universal beams will drive future growth.
- Association with NKK to create huge export potential for Rails.
- State of Chhattisgarh encourages the setting up of new power projects.
- The Government's policy to privatize the power trading leaves new opportunities opened for the company.
- Reduced availability of steel scrap (substitute for the sponge iron) will increase demand for the sponge iron.
- The increasing price of steel in the market will maximize the profitability of the company further.
- India's per capita consumption of steel is projected to increase substantially in the future.
- With their Greenfield plants going on stream and expansion in Jamshedpur they will have a great opportunity to increase the production manifold. This shall give them the potential to become the world's second largest steel maker by that time.
- Possible mergers and acquisitions.

### Threats:

- Sponge iron prices movements are dependent on international scrap prices, which fluctuate widely.
- The main competitors like RINL, JSW steel, NMDC, MITTAL STEEL, JSPL etc.
- Continuing demand and pricing slump in the industry.



### SWOT Analysis of SAIL

#### Strengths

- Staffing is a big strength for SAIL as being a Government venture it is looked upon for generating and offering employment
- Customer base is another major strength for SAIL as it offers steel at subsidized rates and hence caters to high volume of clients
- Another strength for SAIL is its Market position which is on a very successful level and thus there is no hesitation in its clients
- Financial Resources also acts as strength as it can use Government funds for ventures.
- Sales Channels also is strength as it uses all possible channels for promotion and Sales.
- Strength is the (product Steel) is core in nature and related to almost all development and infrastructure activities.
- Profitability is also strength as SAIL records astounding profit figures in spite of providing social benefit and subsidies to its clients.

#### Weakness

- SAIL being a Public sector undertaking, the targets and workload are not as tough as private sector undertakings and job security leads to staff being complacent sometimes.
- Another weakness is that higher profit margins are possible but not allowed since being a Government enterprise.
- Competitive strategies are another weakness as competitors include private players with better quality manpower, strategies and policies.
- Another weakness is production of a dedicated product in steel and no diversification.

#### Opportunities

- However SAIL has got certain opportunities as it is affiliated to the Government of India, therefore security, expansion and growth is possible.
- SAIL can market its products globally with ease using Government support.
- SAIL being financially sound can undertake merger and acquisition projects with weaker counterparts.
- It can also involve in production of forward integration products and by-products apart from its core product (Steel) with the help of its healthy brand image.

#### Threats

- Threats would include change in Government Policies and Economy trend which can have a direct impact on the functioning of SAIL.
- Also emerging and existing private sector competitors who can steal market share.
- Also late implementation of technology and modern machinery as compared to counterparts can pose a potential threat.
- Apart from the above major threats, labour turnover can also cause problems due to existence of higher paying jobs with better benefits in the sector

### Methodology of Marketing Research in Steel Manufacturing Industry

The Marketing Research at SAIL and Tata Steel focuses on process improvement, cost competitiveness, product quality, product development and basic research for improvement in techno-economic parameters to improve the overall efficiency. Major initiatives aimed at Process improvement, cost competitiveness and product development include:

- Improvement in lining life of converter by technological initiatives
- Increase in productivity by process changes in furnace working from peripheral working and other changes in charging system.
- Technological initiatives like hot charging of wheels, modification of ingot design, etc., helped in record production of wheels



- Reduction in roll spalling at various steel manufacturing plants
- Measures to obtain increased campaign length and reduced roll consumption at various steel manufacturing plants
- Installation of automation of hot saws in Structural Mill

**Cost competitiveness**

According to Annual Report of SAIL and Tata Steel, the following cost reduction measures are implemented to gain competitive advantage:-

- (a) Reduction in fixed cost through volume growth, reduction in manpower cost and financial charges;
- (b) Reduction in variable cost through technological interventions like elimination of ingot steel route, 100% Basic Oxygen Furnace and Continuous Casting, coke rate reduction via CDI/auxiliary fuel injection, and higher levels of process control automation, leading to improvement of operating efficiency; and
- (c) By business process improvements such as streamlining of supplies of key inputs of steel making through higher utilization of e-commerce, centralized procurement for select items, etc.

**Quality competitiveness**

SAIL and Tata Steel also emphasize on technology & input quality improvement across value chain; thrust on special quality steel and new products; improvement in process consistency and metal treatment; advanced online testing and quality control facilities; standardization/automation/process control & IT. However, the market research indicators are directing to higher growth potential. Therefore, depending on the market growth, strategies of competitors, global economic scenario, government policies and resource availability, the organization's plans may be revised from time to time, and further growth in terms of volume, products, etc., may be aimed through investments, acquisitions/mergers etc. The current marketing research provides the broad direction for SAIL and Tata Steel to move forward.

**Marketing Research Strategies adopted in Steel Manufacturing Industry**

**Product Positioning:** Steel being an industrial commodity, it is very necessary to maintain customer relationship for profitability and smooth running of company. SAIL implements following practices for continuous improvement.

- Procedure / process adapted to access current / future expectation of customers.

- It induces market research visiting customer premises attending to customer complaints.
- The manufacturing industry has Market Research division where specialists monitor changing demand pattern and development in each Market segment is carried on.
- It has posted market development officers at various locations that are its eyes and ears for monitoring current and future expectation of its customer.
- The Business-planning department is exclusively meant to study customer's changing demand scenario and assess current and future expectation.

To understand customer needs, Marketing Research division organizes seminars and workshops regularly. SAIL and Tata Steel have adopted the philosophy of recognizing segment of the market and identifying key customer in segment and giving them preferential treatment. Sales executives have been trained to use direct selling as tool for building long lasting relationship with the customers.

**Market Development:** Marketing Research at SAIL and Tata Steel have valued customers group in identifying their specific needs specific to that group thus segmenting and developing market segment for the products. Major product changes are done as per their specific needs of the Market segment thereby creating product differentiation packages.

**JIT Delivery:** JIT Delivery means just in time delivery. SAIL and Tata Steel are able to make delivery just in time because it executes its strategies properly and takes order only after consulting the production units and hence the products are delivered on time.

**Production According To Market Needs:** SAIL and Tata Steel are always adapting to the market and tries to produce according to market needs. These manufacturing giants try to produce quality products / new products which full fill the need of market.

**Policies of Marketing Research**

This segment carries out product pricing and related activities which are as follows :-

- Finalize annual sales plan and quantity, monthly, weekly, and daily rolling programme of Rolling mills in consultation with CMO and mills. This plan is based on the sales forecast receive from the marketing research department.
- Optimizing the product-mix by proper utilization of available stocks.
- Receiving Enquiries and complaints, cancellation of orders etc.



- Coordinating the works of mills and traffic department so as to maximize dispatches.
- Co-ordinations with CMO from stages of enquiry, for exports, development of new Profiles, sections, modification of product scheduling till the orders are completed.
- Development of new qualities of steel. Regular market surveys of products to analyze the market situation.
- Implementation of suggestions received from the customers feed back.
- Ensure customer satisfaction by meeting customers regularly; provide redressal to their problems and fulfillment of demand.

**BY PRODUCT:** In the steel industries coke is heated to get some gas and tar product such as Ammonia, Tar, Benzene etc. These products are unwanted but can't be left in vain. Since they are profitable as well as harmful for the environment and industries, so they go through certain process and are then made into some valuable product. Eg. At the Bokaro plant heat the coke ammonia gases obtained, and then mixed it in the sulfuric acid and made ammonia sulphate that is used as a fertilizer with brand name RAJA.

**SECONDARY PRODUCT:** In the process of making core project, defectives are also produced; the reason may be break down or any technical default. Scrap is also produced in the process of producing steel products. These secondary products are processed from the beginning or else they are sold through the auction or lot sale.

## MARKETING RESEARCH IMPLICATIONS

There are some steps need to be taken to help the Indian Steel Industry achieve its potential which is as follows:

- Steel is yet to touch the lives of millions of people in India. Per capita consumption of steel in India is only 29 kg and has to go a long way to reach consumption levels of around 400 kg in various developed countries.
- There is a need to continue the current thrust on infrastructure related activities and extend them to rural India. Rural Indian today presents a challenge for development of the country and the opportunity to increase usage of steel in these areas through projects such as rural housing etc.
- Current shortage of inputs has pushed up the costs for the steel industry. Government should ensure that quality raw material such iron-ore and coke are available to the

industry. With Ministry of Steel targeting an output of 100 MT of steel, there is an urgent need to develop raw material resources for inputs like iron-ore and coal within or outside the country.

- Adequate enabling infrastructure such as power, ports, roads, rail transport is pre-requisite for the Indian steel industry to remain competitive.
- Government should not regulate prices and free market forces should prevail. Intervention by the Government is only a short-term solution to the issue of steel prices in the country.

The Indian Steel industry also faces stiff competition from various global players. While developed countries have placed various tariff and non-tariff barriers on steel exports from their nations, the domestic industry is exposed to low cost imports from competing nations. The Government should give reasonable protection to the domestic steel industry. Steel Industry should be allowed to have a decent return on investment and contribute to the overall growth of the Indian manufacturing sector. CRISIL in a recent study has concluded that given the large exposure that banks and financial institutions have given to the steel industry, a healthy steel sector is in the best interest of the economy. Today, Indian steel manufacturers employ one of the best standards of technology. Indian Steel finds growing acceptability in international markets. But despite this India's share in world trade steel is bare minimum 2%. Given the potential of the Indian steel industry there is tremendous scope to increase this share further. While the steel industry will continue servicing the domestic demand there is a vast untapped potential.

Therefore, it can rightly be concluded that the liberalization of industrial policy and other initiatives taken by the Government have given a definite impetus for entry, participation and growth of both private and public sector in the steel industry. Assurance, reliability and superior brand experience in every product have always been the core concepts for SAIL & Tata Steel's brand building strategies. In addition, the realigned operating strategy takes into consideration, the realities of the marketplace and improvement of customer satisfaction and relationships with existing customers. In the domain of brand building, both SAIL and Tata Steel have always been able to stay ahead of competition and sustain their position of supremacy even in the face of erratic market changes. In recent times, the Tata Steel Group has been concentrating on the geographies that are logistically favorable to its plants in Europe and Asia, in response to current



realities of the marketplace. Tata Steel has been working to improve customer satisfaction by the usage of Marketing Research. Tata Steel is focusing on positive markets by applying its resources to the core business where they are most needed.

## CONCLUSION

Most Indian businesses were large on margins and low in complexities. There was no imminent need for using analytics as a differentiating factor and one could easily get away without using statistics to predict the potential of a customer. But the last five years has seen competition building up significantly. Therefore, to retain a customer, it has become essential to quantify the risks involved in the business. So, how do businesses recognize or map the uncertainty? Can they do so by using statistical modeling, which involve analyzing the different variables in the business? Take for instance, an FMCG company. A highly marketing-driven industry, companies spend around 15 per cent of their sales on their marketing activities like advertising on various media channels, promotions to retailers or consumers, and so on, going by annual reports. This 'marketing mix modeling' uses multiple variable analysis techniques to estimate the impact of advertising, pricing, merchandising, competitive activity, seasonality, etc. According to Fractal, proper implementation of this modeling can increase efficiency of marketing spend by 10 per cent. In the last three years, analytics companies in India have developed mathematical tools in areas such as cross-selling, employee attrition management and customer acquisition and retention for Indian companies like ICICI Bank, HDFC, Reliance Infocomm, UTI and ABN-AMRO, among others.

Globally, the use marketing research models have spread to sectors like banking, telecom, advertising, search engine marketing, advertising, FMCG, insurance, and transport and communication. It has created millions for mathematicians. Mathematical modeling is now being taken to the next level. After products and services, it is now being used to decipher the random behavior of the consumer. The global insurance industry is now using what is called the generalized linear modeling. Till now in India, it is mainly the banking and telecommunication industries that thrive on marketing research tools. One of the main reasons is lack of consumer data capture processes, like in the case of FMCG industry. Globally, statisticians use a multi-variate analysis technique called structured equation modeling (SEM), which factors in parameters like consumer background, preferences and brand feel while devising solutions. The success of such a model is dependent on the accuracy of available data. "Because of the lack of organized retail sector, data

compilation and even the reliability of data are an issue. Besides, in developing markets like India, data is still gathered through monthly retail audits. This restricts the entry of data to monthly level," says. Ramakrishna Reddy, vice-president, Fractal. It's time Indian businesses started applying Marketing Research to maximize returns. An integrated steel plant is a complex entity in which various products are routed through different production units. Sales, cost, and net profit of each product are functions of many variables. If the operating manager makes decisions that result in sub-optimal operations, a significant savings or income opportunity can be lost. Professor Goutam Dutta of the Production and Quantitative Methods (P&QM) area and Professor Robert Fourer, his colleague at Northwestern University surveyed mathematical programming applications and report about seventy applications in fifteen different countries since 1958. Although steel is a basic industry, very few applications of marketing research in Marketing have been reported in the literature in comparison with Marketing Research Applications in other industries such as oil, airlines, and semiconductors.

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# UNDERSTANDING ASSAM'S SUSTAINABILITY ISSUES

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## ABSTRACT

*Assam was the first state in India to have undertaken the Global Sustainable Development Goals (SDGs) as a long-term guiding strategy for development. At the end of five years, before the state election, evaluating the work on SDGs in Assam is essential to follow up on the commitment of the government. But before we start evaluating the SDGs it is important to understand the development road Assam has taken over the last 100-150 years and why we must make a new turn. This study has tried to understand certain loopholes which have hampered the progress of SDGs in Assam along with how much Assam has been able to address its sustainability issues and how we can progress. We have reviewed the performance of the state based upon the official performance index released by NITI Aayog, Government of India. Our review of the index reflects that Assam has performed relatively poorer than the other states of the country. However, the ethnic culture of the region was deeply rooted in nature which the state can now adopt and harness to achieve its SDGs.*

**KEYWORDS:** *Sustainable Development Goals; Assam Election; Indigenous Knowledge; Citizen Science; Polycentric Governance*

## 1. INTRODUCTION

In 2015, the 17 Sustainable Development Goals (SDGs) were adopted by the countries. It was a new historic agreement on climate change with a shift in opinions on international commitments to sustainability and development (Scoones, 2016). Unlike the Millennium Development Goals (MDGs) the SDGs primarily focused on economic security, social security and environmental sustainability (Arora & Mishra, 2019). Particularly the SDGs have given more emphasis to environmental sustainability as 6 out of 17 goals which include goals 6,7, 12,13,14,15 are directly related to developing a sustainable environment (Arora

& Mishra, 2019). While the MDGs had goals on environmental sustainability but it mainly focused on poverty eradication for underdeveloped countries, the SDGs, on the other hand, constituted 17 goals which apply to all the nations of the world (Arora & Mishra, 2019). These goals are much broader as they contain more varied dimensions than the MDGs. Many countries have adopted the SDGs and India too has marched forward towards achieving these SDGs.

In light of this event, the Government of Assam started its path on Implementation of Sustainable Development Goals in Assam in January 2016. The Government of Assam launched Assam 2030, a guiding



document that defines the ambition of the state. The document quantifies itself to ensure the health, happiness, prosperity and wellbeing of every citizen of Assam, as well as the conservation and preservation of the State's unique bio-diversity, which is critical for the sustainable development and economic growth of Assam (Bhamra & Niazi, 2016). Assam is the first state in India to have undertaken the Global Sustainable Development Goals as a long-term guiding strategy for development in the state (Assam Agenda 2030, 2016).

Assam was a tribal-dominated resource-rich area, which has developed itself through multiple migration waves resulting in a diverse ethnic and cultural enrichment of the region (ENVIS Center, 2016). Assam, as well as its sister states of North East, has a close cultural link with nature. It has a unique geo-climatic condition (ENVIS Center, 2016). Almost the entire state lies in the Brahmaputra valley and the northern and eastern part of this valley is bounded by Himalayan frontal thrust which makes the state more prone to various natural calamities such as floods, earthquakes and landslides (ENVIS Center, 2016).

And the ever-increasing population and competition among the different ethno-religious groups can further complicate resource sharing and development. This has and can further intensify conflicts and division (Shrivastava & Heinen, June 2007). Sustainable Development can be portrayed as a manageable and holistic pathway to international as well as local development. However, several questions lead to disagreement as to what the goals mean and how and who shall benefit and where the responsibilities lie (Scoones, 2016).

It has been four years since the Assam government has adopted the agenda in 2030. Therefore, at this point, it becomes imperative to review the goals based on environmental sustainability and how far Assam has been successful in achieving these goals. The Assam Development Agenda can be divided into three parts (Chatterjee, 2018). The first phase consists of developing the Vision document (Chatterjee, 2018). The Vision 2030 document has analysed the 17 goals and 169 targets and proposes a broad approach to achieve the SDGs (Chatterjee, 2018). Consequent to this document, what we may call as the second phase, there has been a 7-years Strategy Paper and 3 years Action Plan that minutely details out the road map to achieve the targets set by the Vision document (Chatterjee, 2018). This article has tried to critically understand the requirements, benefits and responsibilities identified and taken up by Government of Assam to address the needs of the citizens both in urban and rural context as reflected on the initiative for

Sustainable Development Goals in Assam. However, before we start our discussion on sustainability and development undertaken by the government it is imperative to understand the socio-economic structure and development of the region at least from colonial days. This will help us to understand the requirements, benefits and responsibilities identified and undertaken by the Government.

## **2. A BRIEF HISTORY OF SUSTAINABILITY AND DEVELOPMENT IN ASSAM**

The modern development in Assam started after it was annexed by the British in 1826 after tea was discovered in Upper Assam in 1823 (Sharma et al., 2012). Since then (from 1837 onwards) vast areas of forest lands were converted into tea plantations and the forest department that was set-up in the area went about exploiting the resources systematically. Loss of biodiversity is generally attributed to tea-plantation in Assam (Saikia, 2011; Sharma et al., 2012). Due to the scarcity of local labourers, indentured workers were brought from central India (Sharma et al., 2012).

During colonial times, the global market was introduced to the region and it opened up new demands. Two of the most important industries at that time were the tea industry and sawmill industry. In the upper Brahmaputra valley, large tracts of lands were cleared to encourage the growth of the tea industry. Various incentives by the government were started such as Wasteland Rules of 1838 through which wastelands were leased to planters at nominal prices (Sharma et al., 2012). Further to this, peasants were encouraged to colonise and transform forested lands into agricultural lands (Saikia, 2005). Environmental historians put importance on Assam Land Revenue Settlement, 1886 and Assam Forest regulation of 1891 that has changed the forest cover in the region. Due to such policies, tea plantations which represented 8% of the total settled land grew to one-seventh of the entire state area.

With the discovery of coal and oil, the Brahmaputra valley became a strategic location for the British. To transport oil, tea, timber and coal from the valley, the Assam Railways and Trading Company was started. The advent of the railway system in Assam also exerted a lot of pressure on the forests as at that time, railway sleepers were made of wood (Saikia 2008, Sharma et al, 2012).

However, after World War 1, when the global depression had hit the world in 1929, tea export was reduced and as a result, plantation workers were laid off. The plantation workers moved into adjoining





forestlands and river islands where they clumsily converted forest land into agricultural land in their economic desperation (Tucker, 1988; Sharma et al., 2012). This led to deforestation and degradation of the forests. An estimation by Guha, 2006 shows the land-use change for cultivation increased from 45,325 ha (the early 1900s) to 106,028 ha (1920s). Moreover, since the 1930s, migration from other parts of India increased the population exponentially. The population growth of Assam was the second-highest in the world from 1901 to 1961. From 3.7 million in 1901 it rose to 12 million within 60 years (Dass 1980; Sharma et al., 2012) This factor, however, rested on the natives who were reluctant to work in tea gardens and the workforce was imported by the colonial rulers from central India. These labourers caused the transformation of the demography of the valley and also exerted pressure on the natural resources.

The provincial forest department which was set-up to systematically exploit the forest also curtailed the rights and privileges of the natives and restricted the use of forest products. However, it reciprocally also helped in maintaining the forest cover and resources from planters, imported and migrant labourers. This was done by introducing the concept of reserve forests. Most of the reserve forests established in the pre-independence era still survive under the forest department (Saikia, 2005). But by the Second World War, a huge amount of timbers were exploited for the war effort. The timber production increased twice while fuel wood production went up thrice by 1945 (Tucker, 1988).

In short, even though there was a big economic revolution, i.e. a transition from a quasi-feudal system to a global market, it came with a price of massive ecological destruction. Though there was an economic transition, this did not translate to the development and prosperity of the valley. Centuries later the region still remained underdeveloped. Eminent economic historian Amlendu Guha has termed this phenomenon as “a big push without a take-off”.

In the 1940s, one of the predominant problems faced by the region was the land and resources conflict. Post-independence, the population in the valley rose drastically due to migration from the adjoining region (Sharma et al., 2012). Assam has varied climate and soil conditions. The state contains both hilly regions and plains and among them there are variations. In hilly areas, the economy was predominantly based on Jhum cultivation while the upper Brahmaputra Valley was already distinguished as a mineral-rich area. However, by the 1950s several major earthquakes in the area changed the landscape to a great extent.

Due to mass immigration, ecological imbalance due to earthquakes, as a result, armed civil unrest spread across the region which had important impacts on the socio-economic development history of the state. This became the Assam Movement or Agitation in 1985 after which the stagnant economy of the state was set to revive. However, despite being the largest producer of tea, oil, plywood and forest products, it continues to be a relatively underdeveloped state (Sharma et al., 2012)

Post-Independence, one of the major economic bases and thrusts for the state has been agriculture. Though initial Five-Year plans focused on increased productivity of agriculture, however, there was a mere 2% increase in arable land. Hence, it can be said that there was no agricultural intensification or expansion. In addition to this, Assam was outside the purview of India's Green Revolution. Post-Independence immigration from Bangladesh and other parts of India increased the pressure on lands (Dass, 1980) and as a result forest covers were cleared. Example: In undivided Lakhimpur and Sibsagar districts, forest cover decreased up to 45% (Goswami, 2002).

‘Industry’ was another sector which created a base for development in Assam. They generally consisted of the colonial industries such as tea, coal, oil and timber. Unfortunately, keeping up with the colonial extraction traditions, few new ancillary industries were facilitated from the existing ones which otherwise could have paved the pathway for development.

Environmental issues have become a matter of deep concern as the new developments taking place in the field of industries and all other sectors contribute towards environmental pollution. The UN office for the coordination of Humanitarian Affairs has stated “climate change is not just a distant future threat, but it is the main driver behind rising humanitarian needs and we are seeing its impact”. Keeping this in mind and Assam's fragile ecology, the state's development has to consider a sustainable path. The Assam Agenda 2030 is a good step towards achieving it. However, a review is required to assess the actions undertaken by the stakeholders towards this goal.

### **3. SUSTAINABLE DEVELOPMENT INDEX OF ASSAM**

The Sustainable Development Goal (SDG) India index which came in 2018 is an important indicator to monitor the progress of different states and UTs every year. It is an instrument to help the states to ponder upon their strategies if they are not working and devise appropriate strategies to reach the desired targets by 2030 (N.I.T.I, Aayog, 2018). The index measures the



performance in terms of the SDGs of all the states and ranks them based on their performance (N.I.T.I, Aayog 2018). The index has created 4 categories in which all the states are divided according to their performances (N.I.T.I, Aayog, 2018). The first category is known as the aspirant category whose score is below 50, the next category is known as the 'performer category' and includes all those states and union territories whose composite score is between 50-64, the third category is known as the 'front runner category' and includes all those states and UTs with a composite score between 65-99 and the final category is known as the achiever category with a composite score of 100 and beyond (N.I.T.I, Aayog, 2018).

Assam has devised a time-bound strategy of various short term, medium-term and long-term goals which are needed to be achieved between the period (2019-2030) for reaching the desired level of targets by 2030 (N.I.T.I, Aayog, 2018). Therefore, it is imperative for the state to reach the performer category by the end of 2022 and the third category by the end of 2026 and finally the 'achiever category' by the end of 2030 and further maintain it beyond 2030 (N.I.T.I, Aayog, 2018). This time-bound strategy has been developed to maintain steady progress of the state. However, Assam's performance in the SDGs has been relatively poor compared to other states like Kerala, Andhra Pradesh, etc. as indicated by the SDG India Index Baseline Report prepared by NITI Aayog in 2018. The index pointed out that Assam stands almost at the bottom of the list with a score of 49 against a national average of 57, just above Bihar (48) and Uttar Pradesh (42) (N.I.T.I, Aayog, 2018). While most of the states have a score of above 50 including the other northeastern states, it has become a matter of concern that despite being the first state to adopt the SDG in 2016, Assam has not been able to reach the score of 50.

The report further stated that Assam's performance has been pathetic in Goal 3, Goal 5, Goal 6, Goal 7, Goal 9 and Goal 11. Even though the state has scored 100 in Goal 15 i.e. (Life on land sustainability manages forest, combat deforestation) but due to the above-mentioned goals, the overall score of Assam was below the national average score (The Sentinel, 2019). However, the 2019 SDG India index reported that the national average has gone up to 60 from 57 in 2018, and Assam along with Bihar and Uttar Pradesh has also reached the Performers category with a score of 55, 50 and 55 respectively (The Sentinel, 2019). Assam has improved its performance in Goal 6 and 7 and moved to the front runner category from the aspirant category (N.I.T.I, Aayog, 2019). But the state's performance has dropped to the front runner

category from achievers category in Goal 15 and the state is still in the aspirant category in Goal 13 along with Goals 3, 5, 9 and 11 (N.I.T.I, Aayog, 2019). Therefore even though Assam has improved its performance from the previous year's report but to achieve a highly ambitious target by 2030 the government need to buckle up and should consider restructuring of some of the administrative policies so that it could achieve the desired level of success within the stipulated time and become a good model for the other states to follow it.

#### **4. STEPS AHEAD**

The SDG India Index Report is an important step towards tracking the performances of different states in terms of implementing the SDGs. Assam being the first state has already prepared a detailed strategy for implementing these goals. Some of the strategies included forming of a nodal department to which will function as the main umbrella department looking after the entire implementing process of the SDGs, under this department a centre has been created to function as a knowledge hub and a cell has also been created for coordination function (N.I.T.I, Aayog 2018). Besides this district planning centres are facilitated to work as a knowledge hub centre for different districts (N.I.T.I, Aayog 2018). Moreover, Assam has also set up 59 core monitorable indicators covering 17 goals and set a baseline as well as final and intermediate targets (Chatterjee,2018). The state has also set up goal wise mapping departments and schemes on SDGs into nine thematic clusters (Chatterjee,2018). However, the SDG India Index 2019 puts Assam in the performer category with an index score of 55 as against the national average of 60 (N.I.T.I, Aayog 2019).

Therefore, the government of Assam should try to find out the loopholes in the strategies. Besides this the state consists of different types of tribal people, therefore if the government can integrate some of the strategies used by these people and devise a unique strategy by combining features of both traditional and modern aspects then it might be able to foster holistic development of the economy sustainably and achieve the targets of SDGs within the stipulated period.

The tribals of Assam such as Bodos, Tiwas, Misings, etc. have various sacred and religious beliefs which led to the preservation and conservation of the environment among the tribal communities (Barman & Phukan,2016). One of the most common features among the tribes is that here the entire community comes together as a whole and holds themselves responsible for the conservation and sustainable use of



the environment (Barman & Phukan,2016). The Tiwas, for instance, adopted community fishing because of the presence of a large number of water sources which has, in turn, provided an opportunity to organise fairs and festivals like the Jun Beel Mela in the Kamrup district (Barman & Phukan,2016). One of the most prominent features of this mela is that buying and selling of things happen through the barter system (Barman & Phukan,2016). Tribes produce various traditional cakes, rice powder etc by bartering edible items such as ginger, turmeric, chillies, indigo etc. This mela provides an eminent example of conserving and maintaining an ecosystem (Barman & Phukan,2016).

This type of fair generally indicates a close link between community life and the environment and also shows how the environment affects community life and vice versa (Barman & Phukan,2016). Moreover, the Assam government can take references from other neighbouring states like Sikkim, Nagaland etc on how they are integrating a traditional approach of sustainable conservation along with the modern one. For instance, in Sikkim, there exists a traditional system of governance, almost 200 years old known as 'Dzumsa', found especially in North Sikkim (Chakrabarti, 2011). It looks after all the development activities, law and order, as well as regulates the natural resource management in the region (Chakrabarti, 2011). Such type of governance will help to foster sustainable development in an effective manner (Chakrabarti, 2011). Moreover, people of Lachung valley in Sikkim practice a high degree of pastoralism, known as 'gothwala' system (Chakrabarti, 2011). It is a process systematically organised by the Dzumsa where the cyclical movement of the herdsman along with their herds allows for the grass to regenerate as well as maintaining sufficient fodder for the animals (Chakrabarti, 2011). Also, the dung of animals helps the soil to replenish its fertility (Chakrabarti, 2011). Therefore this system runs in conformity with the definition of sustainable development and generates livelihood without destroying nature (Chakrabarti, 2011).

Another example of increasing community participation through institutional arrangement based on the existing value system is Nagaland's Village Development Boards (VDBs), created by the Nagaland Government, it aims to augment traditional system of agriculture rather than attempt to radically change it (Ramakrishnan, 2007). Another simplistic view of integrated management would be to identify ecological keystone species (Ramakrishnan, 2007). These are socially/culturally-valued species and are important in the agroforestry systems across the Himalayan region.

Such as the *Alnus nepalensis* and many bamboo species are important for the Jhum system which conserves NPK in the soil (Ramakrishnan, 2007). Therefore, if the government can incorporate some of these features or explore some more indigenous processes specifically in the hilly areas of Assam, it will provide incentives to achieve the goals.

Therefore, there is a need to understand that not all traditional ecological knowledge and practices go against the ethics and ethos of conservation. Government initiatives should aim to establish a complementary relationship between conservation and livelihood issues. Enhancement of the positive dimensions of these practices and knowledge base, buttressed with conventional science-based inputs is likely to be a more effective way of resolving conflicts by increasing community participation, improving the socio-economic development of the people as well as contributing towards effective conservation of nature (Ramakrishnan, 2007). Moreover, forestry and diverse agricultural and agro-forestry practices are among the most promising means of carbon management because of their potentials for carbon sequestration, in turn supporting mitigation (Ramakrishnan, 2007). There is also a need to strengthen climate data collection and increase climate change research, which is presently insufficient.

Currently, national and international development organizations are promoting transparency and participation to create evidence-based policy decision making which will be most benefited with a strong connection to citizen science (Hecker et al. 2018). Evidence has also shown it to be a cost-effective and reliable approach to collect data (Hecker et al. 2018, in literature Hyder et al. 2015, McKinley et al. 2017). Citizen Science has proved as a potential pathway towards contributing data to monitor SDGs (Fritz et al., 2019). Its power has been proven immensely in physics and biology however its application towards SDGs, especially in the environmental sector, are emerging yet limited.

We have seen that there is a limited reach of Citizen Science in developing countries. Most of the citizen science projects in these countries are funded by external agencies. But with new ICT tools and sophisticated internet connections and applications; effective data collection by crowd sourcing can be utilized to gather data collection over large spatial and temporal resolutions (Dickinson, Zuckerberg and Bonter, 2010; Schäfer and Kieslinger, 2016; Fraisl et al., 2020). In India, after the launch of Jio Network, internet connectivity became affordable to the majority of the public making India the 2nd largest internet user



base (Brogen Project), making information and connectivity available to the majority of the population. Citizen Science leads the pathway for developing polycentric governance which helps in highlighting local issues that affect the community. It also helps in taking steps for sustainable development while localizing the global effort.

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## **EXPRESSION OF IDEAS OF TOLERANCE IN THE WORK "NATHAN THE WISE"**

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### **ABSTRACT**

*The article under discussion analyzes the issues of inter-religious harmony and tolerance in the work "Nathan the Wise". The author of the article considers that the German critic and art theorist Gotthald Ephraim Lessing supported humanism throughout his career and placed the concept of interpersonal tolerance at the center of the drama "Nathan the Wise". Through this work, the writer showed a life that celebrates peace and tranquility, kindness and love on earth. At a time when the world was experiencing various conflicts on a religious basis, the ideas of religious tolerance put forward in the Lessing's drama were gaining relevance.*

**KEYWORDS:** *tolerance, upbringing, religion, hero, enlightenment, character, nation, society, life, idea.*

### **INTRODUCTION**

Lessing, who left a huge mark on German literature with his multifaceted work, became known throughout the world as an enlightener who brought literature and life closer together. Throughout his career, the writer, known as a militant, revolutionary enlightener, defended the interests of the affected strata of German society. His works, written in a critical spirit, combined the spirit of freedom and heroism, promoting the national unity of the country, the ideas of humanity.

His work played an important role in the literature of the Western Awakening, as it was sung in the national spirit. This raised key issues for the development of the German nation.

N. G. Chernyshevsky expressed the following opinion about him. "Lessing fought for German literature to be at the center of public life. In this way, he accelerated the development of his people" [1]. Indeed, throughout his career, the writer, like other representatives of the revolutionary bourgeois democracy of the eighteenth century, fought for the idea of human equality. The issues raised by him have not yet lost their force.

Lessing sought to reveal the peculiarities of the various arts in order to further strengthen their connection with life. By this time, "Europe in the eighteenth century was at the forefront of the ideological struggle against feudal regimes, enriched with the philosophical and political teachings of the literary and artistic period of the Enlightenment" [2].

Lessing took the leading position in this struggle. One of Lessing's achievements was that he was one of the first creators to bring a spirit of social protest to German literature. The writer promotes this idea with great passion and courage, believing that the ideas of mutual equality, justice and truth can be realized not through revolts, but through the enlightenment of man, his spiritual maturity.

Therefore, by the 1960s, Lessing was recognized as an art theorist not only in Germany but throughout Europe. His views in the field of drama and theatrical theory went through the same basic stages in its development as the whole bourgeois doctrine of the eighteenth century.

### **MATERIALS AND METHODS**

The purpose of this study is to scientifically substantiate and analyze the ideas of inter-religious harmony and tolerance in the work



"Nathan the Wise". Tolerance is a necessary attribute for every individual and is an important phenomenon that has been valued for centuries, regardless of religion, worldview, beliefs.

The great German writer Lessing summed up the ideas of tolerance in the poetic drama "Nathan the Wise". The drama was originally written in prose. Later, in accordance with the traditions of the Enlightenment, this work was transformed into a dramatic poem. Throughout his career, he has created in almost all genres with great passion.

The dramas written by him clearly showed the social environment of that period. G.E. Lessing was between two of the greatest literary movements of his time - Enlightenment classicism and sentimentalism. But Lessing would not include himself in any of these areas" [3].

His critical views were clearly felt in his works. Through this article, we focus on the analysis of the issue of the artistic expression of the ideas of tolerance in Lessing's "Nathan the Wise". "It is going to be the most impressive play I've ever written," the playwright said.

This work was really a very heartfelt play and left a deep mark on the heart of the reader. Incorporating his debates with the church and its leaders on racial and religious equality, as well as differences, the playwright concludes that "it would be better to strike them from the theatrical stage than to speak from the old pulpit" [5].

The reason was that at that time the relationship between Lessing and the clergy was becoming tense. Lessing filled the factor of tolerance with the need to resist religious persecution. Tolerance was first and foremost about protecting people from all kinds of oppression and violence on an equal footing with people of other religions. Lessing raised the issue between religion and society at a time when religious conflicts in Europe, the relationship between religious and secular authorities, were becoming more serious.

The spread of religious ideas is often explained by social events that exist in society. The play was completed in 1779. When staged at the Weimar Theater in 1801, Goethe reacted to the play by saying that "the feelings of patience, sorrow and remorse that are reflected will remain sacred feelings in the hearts of the peoples."

Indeed, while this play is very impressive among the playwright's works, it shows the author's return to enlightenment-philosophical drama. The play takes a strong place on the stage with its richness of deep human ideas and images. The drama is still alive today. Today, theologians Heinrich Schmidinger and Karl-Josef Kuschel consider the work of the sage Nathan universal for that period and claim to have made a great turn in theology.

Indeed, the drama, along with the interreligious relationship, shows that members of different religions treat each other harshly, disregard their customs, or do not follow the rules of punishment that are not specified in religions at all. Disobedience to religious customs, disagreements between different fanatics or theologians began to cause various conflicts among the people.

In this sense, the playwright, fed up with the filth of society, expressed his attitude to religions and the conflicts that arose between them in "Nathan the Wise". The work is fully interpreted as inter-religious harmony and tolerance.

"Although the problem of tolerance was initially related to religious intolerance, the principles of tolerance are very important for many religions. they call not to violate the fourth commandment, which is set forth in the books, which God commands the other to love himself as himself" [6].

So, in the person of the Jew Nathan, Lessing, adorned with all kinds of propaganda, disorder and discrimination in society, tried to be fair on all fronts, to protect human rights.

## RESULTS AND DISCUSSION

Through the ideas of the work, Lessing wanted people of different religions to live in harmony in a society, and wanted their rights in society to be equal regardless of which religion they represented. Lessing does not emphasize religious controversy in the play, but confronts the hostile priest Getze against the spirituality of a strange universe. This was a severe blow to the unclean people in the society of that time. The ideas that express the first ideas of tolerance in the drama can be seen in the conversation between Nathan and the monk.

Nathan:

No, no! I won't leave you anymore!  
Be friends! May my people  
Worse than your jinn you look bad  
But we can't choose it  
Besides, you and I are not a nation yet  
People, what is it?  
Judaism, Christianity  
In fact, isn't everyone human?  
Oh, I'd be glad to see you  
Generous as a human being [7].

Nathan demonstrates humanity through friendships with representatives of other religions. Nathan offers friendship at a glance to the monk who rescued his adopted daughter Rexa from the torment of fire. Nathan tells the priest this offer not only because he saved his daughter, but also because he wants to live as one united nation.

The author depicts the events of his life through the image of Nathan, and promotes the idea



of a member of society, a family, regardless of which religion mankind represents. Although the monk was a member of a different religion, he was primarily a human being. He also had a heart, and he was also a man of high intellect. Nathan knew that such a quality was embodied in every human being. Through this, the playwright seems to put an end to the debate in society.

G.E. Lessing's humanistic ideas about inter-religious harmony, religious tolerance are revealed in the dialogue of Nathan the Wise with Sultan Salohiddin through the "Legend of the Three Rings." Orientalist O. Mann admits that "G.E. Lessing considers the humane behavior of Sultan Salohiddin as an enlightened and historical figure as a manifestation of Eastern culture" [8].

The playwright sees the positive aspects of Salahiddin in religious tolerance, in harmony between people. Lessing, first and foremost, expresses the notions of religious tolerance in Eastern culture as the main idea in the play "Nathan the Wise". King Salohiddin asks Nathan which of the three religions is superior. Nathan wisely tells the story of the three rings. The legend of the three rings is illuminated in an oriental style.

"It is based on the idea that Christianity, Judaism and Islam are united in discussing the struggle for inter-religious conflict and the development of cultures, the prevention of human rights abuses and the establishment of unity and peace among peoples." The legend of the three rings is illuminated in an oriental style.

Nathan:

In ancient times in the eastern country  
One man lived: in his arms  
There was a precious pearl ring

Lessing also expresses his views on religion in his book "Educating Mankind". It states, "If any religious rule is not enlightened by reason, if it does not pass through its powerful critique, then such rules are nothing but superstition. But it is also true that the content of any religion is imbued with the spirit of universal morality, such as reason and love for people." counts" [9].

According to the author, a person should have human qualities such as reasonableness, honesty, tolerance, generosity. During a conversation with Sultan Salohiddin, Nathan says that the connection between religions is that no religion is superior to any other religion. The continuation of these ideas can also be seen in the following dialogue:

Nathan:

Only on the basis of  
Rather, their basis is holistic:  
History is one, isn't it?  
Ancient chronicles, narrations

That's all there is to it.

But we do not believe in history!

The garden in which we believe rests on us,

Who wears enamel, who wears no clothes,

He is even willing to give his life for us

Qibla is our father and mother

It has always been a symbol of my faith

Leaving the spirit of my fathers, I am yours

Shall I repent of the spirit of my father?

Or vice versa: what a demand

I can - you blame your own people

In a lie, admit mine?

The same can be said of imitation

Is that not the case with Christians?

In a conversation with Sultan Salohiddin, Nathan the Wise emphasizes that the history of the three religions is one, which has been witnessed by legends since ancient times, and explains to the sultan that the essence of religious beliefs is common. It is all based on the ideas of goodness and is based on qualities such as goodness, peace, friendship. It calls people to honesty and purity, kindness, brotherhood and tolerance. Therefore, the Jews say that they should honor their parents by placing them in the direction of the qibla, that is, they should be after God. In every religion, parents are equally valuable. That is why they always deserve respect. In Islam, the qibla is the place where Muslims turn their backs when praying or worshipping, the place where Mecca, the house of God, is located. It is clear from this that for all three religions, the qibla is one side, a sacred place.

In the person of Nathan, the students of that time seemed to see the image of Lessing. He was a kind, intelligent man, a person who was opposed to evil and ignorance.

"Lessing is our pride and our love," Hayne said. With his work, German dramaturgy gained strength, flowing with the ideas of great freedom. His whole life was spent on the path of perfect justice. "Nathan the Wise" appeared in the form of an enlightenment-philosophical drama in form and content.

From the beginning to the end of the drama, the issue of inter-religious harmony and tolerance is at the forefront. The protagonists depicted in the play - representatives of Judaism, Christianity and Islam - take part in a scene and unite as one family at the end of the drama. In the following dialogue, the playwright puts forward the ideas of true tolerance:

Nathan:

I recently returned from a long trip,

Collecting my debts, I thought:

Is that too much money for me?

We have reached a time when

Every aspect you need to think about





How can I save so much money?  
 And the thought came to my mind: after all  
 The country is in the throes of war, war means  
 Unexpected expenses  
 Maybe You need something too

The merchant Nathan offers to transfer the property he had accumulated for a lifetime to the treasure of Sultan Salohiddin, who was on the verge of war. At first he did not accept this complement, but the country's treasury had become much more vulnerable. Nathan wisely explains to the sultan that he cares for the country, and that he, too, thinks of the development of the country as a citizen.

Lessing deals a severe blow to the aristocracy, the rich, through this conversation. Because at the same time the country had become very poor, and the aristocracy had nothing to do with anything, only to squander their wallets. The drama portrays a generous, open-minded man in the person of Salahiddin, along with the image of Nathan. In Western Renaissance literature, however, the presence of such images was a special case. Because the presence of two almost equal positive images in the play it was considered unusual. It is not surprising that in this way the author brought a special direction to the European Awakening literature. The writer seemed to embody two protagonists. Indeed, in the reader, the sultan is embodied as the main character, as is Nathan. Both tried to help their people as much as possible.

The image of Salohiddin is also full with the qualities of religious tolerance like Nathan. Nathan is a Jew and the Sultan is interpreted as a man with positive qualities like all Muslims. The two images are close in these respects. Like other religions, Islam states that human beings have equal rights, that they were created from one mother and one father, and that they were created as a nation and a tribe to get to know each other and exchange cultures.

Momsen notes that "the writer approached Islam as a humane and enlightened doctrine and tried to evaluate it objectively" [10]. Lessing interpreted such ideas in the example of the sultan. Therefore, the sultan, as a representative of Islam, also cares for Christians and other religions in the country, or atheists in general.

Salohiddin:  
 Money from Egypt before it arrives,  
 I zginis poverty, well, here it is  
 But he walked beside the coffins  
 I have to please the beggars.  
 Until the visitor is every Christian  
 With dry hands without leaving here!  
 Oh, if it...

The writer reveals the human qualities such as generosity with the image of Salohiddin.

G.E.Lessing challenged the negative views of some European orientalist on Islamic civilization and advocated the reality of the East. His dramatic and religious works called for the elimination of European-style religious superstitions. His main goal was to reunite the bonds of mutual understanding and harmony between religions through his artistic and scientific-philosophical works and to unite them as one family. The peak of the idea of tolerance in the play is depicted in the image of Daya. A Christian woman who had long lived in the Jewish house of Nathan was delighted with the true gift of tolerance. Rexa tells Zita the following about him:

Rexa:  
 Christian  
 Night and day she is a propeller to me,  
 She grew up and brought up.  
 Yes, motherhood  
 God bless you!

The widow was a nurse in a Jewish home. Daya gives Nathan's adopted daughter Reha a motherly affection. She appears in the play as a sometimes harsh and sometimes open-minded character. Daya shares her thoughts about her master Nathan during a conversation with the monk.

Daya:  
 If he is not generous  
 How long have I lived in it?  
 After all Christianity is my faith  
 I didn't notice a speck

In the play, Daya gives a low profile but plays an important role in the end of the play. She stands between Nathan and his daughter, Judaism and Christianity. Daya, who embodies the image of an uneducated woman, does not participate in public life. She spends most of his time raising Rexa.

Although Daya is a Christian, she does not feel humiliated in the Jewish home. Daya, who has lived in Jewish home for a long time, has not lost her Christian faith. Merchant Nathan sees her as a representative of his family. With these thoughts, the author demonstrates the idea of religious tolerance, the coexistence of people of different faiths in one land, one Motherland, as partners and solidarity in the path of noble ideas and intentions.

"The new hero of the German Enlightenment of the eighteenth century was a secular citizen. For such a person, it is strange to approach the events around him in his own interests. He seeks good people from all walks of life or from different faiths and they become a hero." Another manifestation of tolerance can be found in the dialogue between Sultan Salohiddin and the monk:

Salohiddin:  
 I will test you now,  
 Would you like to stay in the palace?  
 Do you agree to live with me, tell me?



Christian, Muslim — we are all human!  
Wear a turban or a hat.  
It's all the same to me! Who he never was  
All trees in the same form,  
I didn't want it to be the same color.

In his doctoral dissertation, the researcher Z.M.Muslim states that "Lessing tries to describe Salohiddin in the light of historical facts. He refers to his biography in revealing the political and human actions of the Muslim Sultan" [11].

Indeed, the great enlightened writer appealed to Eastern views as representatives of the literature of the European Renaissance. In the image of Salohiddin, he creates a noble representative of Islam and a morally exemplary Muslim personality. The Sultan asks the monk to stay with him in the palace and tells him that his religion will not interfere with this.

## CONCLUSION

In summary, the German critic and art theorist Gotthald Ephraim Lessing supported humanism throughout his career and placed the concept of interpersonal tolerance at the center of the drama "Nathan the Wise". With this work, the creator Weimar paved the way for Goethe and Schiller's subsequent poetic tragedies of the Classic era.

The relationship between religion and clergy plays an important role in the drama. In this sense, the writer uses the religiosity of the protagonist to try to counteract the intolerance that results from inequality in the Enlightenment. For Lessing, the power of reason plays an important role in Enlightenment literature.

It is no coincidence that Heinrich Hayne wrote about him as a living critic of his time, and that this criticism left its mark on religion, science, and art in a wide range of areas of thought and passion. Lessing's drama "Nathan the Wise" is one of the most enduring works of world literature. The work expresses a noble idea of great vitality and current universal significance, instilling it in the hearts of generations, urging them to refrain from inhumane behavior.

In a word, through this work, the writer showed a life that celebrates peace and tranquility, kindness and love on earth. At a time when the world was experiencing various conflicts on a religious basis, the ideas of religious tolerance put forward in the Lessing's drama were gaining relevance.

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# STUDY ON THE INFLUENTIAL FACTORS OF THE INVOLVEMENT OF LOCAL PEOPLE IN PARTICIPATORY FOREST MANAGEMENT: THE CASE OF WOF-WASHA DISTRICT, ETHIOPIA

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## ABSTRACT

*Participatory Forest Management (PFM) is crucial to the implementation of effective forest management and improvement in the living conditions of local communities. But local people involvement in PFM practice is affected by demographic, biophysical, institutional, and socio-economic factors. A cross-sectional survey research design was employed to collect information from 295 households (127 participants and 168 non-participants) by stratified sampling technique followed by a random sampling method. Both qualitative and quantitative data were collected from primary and secondary sources through structured interview schedules, Focused Group Discussion (FGD), Key Informant Interviews (KII) and field observation. The study employed both descriptive statistic and logistic regression model to compute the socio-economic characteristics and to identify influential factors that affect the community's involvement in PFM practice respectively. The results of the logistic regression model revealed that household's family size, educational status, training, benefits derived from the forest, and the number of livestock were positively affected local people's participation in PFM activities, whereas the distance of the forest from household resident was negatively affected. Apart from demographic, biophysical, institutional, and socio-economic factors granting ownership right, improved awareness, fear of displaced from the forest area, fear of forest lose and moral obligation were enhancing factors while the expansion of agricultural land and settlement, illegal logging, weak punishment, the insufficient fund or lack of incentives, poor forest management trend, conflict of interest, and doubt on the continuity of PFM program were some influential factors that hinder local people's participation in PFM activities. The study assisted policymakers to inform the influential factors that affect local people's participation in the study area and formulate effective policy advice to promote PFM practice in the region.*

**KEYWORDS:** *Participatory forest management; Influential factors; Household; Socio-economics; Wof-Washa District; Policy advice*

## 1. INTRODUCTION

The forest resources in Ethiopia have been conserved by rules and regulations in the top-down approach system for a long time. But this kind of forest conservation practice has not been minimizing the problem of deforestation. As a result, forest resources in Ethiopia have been declining significantly in both size and quality. The total forest area decreased from 15.1 million ha in 1990 to 12.5 million ha in 2015, with an average annual decline rate of 0.8% (FRA, 2015). The decline of forest capacity at the global and national level is a great problem which now affects the livelihoods of people in different ways. According to



Tesfaye *et al.* (2011), lack of awareness, negative attitudes, exclusion of local people in the economic benefit-sharing mechanism, lack of incentives, conflict of interest, weak legal actions are taken on illegal forest users, agricultural expansion, overgrazing, unspecified boundary and lack of skills and professional knowledge in the local community have exacerbated the loss of forests in Ethiopia.

To address the alarming rate of forest depletion, different forest conservation strategies are practiced. In many developing countries like Ethiopia, there has been a paradigm change in forest conservation and management plans from State-centered control towards community-based systems, with dual goals of fostering sustainable forest management and reducing poverty. Many studies stated that shifting forest management system from state-managed top-down approach to people-centered bottom-up approach is effective and efficient method for the forest management practice (Gebreyohannes and Hailemariam, 2011). Among those forest conservation strategies, Participatory Forest Management (PFM) program is the key. It is a management system in which local forest users conserve the forest and improve the living status of their life (Ellen, 2010; Worah, 2008). This system enables the members to be the direct beneficiaries of the forests. In similar explanation, participatory forest management is a plan to achieve sustainable forest management by encouraging the local communities living in and around the forest by involving them in different forest conservation activities (Winberg, 2010). Due to the PFM program, planted forest area is going to increase from year to year because of the expansion of reforestation, afforestation and other forest rehabilitation and restoration strategies through community participation (Keenan *et al.*, 2015).

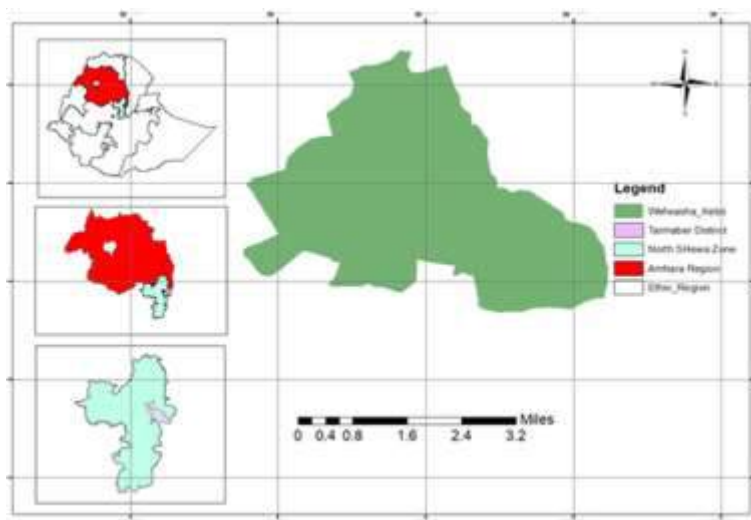
But local people involvement in PFM practice is affected by demographic factors (e.g. age, gender and, family size), biophysical factors (e.g. distance of local residents from the forest, and distance from the market), and socio-economic factors (e.g. educational status, landholding size, income from the forest, alternative PFM income-generating activities and the number of livestock) (Tadesse *et al.*, 2016). There are also different influential factors other than socio-economics, demographic, institutional, and biophysical factors that affect local community participation in PFM activities. These factors may enhance or inhibit the participation of local community's decision to involve in PFM activities. Incentives and ownership right are major factors that increase participation of household in PFM activities while expansion of agricultural land, illegal logging and conflict of interest inhibits local people involvement in PFM program (Degeti, 2003). Those factors have direct and indirect impact on both the local community livelihood's status and on the forest status (Abay, 2014).

Therefore, the purpose of this paper is to find out the factors that affect local people involvement in PFM activities in Wof-Washa district of North Shewa Administrative Zone of Ethiopia. The output of the study is essential for private, governmental, and non-governmental organizations which have close relation with community-centered forest conservation system. It can be used as a basis for upcoming researchers who have a strong desire to carry out research on related topics. The study also assisted policymakers to inform the influential factors that affect local people's participation in the study area and formulate effective policies to promote PFM in the region.

## 2. DATA AND METHODS

### 2.1 Description of the study area

The study was conducted in Wof-Washa district of Tarmaber, North Shewa Zone, Amhara Region, Ethiopia. Tarmaber is located about 190 km north east of Addis Ababa, capital city of Ethiopia and 60 km from Debre Berhan town, the capital of North Shewa Zone. It is geographically located at latitude and longitude of 10°09'60.00"N and 39°39'59.99" E respectively. The district covers an area of 60925.6 ha. It has 19 rural sub-districts and 4 urban administrative towns. Wof-Washa district is the adjacent of Wof-Washa natural forest. This forest is Ethiopian oldest proclaimed state forest. Wof-Washa (literally meaning Bird's Cave) natural forest is called the 'lung' of the Amhara region because it is the last remnant of natural forest and is considered to be the most threatened forest ecosystem in the region.



**Figure 1. Map of the study area**

## 2.2 Data collection

To conduct this research, the required sample of households was obtained from both PFM users and non-users group. Firstly, stratified sampling procedure was employed to select the number of samples from PFM users and non-users. To do so, Wof-Washa district was selected purposively. Secondly, 8 villages (Silase gedamna Tach gedam, Gureza debir, Mebirek Amba, Lankusona Giderach, Giftna awadi, Lay genet, Kebroyi and Chacha hudad) were randomly selected out of 18 villages. Then, the sample respondents were randomly drawn from the sampling frame using a simple random sampling method. Accordingly, the sample households from users and non-users were 127 and 168 respectively. Totally 295 households were selected to get the required data by using Yemane's formula of (1967) with 93% confidence interval, and 7% precision level as follows:

$$n = \frac{N}{1+N(e)^2} \quad (1)$$

Where n - sample size, N - population size, and e - is the level of precision at 93% for PFM users and non-users at significance level 0.07.

To conduct this research, both primary and secondary data were employed. Primary data were collected from the sampled households to identify demographic factors (age, gender, marital status, and family size), institutional factors (tenure security, local institutions, training and awareness, conflict of interest with non-PFM users), biophysical factors (distance from forest, distance from market), and socio-economic factors (benefits derived from forest, income-generating activities, educational status, number of livestock, and land holding size). Those primary data were collected by using the following data collection tools:

**Household survey:** The household survey questionnaire had both open and closed-ended questions and translated to the local language Amharic because of most of the local communities can't understand English. Open-ended questions were prepared to identify major influential factors that initiate (enhance) the local community to participate in PFM and major problems or factors that hinder (discourage) them not to involved in PFM activities.

**Focus group discussion (FGD):** In this study, the members of the focus group from both PFM users and non-user were represented from randomly selected villages.

**Key informants interview (KII):** The key informants were those experienced and knowledgeable households on PFM historical development. They know the local community's way of life before and after the introduction of PFM. The interview was adopted as a method for data collection partly due to its cost-



effectiveness and its strength to get empirical data in both informal and formal settings. KII used in order to support the data, which collected from the household survey.

**Field observation:** In this study, besides the household survey, KII and FGD, direct field observation was also conducted to assess and evaluate major influential factors in and around Wof-Washa natural forest. This information was used to counter-check the information provided by household respondents, focus group participants and key informants.

### 2.3 Methodology

Both qualitative and quantitative data were analyzed by using descriptive statistics and econometric models respectively with the help of STATA software version 13. All data collected from the household interviews were coded and encoded on excel spread sheet.

**Descriptive Statistics:** The qualitative data obtained from the sampled household were analyzed using descriptive statistics like mean, percentage, frequency and summary statistics. The results were shown in the table under results and discussion part.

**Logistic Regression Model:** Quantitative data were analyzed by using logistic regression model. This econometric model is used to identify factors that affect local people involvement in PFM program. To explain the observed variation, the dependent variable which is local people participation is regressed as a function of the explanatory variables of demographic, biophysical, socio-economic and institutional factors following the methods used by (Gobeze *et al*, 2009). The logistic regression model ensures that the estimated response probabilities were strictly between zero and one. The response of the participants as to whether they participate in PFM can be outlined as a binary choice model, with an outcome (decision of households) decide to participate in PFM (coded 1) or did not participate in PFM (coded 0) or Simply put in the logistic model,  $Y_i$  represents the dependent variable, participation, which equals to a household is coded 0 if a household member doesn't participate in participatory forest management activity and a household is coded 1 if any one of the household members participate in PFM activity.

Dependent variable = Household's participation in PFM  $\left\{ \begin{array}{l} 1 = \text{participate} \\ 0 = \text{not participate} \end{array} \right.$

Therefore, the probability of household participating in PFM,  $\Pr(Y_i = 1)$ , is a joint probability density function/ likelihood function evaluated at  $X_i\beta$ , where  $X_i$  is a host of explanatory variable and  $\beta$  is coefficient of the predictor variable explaining the change in the dependent variable as a result of a unit change in an explanatory variable. The estimation from logistic transformation of the probability of participants' opinions in favor of participation in PFM  $\Pr(Y_i = 1)$  can be represented as:

$$\text{pr}(y_i = 1) = \frac{\exp(xi\beta)}{1+\exp(xi\beta)} \tag{2}$$

The above equation can be reduced to:

$$\Pr(Y_i = 1) = \beta_0 + \beta_1X_1 + \beta_2X_2 + \dots + \beta_iX_i + \mu \tag{3}$$

Where: 'P' is the probability of presence of the characteristic of interest, community participation; ' $\beta$ ' is the coefficient of the predictor variables and is estimated from calibration data using maximum likelihood technique; ' $\beta_i$ ' is vector parameters to be estimated; ' $\beta_0$ ' is the constant term; ' $\mu$ ' is the error term; ' $X_i$ ' is a host of explanatory variables.

**The Model Equation:** The model, which represents participation in PFM (coded 1) or did not participate in PFM (coded 0) and a host of explanatory variables, is given by:

$$P(\text{PFM}) = \beta_0 + \beta_1(\text{GENDHH}) + \beta_2(\text{AGEHH}) + \beta_3(\text{HHFSIZE}) + \beta_4(\text{EDUCHH}) + \beta_5(\text{TRAIHH}) + \beta_6(\text{DISFOR}) + \beta_7(\text{BENDEF}) + \beta_8(\text{NUMBLI}) + \mu \tag{4}$$

Where  $\beta_0$ = the constant term;  $\mu$ =Error term;  $\beta_1$ - $\beta_8$ = Parameters measure the change in household participation; P (PFM) = Households participation in PFM; GENDHH= Gender of household; AGEHH = Age of household in years; HHFSIZE= Household family size in persons; EDUCHH= Educational status of household in schooling years; TRAIHH= Availability of training for households; DISFOR= Distance from



forest to household resident in km; DISMARK= Distance from market in km; LANHSIZ= Land holding size in hectare; BENDEF=Benefits derived from forest; NUMBLI= Number of livestock

**Table 1 Description of the variables and their expected sign**

Variables Description	Variables Code	Characteristic of Variables	Expected Effects on Participation
Participatory forest management	PFM	Dummy	Dependent variable
Gender of the household 0-Female, 1-Male	GENDHH	Dummy	+/- ve
Age of the household in Year	AGEHH	Continuous	+/- ve
Households' Schooling year	EDUCHH	Continuous	+ ve
Number of household members	HHFSIZE	Continuous	+ ve
Distance of the forest from the household's home in km	DISFOR	Continuous	- ve
Benefit derived from WWF	BENDEF	Dummy	+ ve
Training and awareness about PFM 0- haven't access, 1- have access	TRAIHH	Dummy	+ ve
Number of livestock	NUMBLIV	Continuous	+ve

### 3. RESULTS AND DISCUSSION

#### 3.1 Household's socioeconomics characteristics

**Table 2 Summary of descriptive statistics for dummy explanatory variables**

Variables	Total (295)		Participants (127)		Non-participants (168)		
	N	%	N	%	N	%	
GENDHH							
	Male	229	77.6	105	82.7	124	73.81
	Female	66	22.4	22	17.3	44	26.19
TRAIHH							
	Have access	169	57.3	117	92.1	52	30.95
	Haven't access	126	42.7	10	7.87	116	69.05
BENDEF							
	Benefited	168	56.9	123	96.85	45	26.79
	Not benefited	127	43.1	4	3.15	123	73.21
P(PFM)							
	Participant	127	43.1	127	100	0	0
	Non-participant	168	56.9	0	0	168	100



**Descriptive Statistics:** According to the dummy explanatory variables described in table 1, the survey result which obtained from the total household, 229(77.6%) of the respondents' gender were male-headed households, and the rest 66(22.4%) were female-headed. Among the total sampled male household headed, 105(82.7%) of them were participant and 124(73.81%) were non-participant in PFM. And also from the total sampled female-headed households, 22(17.3%) of them were participant while 44(26.49%) of them were non-participant. 117(92.1%) of participants got training about forest management and different PFM income generating activities while 10(7.87) of them haven't access to get training but they were effective to get benefit from forest and interested to participate in different PFM activities. Beside 52(30.95%) of non-participants have the opportunity to get training they were not successful. On the other hand 116(69.05) of non-participants haven't get the opportunity to take training. 123(96.85%) of participant household got direct physical benefit from wof-washa forest while 4(3.15%) of them haven't get direct benefit from wof-washa natural forest but they got indirect benefits from different PFM income generating activities.

**Table 3 Summary of descriptive statistics for continuous explanatory variables**

Variables	Total (N=295)		Participants (N=127)				Non-participants (N=168)			
	Mean	SD	Mean	SD	Min	Max	Mean	SD	Min	Max
AGEHH	48.67	11.73	47.32	11.14	28	82	49.69	12.09	28	83
EDUCHH	2.84	2.92	3.78	3.27	0	10	2.12	2.39	0	10
HHFSIZE	5.35	2.11	6.46	2.29	2	13	4.51	1.49	2	13
DISFOR	5.49	2.51	3.14	1.17	0	5	7.26	1.65	0	11.5
NUMBLI	3.01	1.63	3.76	1.83	0	8.6	2.44	1.19	0	8.6
DISMARK	22.14	2.53	21.57	2.52	15.5	27	22.57	2.46	15.5	28
LANHSIZ	1.3	0.76	0.9	0.51	0	2	1.63	0.77	0	3

The mean age of the participant household headed was 48.67 year with a range of 28 to 82 years old. While the mean age of non-participant household headed was 49.69 years with a range of 28 to 83 years. The average family size of participant household was 5 persons with 2 and 13 persons minimum and maximum respectively whereas the average family size of non-participant household was 5 to 13 persons with 2 and 13 persons minimum and maximum respectively. The average educational level of participant household-headed was 2.84 years with 0 and 10 years minimum and maximum schooling years while the non-participant household-headed average educational level was 2.12 years with 0 and 10 years minimum and maximum schooling years respectively. The average distance from forest was 3.14 km with a range of 0 to 5km in case of participants but in case of non-participants the average distance was 7.26km with a range of 0 to 11.5km. The average number of livestock for participants was 3.76TLU with 0 and 8.6 TLU minimum and maximum respectively whereas the average livestock in TLU for non-participants was 2.44 with 0 and 8.6 minimum and maximum respectively. The mean distance from market to participant's resident was 21.57km with a range of 15.5 to 27km while the mean distance from market to non-participants resident was 22.57km with a range of 15.5 to 28km minimum and maximum respectively. The average land holding size of participant households was 0.9ha with 0 and 2ha minimum and maximum respectively whereas the average land holding size of non-participant household was 1.63ha with a range of 0 to 3ha minimum and maximum respectively.



**Table 4 Binary logistic regression result**

PPFM	Coef.	Odds Ratio	Std. Err.	z	P> z	dy/dx
GENDHH	-1.88	0.15	2.00	-0.93	0.35	-0.02
AGEHH	0.00	1.00	0.08	0.04	0.97	0.00
HHFSIZE	2.22***	9.23	0.85	2.6	0.00	0.03
EDUCHH	0.90***	2.45	0.34	2.65	0.00	0.01
TRAIHH	4.97***	143.33	1.61	3.07	0.00	0.06
DISFOR	-4.28***	0.01	1.37	-3.11	0.00	-0.05
BENDEF	6.91**	1008.05	3.04	2.27	0.02	0.08
NUMBLIV	1.43**	4.17	0.64	2.22	0.02	0.02
_cons	-5.85	0.00	4.66	-1.26	0.21	

Note: \*\* and\*\*\* show variables significant at 5 % and 1% significance level respectively; Number of obs =295; LR chi<sup>2</sup> (8) = 380.47; Prob > chi<sup>2</sup> = 0.0000; Pseudo R<sup>2</sup> = 0.9435; Log likelihood = -11.386377.

**Marginal effect for logistic regression (dy/dx):** The marginal effect of each independent variable on the dependent variable was not constant but it depends on the value of the independent variables. Thus, marginal effects can be a means for generalizing how conversion in response was associated to change in a covariate. For continuous independent variables, the marginal effect measures the instantaneous rate of change (derivative) that is when calculated them for a variable while all other variables were held constant which means in this study change in the probability participatory forest management with a unit change in the continuous independent variable. Thus, it is not possible to conclude the estimated parameters as the effect of the independent variable upon participatory forest management. However, it is possible to compute the marginal effects at some interesting values of the significant explanatory variables.

**Household's family sizes:** It was positively associated with participation in PFM and statistically significance at 1% level. It was found that households who have one more person family member had a higher probability of participation in PFM by a factor of 2.22 with households having one lesser person of a family member. The marginal effect value of the variable was 0.03. This shows that as the number of family size increased by one person, the probability of participation of the household in PFM increased by 2.53%.

It is most likely that large family members have a greater demand for forest products such as firewood, grass, seed wild fruits, and other basic needs from different income-generating activities. But a small number of family sizes unable to participate due to workload. This result is supported by Ogada (2012), of those households with large family sizes have more labor energy to dedicate to PFM activities. Moreover, such households would be better placed in terms of labor for extraction of forest products from forest and to involve in different income-generating PFM activities.

**Educational status:** Educational status has a positive association with participation in PFM activities and statistically significant at a 1% level. The coefficient indicated that a year increase in education results in the participation of a household in PFM increases by a factor of 0.90 to households who have one lesser year of education. The marginal effect value of the educational status was 0.01. This indicates that as schooling year increased by one year, the probability of participation of the household in PFM activities increased by 1.02%. This result showed that households who had a better educational status were more likely to participate in PFM activities. This was probably due to the fact that households with formal education can obtain information about forest benefits easily compared to non-educated households. This finding is also supported by Faham *et al.*(2008), which stated that the willingness of forest users' participation in forest management activities increases as their level of formal education increases.

**Training and Awareness:** As hypothesized, access to different training and experience sharing has significant positive influence on the likelihood of deciding on participation in the forest management activities. The training was positively associated and significant at 1% level with Participation.



The coefficient for the variable in the model was 4.97. The marginal effect value of training and awareness was 0.06. This implies that households with better training and experience sharing about forest management were more likely to participate in PFM activities unlike those households with no training or awareness about forest conservation. Or the result of this variable can be interpreted to mean an increase in the proportion of training to total household participation in PFM by 1% increases the possibility of household's participation by 5.65%. Thus, when there were training and experience sharing the better trained of a household about PFM for both management of the forest and income generating activities for the local community was increased by 5.65%. Studies in Darghouth *et al.* (2008), and Maraga *et al.* (2010) identified the existence of synergies between the local people's participation and their awareness of natural resources-related problems. Furthermore, Teshoma (2010) indicted that awareness of the aim of management can affect the level of participation.

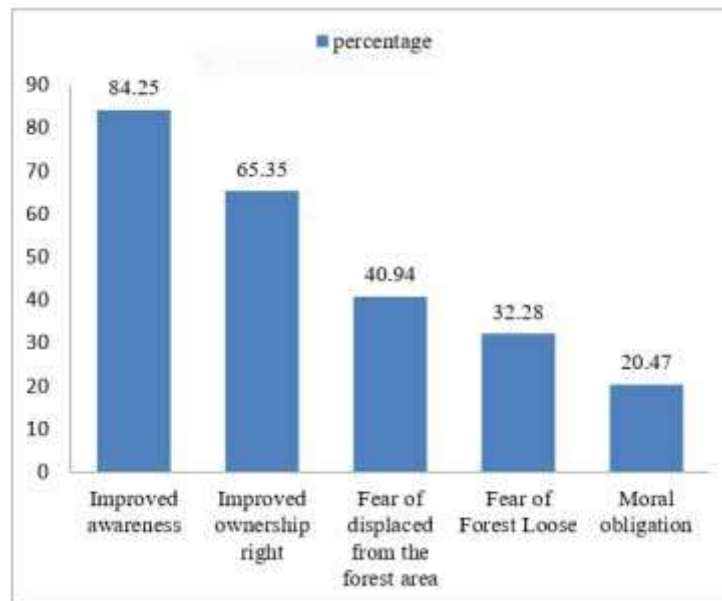
**Distance home from the forest:** Home distance from the forest is another biophysical influential factor in the household decision to participate in PFM or not. As predicted earlier in the hypothesis of this study, distance from the forest has related negatively with the level of participation in PFM activities at 1% significant level. The coefficient for the variable in the model was -4.28. The marginal effect value of the variable was -0.05. As I was expected the finding of this research showed that holding other variables on their mean values, distance home from Wof-Washa natural forest increase by 1 km, the probability participating in PFM decreased by about 4.86%. This was because as a household further away from the forest resource, the less they interact with forest which probably led them to associate fewer values with the forest. Households join in community forest to get benefits from the extraction of forest products, and households that are far from forests will have less motivation to join because it would be more expensive for them to travel to the forests when they consider transportation cost and energy what they lose.

**Benefit derived from the wof-washa forest:** Physical benefit derived from the forest was positively associated and significant at 5% level with Participation in PFM activities. The finding of this study showed that holding other variables on their mean values, then when benefit derived from the forest increased by 1% probability leads participation in forest management would be increased by 7.86%. It can be interpreted to mean that when households assess their benefit from the forest and more useful for livelihoods, their probability to participate in PFM increased by 7.86%. This can be stated as a high level of forest dependency leads to greater participation in forest management. Higher economic benefits from forests encourage the community to participate in the management of forest resources.

**Number of livestock owned by household headed:** Number of livestock in TLU is positively correlated with participating in PFM and statistically significant at 10% level. For each additional unit of livestock heads, the likelihood of participating in PFM activities increases by a factor of 1.42. The marginal effect value of the variable was 0.02. This indicates that as livestock ownership increased by one TLU, the probability of PFM participation of the household increased by 1.62%. There is similar study which stated that livestock size has a positive relation with participation of forest management practice (Musyoki *et al.*, 2013; Oli and Treue, 2015).

### 3.2 Enhancing factors

There are many influential factors that enhance local people's participation in participatory forest management. These enhancing factors are identified in the field survey by using open-ended questionnaires. The participant respondents have listed-out some of the most important variables that enhanced their participation. Funding of incentives, granting ownership right, fear of displaced from the forest area, fear of forest loose and moral obligations are major factors that increase participation of household in PFM activities



**Figure 2. Major factors that enhance local people involvement in PFM**

**Improved awareness:** When the sampled PFM user respondents were asked what factors initiate them to participate in PFM activities, 107(84.25%) of them expressed that understanding the importance of forest and the effect of the destruction were the major factors that encouraged them to participate in PFM actively. Almost all of the respondents agreed that the forest has paramount importance for them. When they were asked whether they know or not about the adverse effect of deforestation, they know it very well. This is equivalent to having a better understanding or grasping basic knowledge about the physical, social, and economic impact of deforestation, people to take part in forest conservation activities.

**Improved ownership right:** According to 83 PFM users (65.35%) of respondents granted the ownership right on forest resource enhanced their participation in PFM activities. This implies that people have the right to use each resource, taking it as their own possession. If there is no rule and regulation that ensure people the right to use, they will have the intention of over utilization and or wasteful utilization for only temporary benefit. Giving the right to use the forest has played a great role in developing a sense of ownership right so that they feel much concern towards the forest development.

**Fear of displaced from the forest area:** The PFM user groups were established with those people who are living in and around Wof-Washa natural forest. So those people are supporting their life directly or indirectly from the forest. They graze their cattle, they plough near the forest, and they use the forest product like fuelwood and other forest products for their own consumption as well as for commercial purpose. Figure 2 indicates that 52 respondents (40.94%) mentioned fear of displacement can be considered as one factor that motivates them in forest management activities.

According to some key informants and project staffs, one of the major factors that speed up the registration of PFM users was fear of such displacement. Some respondents explained that at the beginning of the PFM user establishment in the study area, they were in suspected of some bad outcomes. They had neither confidence nor belief in the realization of the project. Some respondents stated that, they are highly adapted with that forest for the survival of their cattle and their children and they have fear of displacement from the forest. Then they were registered to the membership.

**Fear of forest loose:** Some respondents explained that, they do not like to see the high deforestation; they would rather like to see green and improved forest. They have bad feeling toward destruction of forest resource. Accordingly, 41 respondents (32.28%) explained that they have lived within the forest for a

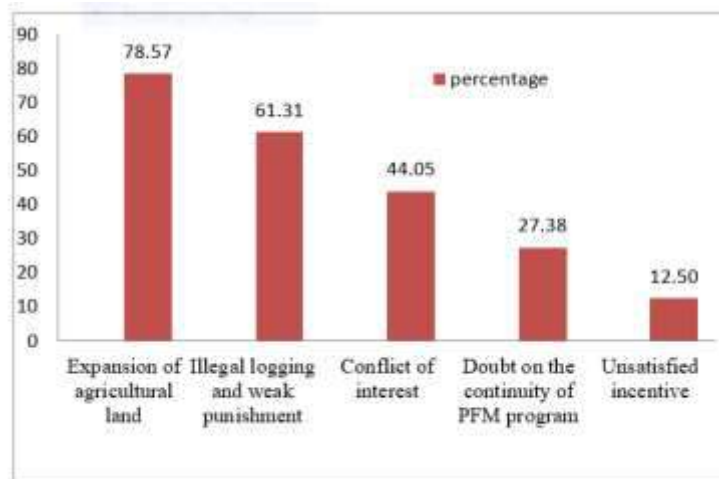


longer period of time starting from their grandfathers. So they have greatly concerned about the forest but they do not have power to save it from destruction. According to them their active participation emanates from the love they have for the forest. This shows living in and around the forest for a long period of time in their family chains contributed to initiate them to conserve the forest for the coming generation.

**Moral obligation:** Moral obligation is an important motivating factor in forest conservation activity. As it is indicated above, 26 respondents i.e., 20.47 percent claimed that they have positive attitude towards PFM because they feel accountable to it. The most important parts in initiating people to PFM are awareness about the advantage of the existing forest and disadvantage of its destruction.

### 3.3 Hindering factors

There are many factors that could inhibit local people's motivation towards the conservation of forest in their surrounding in addition to socio-economic, institutional, biophysical and demographic factors. Those factors have direct and indirect impact on both the local community life status and on the forest status (Abay, 2014). According to the non-participant respondents, expansion of agricultural land and settlement, insufficient fund to support PFM activities, poor management and lack of incentive, conflict of interest with non-user groups, and inequity of benefit sharing and population growth were major factors that hinder their participation in participatory forest management.



**Figure 3. Major factors that hinder local people involvement in PFM**

**Expansion of agricultural land and settlement:** The lack of granted land tenure or forest user rights was the main reason why local households don't promise themselves to participate actively in forest management practice. From the total non-user local households, 132(78.57%) of them stated that expansion of agricultural land in the district inhibit them from actively participate in PFM activities.

**Illegal logging and weak punishment:** Out of the total non-user respondents in the survey, 103 respondents (61.31%) stated some other factors like absence of supporting by district administration. This shows the absence of measures on illegally clearing of forest. They referred to the district administrators, police and court's failure to take appropriate action on individuals to be blamed or accused to the damage of the forest. According to some informants, the policy, law and regulation that enforce to take an action on illegal users and traders were very weak. For example, the punishment taken on illegal users by the district court is 500ETB. The PFM user groups complain for the court to make some correction on those illegally beneficiaries. But still there is less cooperative effort by police and court in taking appropriate action on this illegal action. Those illegal activities and weak punishment trend in the district hinder the local community and participate less in PFM activities.



**Conflict of interest:** Conflicts often arise because people have different utilization experience on natural resources such as forests. The cause of conflict was the residents of Wof-Washa district PFM user groups needed to use the forest in restricted and sustainable way but the neighboring sub-districts residents need to use the forest as free access. But those people of other villages want to get additional benefit from Wof-Washa natural forest. Due to this reason there might be conflict of interest.

According to the non-participant respondent and key informants in the study area, 74(44.05%) of them mentioned that conflict of interest with participant groups makes them discouraged from participating in PFM. Conflict results not only detain the participation of the community but also famine, susceptibility and immigration are often exaggerated (Tedla, 2007). Conflict affects both bio-physical resource and local people's willingness to involve in PFM activities.

**Doubt on the realization and continuity of PFM program:** According to the open-ended questioners result, some respondents have suspected on the realization and life span of the project in the study area. 46 non-user respondents mentioned that having suspect was one hindering factor in the PFM project. According to them, the project may phase-out so that all the effort applied come without any result. As the conductor of the study observed, the communities were not sure the forest is their own property if the project does not exist. Two respondents suspected that, the government enforces to have limited farmland and house that we have outside the forest and this could inhibit us from participating in the program. The major issues that lessen the confidence of community on the approach lie on absence of granting ownership right at policy level. If people are assured to the property right on forest, no matter the project exist or phase-out, they are likely to protect the forest as their own personal possessions.

**Unsatisfied incentive:** Local communities should gain incentives as per their contribution to forest conservation efforts. There were 21(12.5%) respondents who explained that lack of incentives is one factor that hinders their participation in participatory forest management. Some of the informants correlated the incentives with the salary that they gain from patrolling the forest. They briefly explained that as far as they look after the forest day and night, they got an unsatisfied salary. In addition to this, currently, the forest is transferred from Amhara forest enterprise to Tarmaber district land and natural resource management office. During this transition period, the guards complain that they didn't get their monthly salary for the last 3 consecutive months. This clearly showed that, unsatisfied salary or fewer incentives leads less participation trend in forest conservation program.

## 4. CONCLUSION AND RECOMMENDATIONS

### 4.1 Conclusion

Local people's Participation in PFM practice is affected by demographic, biophysical, institutional, and socio-economic factors. These influential factors may enhance (encourage) or inhibit (discourage) the involvement of the local communities in participatory forest management program. This survey was conducted in Wof-Washa district by using 127 PFM user and 168 non-user sample respondents. The influential factors had identified and computed to what extent they affect the local household's decision to involve in PFM activities. As a result, demographic factors (age, gender, family size), biophysical factors (distance from forest, and distance from the market), and socio-economic influential factors (educational status, landholding size, income from the forest, alternative PFM income-generating activities and the number of livestock) were identified and measured their influence on local community's decision to participate in PFM activities by using both descriptive and logistic regression analysis method.

The logistic regression model result revealed that household family size, educational status, training, number of livestock, and economic benefit derived from Wof-Washa forest have positive association with the local community's participation. The distance of the forest from the household's residence is negatively related and decreased the likelihood of participation in PFM activities at less than 1% significant level. The other variables such as age and gender were not significantly associated with the local community's participation in PFM. Therefore, we can conclude that household decision of participation in PFM is influenced by family size, educational status, training, the distance of the forest from home, livestock holding size and physical benefits derived from the forest.



The result of the study also showed that granting ownership right, improved awareness, fear of displaced from the forest area, fear of forest lose and moral obligation were encouraged or enhanced the participation practice of households in PFM activities while the expansion of agricultural land and settlement, illegal logging, weak punishment, the insufficient fund to support PFM activities, poor management and lack of incentives, conflict of interest with non-user groups, and doubt on the continuity of PFM program were some hindrance factors. Therefore, appropriate punishment, awareness creation, strong policy implementation, clearly discussion with the neighboring district community, timely providing the compensation, and NGOs initiation households to participate in PFM activities were basic elements to promote PFM practice in the region.

#### **4.2 Policy recommendations**

This paper addressed the constraints that prevailed or motivate local community's involvement in participatory forest management activities. Therefore, based on the results of the study and future implication, the following recommendations were given for the concerned body.

The government policy framework on PFM should be revised and incorporate the socioeconomic, demographic, institutional, and biophysical factors which were highly significant in the study area. These variables if they are carefully incorporated in policy formulation, they could promote local people's participation in PFM. And they are important to combat the listed major problems in the study area (e.g. legal actions should be taken on illegal forest users, there should be a strong policy that protects the forest from damage).

The distance of forest from home has a negative impact on participation due to information asymmetry, time delay, and fewer direct benefits obtained from the forest. Therefore, the improvement of rural infrastructures such as road and transportation should be improved in the study area to promote household's participation in different forest conservation activities. Part of the management fund could be allocated to construct the road.

An extensive capacity-building and empowerment program should be implemented by the district land and natural resource management office to increase the household's participation. The PFM strategy would be a feasible measure that could restructure the problem of forest destruction. Forest management should be effective if the local people involved in planning, idea-generating, protection of regenerating trees, re-planting trees, decision making, monitoring, and evaluation activities based on their interest.

The number of livestock owned by households has a substantial role in PFM practice. Therefore, improving the production and productivity of livestock through providing veterinary services, strengthening milk-producing and delivering group, providing training and awareness in cooperatives and individual manner, and providing fodder resources from the forest as an incentive is important to promote community's participation in PFM program at the study area.

Local communities should plant a tree, particularly outside the forest so as to establish their own woodlots, which can reduce the deforestation pressure on natural forests. The gap between demand and supply for firewood, construction material, and furniture is increasing from time to time. Finding alternative sources of energy should be considered in the study area. For example; using local innovative methods like biogas and wood saving stoves should be adopted in the district in order to minimize the local community forest dependency trend.

Developing the forest for nature-based tourism purposes will help to create a business in the future. Eco-tourism practice helps to improve and diversify the incomes of the local people through creating job opportunities, such as hiking trails and interpretive materials including field guides to birds, endemic wild animals, tourist guiding services and indigenous woody species would be valuable assets for practicing community-based eco-tourism in the study area. And also local people can get benefits from horse renting.

To conserve the forest and to confirm continued forest life in the long run, there should be strong local community participation in PFM program and positive association of local community with the forests. For the better accomplishment of the PFM program, it needs to consistent encouragement of local community. This should be achieved by increasing incentives, increasing access to invite potential sponsors, promoting the formation of social groups, and improving infrastructures.



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## **DEVELOPMENT OF A NEW DESIGN OF ORTHOPEDIC SHOES FOR CHILDREN WITH PATHOLOGICAL FOOT DEVIATIONS**

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### **ABSTRACT**

*This article provides information on research work on the study of a new design and manufacturing technology for orthopedic shoes for children with pathological. Orthopedic insoles are best made from a plaster cast of the foot, but it can also be made from a print or computer image. The structural elements of the insoles are made of safe and durable materials such as polyethylene foam. The average lifespan of flat feet insoles is 2 years, but they usually last much longer.*

**KEYWORDS:** *Pathology, deviation, shoe design, technology, orthopedic shoes, flat feet insoles, comfortable shoes, walking time, support, heel deepening, correction,*

### **DISCUSSION**

In recent years, there has been the development of pathological abnormalities in the foot in children of the Republic of Uzbekistan. The reason for this may be uncomfortable shoes. Therefore, the production of high-quality comfortable preventive footwear is an urgent problem today. Currently, prophylactic and orthopedic footwear is produced by individual order. The design of existing preventive and orthopedic footwear is not scientifically substantiated. Flat feet in children is a serious condition consisting in flattening and arches of the feet.

As a result of these changes, such unpleasant phenomena arise as in the feet, ankles and legs. In addition, the spine may suffer, there is pain in the lumbar spine. A very important place in the correction of flat feet is occupied by special orthopedic shoes and flat feet insoles. To solve this problem, research is being carried out on the topic "Development of the design and manufacturing technology of children's preventive footwear for

children with pathological disabilities". This project provides for the development of comfortable footwear for patients with flat feet and other pathological abnormalities in the structure and functions of the foot. For the manufacture of such shoes, separate places are allocated at shoe production enterprises, where modeling and design of shoes are carried out, the design of technological processes for the manufacture of comfortable preventive and orthopedic shoes, and improvement of the quality of products is envisaged.

Orthopedic shoes are intended for medicinal purposes in case of pathological changes in the legs. It helps to correct the initial unstable deformities of the lower limbs, prevents their progression, compensates for the shortening of the limbs, etc. Such shoes should correspond to the shape and size of the diseased foot, be light enough, elastic, durable and not deformed during use. Its inner surface should be smooth, without rough seams with indentations for painful areas of the foot. The upper of such shoes is made of soft leather. For the backs (sometimes for



the sidewalls), hard leather is used, for the insole - leather, duralumin, cork, felt, plastic.

Orthopedic insoles, or orthoses, are advanced shaped inserts that are used to support the arch of the foot. Flat feet insoles perform the following functions:

- improve blood circulation in the tissues of the foot;
- increase stability while walking and standing;
- reduce the stress on the hip, knee and ankle joints;
- prevent the development of pathological changes in the musculoskeletal system (osteochondrosis, osteoarthritis of the joints of the lower extremities, etc.);
- reduce pain and fatigue in the lower limbs.

Thanks to correctly selected insoles, the correct distribution of the load on the foot occurs.

Currently, orthopedic insoles are made from polymer materials or natural leather. Leather insoles are the best option. In the process of wearing, such insoles do not wear out for a long time and acquire the most optimal shape. Silicone insoles have the advantage of being flexible, thanks to which they can adapt to the individual characteristics of the foot. But they also have disadvantages - low elasticity and quick wear, relatively large weight. This leads to rapid leg fatigue while walking. Insoles made for different purposes have roughly the same components:

- Instep support, which is modeled in the projection of the inner arch;
- Deepening in the heel area;
- Metatarsal cushion in the area of the transverse fornx.

The technology of manufacturing orthopedic insoles for flat feet consists of the following stages:

- ❖ Diagnostics of flat feet and formulation of insoles;
- ❖ Making the base of the insoles and its structural elements;
- ❖ Direct Fitting and delivery of the product;
- ❖ Correction of the insoles during use.

Orthopedic insoles are best made from a plaster cast of the foot, but it can also be made from a print or computer image. The structural elements of the insoles are made of safe and durable materials such as polyethylene foam. The average lifespan of flat feet insoles is 2 years, but they usually last much longer.

In the course of corrective therapy, it is often necessary to change the design of the product. For example, you have to raise the metatarsal support or change the roll zone. Instructions for correcting the shape of the insoles are given by the attending physician. In this case, the shape of the insoles and the material will directly depend on the shape and degree of flat feet. In the case of transverse flat feet with varus deformity of the forefoot (it is helically

rotated by the first metatarsal bone upwards), insoles are assigned with an external wedge under the forefoot and a metatarsal cushion. With a significant degree of flat feet, when the deformity of the foot is fixed, the metatarsal pad is raised gradually, which achieves a good effect. After about 10-12 months, new insoles are made, taking into account the achieved correction.

With flat feet, you need to be especially careful about the choice of shoes. The right footwear can help slow the progression of the disease and reduce discomfort. But shoes with high heels and not corresponding to the shape of the foot will only aggravate the deformation and may even provoke complications of flat feet. In a word, the further course of the disease depends on what kind of shoes to wear with flat feet.

In the early stages of flatfoot development, you can get by with just comfortable shoes made of high-quality natural materials. But at the II and even more so the III stage of the disease, you will have to wear orthopedic shoes almost all the time to avoid complications.

What to focus on when choosing shoes:

- ✓ the best material for shoes is genuine leather, it is good if the sole is also leather;
- ✓ a small heel is necessary, which will help to evenly distribute the load; in children, at least one third of the sole should be about 0.5-1 cm high;
- ✓ to prevent hallux valgus, it is important to choose shoes with a wide toe;
- ✓ shoes should not have an unpleasant odor or stain;
- ✓ during fitting, shoes should not rub the skin or press on toes and heels;
- ✓ you should choose shoes with flexible soles that bend easily when walking and do not cause excessive muscle tension.

One of the most important properties of good shoes is comfort. High-quality and comfortable shoes can last a long time and will help to cope with discomfort in the feet after a long day at work. The listed criteria are suitable not only for people with early signs of flat feet, but also as a prevention of the disease. With obvious symptoms of the disease, you can no longer do with ordinary comfortable shoes. In such cases, the orthopedic surgeon prescribes special shoes based on the results of the examination.

It should be remembered that even a short but regular wearing of shoes with high heels, and even more so with stiletto heels, increases the risk of flat feet in women many times over. Platform shoes have a similar effect on the function and shape of the foot.

Orthopedic shoes for flat feet in adults and older children are made individually, taking into account the anatomical features of the foot, the type and



degree of flat feet. For example, with a flat-valgus foot with a deflection of the big toe to the outside of the foot, the shoe should have a high and hard back and a wide nose. Young children sometimes use standard orthopedic footwear. If necessary, orthopedic insoles are also used at the same time. Special footwear performs the following functions:

corrects minor deformities of the foot and compensates for its shortening,

- expands the support area,
- reduces the load on painful parts of the foot,
- masks external defects,
- is the "final support" when walking.

Shoes made to order from a plaster cast of the foot fulfill their purpose most fully. Nowadays, you can order quite beautiful orthopedic shoes, which in appearance are practically no different from ordinary models.

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## **A STUDY ON CUSTOMER SATISFACTION OF MICHELIN TYRES WITH SPECIAL REFERENCE TO COIMBATORE CITY**

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### **ABSTRACT**

*This study concluded that in this modern business economy it is very important to analyse the customer satisfaction of the Michelin tyres. The study result shows the majority of the consumers are satisfied with the Michelin tyres, but also there is a drawback such as hike in price and such other factor like design of the product. If necessary steps to re-solve problems of retaining customers of Michelin tyres will be high, the company can understand the preference and overall perception of the consumer.*

**KEY WORDS:** *Customer Satisfaction, analyses.*

### **INTRODUCTION**

Now a day's, It becomes very important factor for every organization to enhance the level of customer satisfaction. Customer satisfaction according to ISO 9000, users opinion about the degree to which its meets its requirements. Thus customer satisfaction is defined as "a measurement that determines how happy customers are with a company's products, services, and capabilities". Customer satisfaction information, including surveys and ratings, can help a company determine how to best improve or changes its products and services. Customer satisfaction is the perception of a consumer, It is primarily based on two top-level factors, namely expected value versus delivered value. Michelin is a French tyre manufacturer based in Clermont-Ferrand, France. It is the second largest tyre manufacturer in the world after Bridgestone.

### **STATEMENT OF THE PROBLEM**

- In today's competitive world, the commercial vehicle have been increased by high. In that way, the everyconsumer thinks to have a reasonable and sustainable tyres.

- While riding in every way of speed at the degree of kilometres, the Michelin brand of tyres gives the satisfaction level for their vehicles. The vehicle tyres are the primary thing for the riding purpose.
- They do prefer the same brand for the future purchase with the satisfaction of various factors like price, quality, etc...

### **SCOPE OF THE STUDY**

To study the customer's expectation according to this brand purchase and the customer's attitude and satisfaction level of consuming the brand "Michelin" tyres. To know the quality, service, sales, etc... regarding the product, to know the exact preferences of the customer. The study has been conducted among the different places in Coimbatore city.

### **OBJECTIVE OF THE STUDY**

1. To evaluate the customer attitude towards Michelin tyres.
2. To study the quality and customer preference towards Michelin tyres.
3. To identify the satisfaction level of customers towards Michelin tyres.



4. To offer valuable suggestions for improving brand loyalty of Michelin tyres.

### RESEARCH METHODOLOGY

Research methodology is the systematic way to solve research problem, it may be understood as a science of studying how research done systematically. This includes geographical area covered, method of data collection.

### SOURCE OF DATA

The study includes both primary and secondary data.

- Primary data respondents concerned and collected by using predefined questionnaire.
- Secondary data is collected from the various articles, journals and websites.

### SAMPLE DESIGN

- The sample design used to collect data from the respondent is convenient sampling.

### AREA OF STUDY

- The study is conducted in Coimbatore city.

### SAMPLE SIZE

- The sample size which take for the study is 120.

### TOOLS USED FOR DATA ANALYSIS

- Simple Percentage Analysis
- Ranking Correction
- Likert Scale Analysis

### LIMITATIONS OF THE STUDY

- The study is carried out on a certain period and hence it is influenced by prevailing factors during the period
- The data is collected only from Coimbatore city
- Limited tools have been used to interpret the data collected

### REVIEW OF LITERATURE

Ms. RenuGulia (2014), The “tyre industry” in India grew slowly until 1970’s when there was a spurt of companies entering in the market. This research paper evaluates the position of JK tyres in the market and the role of direct and Indirect marketing. Today, marketers are directing their efforts in retaining the customer and customer’s base. Their focus has shifted towards the three elements and they are people, service and marketing. Most of the industries use information technology to provide best services to their customers. Automotive market in India seems

to offer opportunity for growth and its hopeful of increasing market share in high performance tyre segment.

B. Theeban Kumar, M. Mahalakshmi, (2015), Satisfaction is a person’s feeling of pleasure or disappointments results from comparing products of outcome in relation to his or her expectation. The process whereby the individual deciding whether, what, when, who, from whom to purchase goods and services can be termed as customer behavior. The main objective of the study is to conclude the customer satisfaction towards Apollo tyres limited. The majority of the sample customers are using Apollo tyres. In order to sustain in market, the company should adopt technical advertisement in the product.

### HISTORY AND PROFILE OF THE STUDY

Two brothers, Édouard Michelin and André Michelin, ran a rubber factory in Clermont-Ferrand, France. One day, a cyclist whose pneumatic tyre needed repair turned up at the factory. The tyre was glued to the rim, and it took over three hours to remove and repair the tyre, which then needed to be left overnight to dry. The next day, Édouard Michelin took the repaired bicycle into the factory yard to test. After only a few hundred metres, the tyre failed. Despite the setback, Édouard was enthusiastic about the pneumatic tyre, and he and his brother worked on creating their own version, one that did not need to be glued to the rim. Michelin was incorporated on 28 May 1889. In 1891 Michelin took out its first patent for a removable pneumatic tyre which was used by Charles Terront to win the world’s first long distance cycle race, the 1891 Paris–Brest–Paris. Michelin acquired the recently merged tyre and rubber manufacturing divisions of the American firms B.F. Goodrich Company (founded in 1870) and Uniroyal, Inc. (founded in 1892 as the United States Rubber Company) from Clayton, Dubilier & Rice. Uniroyal Australia had already been bought by Bridgestone in 1980. This purchase included the Norwood, North Carolina manufacturing plant which supplied tyres to the U.S. Space Shuttle Program.

### DATA ANALYSIS AND INTERPRETATION

In this chapter the analysis and interpretation of the “A Study on customer satisfaction of Michelin tyres (With special reference to Coimbatore city)”, is presented based on the opinion of sample of 120 respondents selected from Coimbatore city through a questionnaire containing 20 questions were analyzed through



- Simple percentage analysis
- Likert scale
- Rank analysis

**SIMPLE PERCENTAGE ANALYSIS**

Simple percentage analysis is carried out for most of all questions given in the questionnaire. This analysis describes the classification of respondents failing each category. The percentage analysis is mainly used for standardization and comparisons are support with the analysis.

**FORMULA**

$$\text{Percentage} = \frac{\text{Number of respondents}}{\text{Total respondents}} \times 100$$

**TABLE NO. 1  
TABLE SHOWING SIMPLE PERCENTAGE ANALYSIS**

S. NO.	GENDER	NO. OF RESPONDENTS	PERCENTAGE
1	Male	102	85
2	Female	18	15
	TOTAL	120	100

Source: Primary data

**INTERPRETATION**

The above table shows that 85% of the respondents are Male and 15% of respondents are Female

**INFERENCE**

Majority, 85% of the respondents were male.

**LIKERT SCALE**

A Likert scale is a psychometric scale commonly used in research employing questionnaires. Self-reporting is the most widely used approach to scaling responses in survey research. The term is often used interchangeably with rating scale, or more accurately the Likert-type scale, even though the two are not anonymous. The scale is named after its inventor, psychologist Rensis Likert. Likert distinguished between a scale proper, which

emerges from collective responses to set of items, and the format in which responses are scored along a range. Technically speaking a Likert scale refers only to the former. When responding to a Likert questionnaire item, respondents specify their level of agreement or disagreement on a systematic agree-disagree scale for a series of statements. Thus, the range captures the intensity of their feelings for a given item.

**FORMULA**

$$\text{Likert Scale} = \frac{\sum(fx)}{\text{Total number of respondents}}$$

f = Number of respondents  
 (fx) = Total score

**MID-VALUE**

Mid-value indicates the middle most value of Likert scale.

**TABLE SHOWS THE LEVEL OF SATISFACTION OF THE FACTORS IN MICHELIN TYRES (LOYAL BRAND)**

S. NO.	FACTORS	NO. OF RESPONDENTS	LIKERT SCALE VALUES(x)	TOTAL
1	Strongly agree	50	5	250
2	agree	50	4	200
3	Neutral	15	3	45
4	Disagree	3	2	6
5	Strongly disagree	2	1	2
	TOTAL	120		503

(Source: Primary data)

$$\text{Likert scale} = \frac{\sum(fx)}{\text{Total number of respondents}}$$



= 503/120

= 4.2

**INTERPRETATION**

Likert scale value 4.2 which is greater than the mid value 3, so the customers are agrees with the Michelin tyres as loyal brand.

**RANKING METHOD**

A rank analysis is any of several statistics that measure an ordinal association, the relationship between ranking of different ordinal variables or

different ranking of the same variables, where a “ranking” is the assignment of the labels “first”, “second”, “third”, etc... to different observation of a particular variable. A rank analysis measures of similarity between two rankings, and can be used to assess the significance of the relation between them. It is not necessarily a total order of object because two different objects can have the same ranking. The rankings themselves are totally ordered.

**TABLE NO: 4.3.1**  
**TABLE SHOWS THE FACTORS OF THE MICHELIN TYRES**

S.NO	PARTICULARS	RANK 1	RANK2	RANK3	RANK 4	TOTAL SCORE	RANK
1	Design	38(4) 152	36(3) 108	34(2) 68	12(1) 12	340	3
2	Price	18(4) 72	55(3) 165	38(2) 76	18(1) 25	338	4
3	performance	28(4) 112	26(3) 78	46(2) 92	20(5) 100	382	2
4	Quality	38(4) 128	13(3) 91	42(2) 120	27(1) 75	414	1

(Source: Primary data)

**INTERPRETATION**

The above table shows that the Quality is rank 1, performance is rank 2, design is rank 3, Price is rank 4.

**INFERENCE**

Quality is ranked 1 based on the respondents ranking towards the factors of the Michelin tyres.

**FINDINGS, SUGGESTIONS AND CONCLUSION****FINDINGS**

- Majority, 85% of the respondents were male.
- Majority, 58.3% of the respondents are 20- 30 years.
- Majority, 53% of the respondents are students.
- Majority, 74% of the respondents are Under Graduate.
- Majority, 43.3% of the respondents are earning below Rs 60,000.
- Majority, the maximum number of respondents are unmarried.

- Majority, 48.3% of the respondents are from 2 – 6 members of the family.
- Majority, the 38.3% of the respondents are using the Michelin tyres for 1 – 2 years.
- Majority, the 58.3% of the respondents purchase the Michelin tyres from the retailer.
- Majority, The 60.8% of the respondents like the safety of the Michelin tyre.
- Majority, 56.7% of the respondents says that the Michelin tyre stands for long time.
- Majority, 48.5% of the respondents have not been faced any problems.
- Majority, 46.7% of the respondents says that the advertisement was informative.
- Majority, 47.5% of the respondents reported as no issues or problems came in Michelin tyres.
- Majority, the 60% of the respondents have been used the Michelin tyres for the car.

**LIKERT SCALE**

- Likert scale value 4.2 which is greater than the mid value 3, so the customers are agrees with the Michelin tyres as loyal brand.



- Likert scale value is 4 which is greater than the mid value of 3, so the customers agrees with the durability of Michelin tyres.
- Likert scale value 3.5 which is greater to the mid value of 3, so the customers are satisfied about the price.
- Likert scale value 3.8 which is greater than the mid value 3, so the customers agrees with the Michelin brand when compared to other brand tyres.
- Likert scale value 3.7 which is greater than the mid value of 3, so the customers agrees with the designs.
- Likert scale value 4.6 which is greater than the mid value of 3, so the respondents agreed with the warrantee of Michelin tyres.
- Likert scale value 3.8 which is greater than mid value 3, so the customers agrees with the availability of Michelin brand in showroom.

### SIMPLE RANKING METHOD

- Quality is ranked 1 based on the respondents ranking towards the factors of the Michelin tyres.

### SUGGESTIONS

- From the study, it is suggested to bring a different pattern for a motorcycle.
- From the study, it is suggested to make a constant price of the tyre in every showroom.

### CONCLUSION

I conclude that the tyres are the primary tool for every vehicle. It comprises the maturity of travelling besides the condition of the tyre. Michelin brand available in most of the showroom and the consumers are well satisfied with this brand comparing to other brands. The brand has a unique style and named as loyal among from the consumers. The Michelin brand beats high with the quality and safety from the product. It matches a perfect fit for all kind of vehicles. It delivers a stable smooth comfort in every road conditions. So, the research is fulfilled with the satisfaction of the consumers of Michelin tyres in Coimbatore city. And the consumers will prefer the same brand in future as they are satisfied with this brand.

### REFERENCE

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as service. The objective of the study is to determine the customer satisfaction on tyres. I conclude that the customer satisfaction and the customer loyalty is important part of resources by individual and this method of process should be followed in every stores to fine the satisfaction level and sales promotion by providing better products.

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## WEBSITES

- [www.wikipedia.com](http://www.wikipedia.com)
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## FACEBOOK USAGE AND STUDENT ENGAGEMENT OF PRE-SERVICE TEACHERS

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### ABSTRACT

*Academics and researchers are interested to study how social networking sites affect the students who are enrolled in higher education. Among all social networking sites, particular interest towards “Facebook” is quite evident. Previous researches have documented positive, negative or no significant relationship between Facebook usage and student engagement. Owing to paucity of similar studies in Indian landscape, the present study attempts to explore the relationship between Facebook usage and pre-service teachers’ engagement. Data was collected from 120 pre-service teachers of two central universities. Questionnaire was developed by the researchers to examine the general use of Facebook by pre-service teachers. The second section of questionnaire dealt with student engagement which was ascertained by adapting certain items of National Survey of Student Engagement (2013). Data was analysed both i.e. quantitatively and qualitatively. Results indicated that use of Facebook pages was significantly correlated with active and collaborative learning. However, there was no significant correlation between some dimensions of Facebook usage, such as messenger, groups and events with student engagement.*

**KEY WORDS:** *Facebook, Student engagement, Facebook usage and student engagement*

### INTRODUCTION

With increased access to Internet, the number of users at various social networking has upsurged. In the present digital era, social networking sites (hereafter referred as SNS) are one of the most popular online destinations. From facilitating relationship building to online social discourse, social networking sites have blossomed into a platform for individuals to share and voice their opinion. Amongst all social networking sites, Facebook scores high on popularity index with a wide and diverse user base at varied levels of education. In India, there are around 260 million active Facebook users that are expected to reach 444.2 million in 2023 (Statista, 2019). Around 47% of Facebook users fall in the age group of 18 to 24 years. The next prevalent group of users are in the age group of 25 to 34 years (Socialbakers, 2011). Research findings from various studies provide that almost 85-99% college students use

Facebook (Junco, 2012) which brings to light the immense potential of SNS which can be exploited to support learning (Kear, 2011). Because of rising popularity, Sendurur et al. (2015) recommended that social networking sites could be a favourable platform for different academic activities. These SNS accelerate, advance and innovate the ways of communication, expression, as well as entertainment. Students can make a small community as per their interest in order to share their ideas and views with each other. So, owing to widespread use of Facebook, the level of interest to explore is there any correlation exists between Facebook usage and student engagement has increased.

### Facebook

Facebook is a social networking site which was created by Mark Zuckerberg and his fellows (Eduardo Saverin, Andrew McCollum, Dustin Moskovitz and Chris Hughes). When Facebook was



created in the year 2004, it had limited features only. There was no feature of live videos, poking, notifications, and status updates. But today, Facebook houses many features such as Friends (including friend requests and people you may know), uploading of unlimited number of photos on profile, privacy options for selection of audience (friends only, friends of friends, only me, public and custom) and other features, like timeline, newsfeed, pages, groups, videos, application and games, Facebook messenger, life events, reactions, live videos, # tag, profile picture guard, DP frame, save links, etc.

### **Student Engagement**

The term “student engagement” is used to indicate readiness, need, desire as well as compulsion of pupils to make active participation in everyday activities (school) such as attending classes, submission of required course works/ assignments. According to Kuh et al. (2008), “Student engagement” includes both time and energy which pupils devote on productive educational activities and the effort institutions apply in using effective educational practices. Strydom and Mentz (as cited in Mbodila, 2014) stated that student engagement has two components— “what students do” and “what institutions do”. Further, Kuh (2009) specified that student engagement can be “in-class engagement” as well as “out-of-class engagement” in any educational programme. Nelson et al. (2014) said that student engagement involves both academic as well as non-academic activities of pupils’ in university that are likely to produce high quality learning.

National Survey of Student Engagement (2013) has defined student engagement componentially, i.e., active and collaborative learning, level of academic challenge, enriching educational experience, student-faculty interaction as well as supportive campus environment. In consonance with the need for study, researchers have selected only two dimensions of student engagement, i.e., level of academic challenge, and active and collaborative learning. Student engagement with using Facebook was as not taken into account.

*Level of Academic Challenge* means challenging logical and creative work that is crucial for pupils learning and educational excellence. It further refers to analysing, applying and evaluating any idea or information by the students. *Active and Collaborative Learning* means active participation of pupils in different educational activities. Pupils learn a lot while they take part in various educational activities individually as well as collaboratively. Through collaboration with peers, students develop abilities that prepare them to cope with different kinds of situations and problems that they face during and after college.

### **Facebook Usage and Student Engagement**

In this contemporary period, one thing has become persistent i.e. ‘change’. Internet has transformed the world radically. Emerging use of digital platform provides an ease for teaching-learning without threaten the socio-economic backgrounds of the pupils (Bhatia, 2008). Increasing number of Facebook users has aroused the interest of researchers towards exploring Facebook usage and student engagement among college students. According to Paculan (2013), Facebook is valuable in the life of students’ as Facebook groups and pages create community of people who have similar interests and views that helps to learn each other’s hobbies, interests, favourite books. Balcikanli (2015) stated that Facebook may help pre-service teachers for improving their reflective skills by looking at their own teaching practices more constructively. Students can share ideas with others and get feedback from online community via Facebook. In other words, it provides opportunity to engage actively in sharing of information and knowledge such as speaker events, topics related to course and lectures through live videos. According to Nielsen et al. (2013), social media platforms can be used in teacher education courses to design different tasks as well as assignments. Students can enhance their technical and pedagogical skill for using the facilities offered by different social media tools for learning.

Therefore, this is to say, using Facebook can prove to be beneficial for college students in learning so many things which may be helpful for in their course of study. So, there is possibility for students to use Facebook in a way that enhance their engagement and participation in different educational activities.

### **CONTEXT OF THE STUDY**

The present study was conducted by taking into consideration B.Ed. students from two central universities of India i.e. Jamia Millia Islamia and University of Delhi. These universities facilitate different courses for pre-service teacher education such as B.Ed., B.EL.Ed., D.Ed. and B.Ed. (Special). B.Ed. is a course which prepares pre-service teachers to teach up to secondary as well as senior secondary level of school.

### **NEED FOR THE STUDY**

According to NCFTE (2010), “ICT can be imaginatively drawn upon for professional development and academic support of the pre-service teachers.” According to ICT policy (2012), courses need to be revised to meet the changing requirements of teachers with emerging trends in technology. So, pre-service teachers should be trained appropriately to use ICT in schools.



Clements (2015) suggested that use of Facebook can be beneficial for enhancing extracurricular engagement among students of higher education. Its usage can be advantageous for college students beyond the scope of achievement marks. According to Singh (2012), student teachers use Facebook for sharing educational material, project, homework, resources or ideas. Other most popular reasons to use Facebook includes keeping up with people they know in the real world and following photos, videos, events etc. Fagioli et al. (2015) revealed that student teachers seemed to feel that Facebook should be used in their learning because it creates a more interesting learning environment. According to Deng and Tavares (2013), Facebook groups provide student teachers with informational, social as well as intellectual support during their teaching practice. Rizvi (2013) found that a negative correlation exists between use of Facebook for general purposes and engagement of student-teachers with course. Oginni et al. (2016) stated that students were negatively affected by the use of social networking sites as they used it to chat with friends. So, their activities were ignored.

As different studies on Facebook and student engagement have documented both negative and positive impacts, only few studies are available in India regarding effect of using Facebook on engagement of pre-service teachers. Therefore, a need is felt to examine general usage of Facebook by pre-service teachers and if there is a relationship between Facebook usage and student engagement. This will enable us to ascertain if use of Facebook is fruitful for pre-service teachers and answer the following research questions:

1. Is Facebook usage related to student engagement?
2. How does Facebook usage relate to pre-service teachers engagement?

### **OBJECTIVES OF THE STUDY**

1. To study the use of Facebook by pre-service teachers for general purposes in terms of
  - Facebook messenger
  - Facebook pages
  - Facebook groups
  - Facebook events
  - Other Facebook activities (including news feed and wall activities)

2. To study the student engagement among pre-service teachers in terms of
  - Level of academic challenge
  - Active and collaborative learning
3. To study the relationship, if any, between Facebook usage for general purposes and student engagement.

### **RESEARCH METHODOLOGY**

Following research methodology was used to achieve the objectives of this research.

#### **Participants**

Convenience sampling technique was followed to select the 120 B. Ed. students (who use Facebook) from two different central universities i.e. Jamia Millia Islamia and University of Delhi.

#### **Questionnaires**

**Section I:** Questionnaire on Facebook usage was developed by the researchers to examine the general usage of Facebook (including dimensions: Facebook messenger, Facebook pages, Facebook groups, Facebook events and other Facebook activities such as news feed and wall activities) among pre-service teachers. Some items were selected from the studies conducted by Singh (2012), Rizvi (2013), and Junco (2012) and rest of the items were developed by the researchers. In this section the items were based on 5-point scale from 'Never' to 'Very Frequently'. Two open-ended questions were also asked from the respondents by the researchers.

**Section II:** The second section of the questionnaire was on student engagement. Items were adopted from National Survey of Student Engagement (NSSE) scale to measure the student engagement of pre-service teachers. Permission was taken by the researchers for the purpose of using NSSE scale. NSSE is the most used scale in the context of student engagement. Kuh (2009), Junco (2012), Jayarathna and Fernando (2014) have been used some items of this instrument in their respective study. In this section the items were based on 4-point scales from 'Never' to 'Very Often'.

#### **Analysis and Interpretation of Data**

In the analysis of data, the statistical measures used are mean, mean % and Pearson correlation. Pearson correlation was used to examine if a correlation exists between Facebook usage and student engagement. Qualitative analysis of data was done by coding. Analysed data was presented by tables.

**FINDINGS AND DISCUSSION**

The findings have been reported as per the objectives of the study.

**Objective 1:** To study the use of Facebook by pre-service teachers for general purposes

**Table 1: Use of Facebook for general purposes (Sample 120)**

S.No.	Dimensions	Number of items	Mean	Mean %
1	Facebook Messenger	14	29.29	209.21
2	Facebook Pages	9	23.40	260.00
3	Facebook Groups	8	16.58	207.25
4	Facebook Events	3	5.91	197.00
5	Other Facebook activities(including news feed and wall activities)	26	71.23	273.96

Table 1 shows that on an average, pre-service teachers use other Facebook activities (including news feed and wall activities) mostly (mean = 71.23, mean % = 273.96) followed by Facebook pages (mean = 23.40, mean % = 260), Facebook messenger (mean = 29.29, mean % = 209.21), Facebook groups (mean = 16.58, mean % = 207.25), and Facebook events (mean = 5.91, mean % = 197). This suggests, on an average, Facebook messenger, Facebook

pages, Facebook groups and other Facebook activities (including news feed and wall activities) are used between 'Rarely' to 'Sometimes' by the pre-service teachers for general purposes. Whereas Facebook events are used between 'Never' to 'Rarely'.

On being asked what kind of challenges do they face while using Facebook for general purposes, the participants responded as:

**Table 2: Challenges faced by pre-service teachers in using for general purposes**

Responses	No. of Pre-service teachers with %
No comment	15 (12.50%)
No challenge	43 (35.83%)
Slow network connection	8 (6.66%)
Privacy issue and security concern	3 (2.5%)
Authenticity of information	5 (4.16%)
Unwanted materials and friend requests	7 (5.83%)
Messages from unknown people	4 (3.33%)
Unnecessary tags	5 (4.16%)
Lot of advertisements	7 (5.83%)
Too many posts, photos and videos	23 (19.16%)

Table 2 shows that 12.50% participants did not give any response to this question, whereas 35.83% do not face any challenge in using Facebook for general purposes. As many as 19.16% pre-service teachers mentioned that too many posts, photos and videos irritates them and 6.66% answered that they

have network problem while using Facebook. Rest of the respondents reported that they face challenges while using Facebook for general purposes such as privacy and security, authenticity of information, unwanted materials and friend requests, messages from unknown people, unnecessary tags, and



advertisements. Some of the statements given by pre-service teachers were:

*"Its sources are not trust worthy. Anyone can share post from any site/blog"*

*"There are many useless photos and videos which keep popping up on the newsfeed"*

*"A lot of advertisements appeared which are not relevant for me"*

*"Sometimes I found fake information and vulgar photos, videos, etc."*

*"No, I didn't face any problem in using Facebook."*

**Objective 2:** To study the student engagement among pre-service teachers

**Table 3: Student engagement (Sample 120)**

S.No.	Student Engagement	Number of items	Mean	Mean %
1	Level of academic challenge	15	38.27	255.13
2	Active and collaborative learning	5	15.59	259.83

Table 3 shows that, on an average, the mean value of active and collaborative learning (mean = 15.59, mean % = 259.83) is followed by level of academic challenge (mean = 38.27, mean % = 255.13). Thus, it can be concluded that pre-service teachers have done different academic and collaborative activities between 'Sometimes' to 'Often'.

**Objective 3:** To study the relationship, if any, between Facebook usage for general purpose and student engagement

For achieving the third research objective, researchers had applied the method of Pearson correlation and calculated the requisite measures with the help of SPSS.

**Table 4: Relationship between Facebook usage for general purposes and student engagement**

		Level of academic challenge	Active and collaborative learning
Facebook Messenger	Pearson Correlation	-.007	.087
	Sig. (2-tailed)	.940	.344
Facebook Pages	Pearson Correlation	.132	.234*
	Sig. (2-tailed)	.151	.010
Facebook Groups	Pearson Correlation	.001	.162
	Sig. (2-tailed)	.987	.077
Facebook Events	Pearson Correlation	-.009	.049
	Sig. (2-tailed)	.921	.595
Other Facebook Activities (including news feed and wall activities)	Pearson Correlation	.174	.242**
	Sig. (2-tailed)	.057	.008

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

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

Table 4 shows that general usage of Facebook messenger, groups and events are not correlated significantly with level of academic challenge and active and collaborative learning at any level of significance. However, Facebook pages and active and collaborative learning are associated positively at 0.05 level of significance. Besides, there is

significant positive correlation between other Facebook activities (including news feed and wall activities) and active and collaborative learning at 0.01 level of significance.

When participants were asked if Facebook can be an effective tool for student engagement, they had given the following responses:

**Table 5: Responses given by participants for Facebook as an effective tool for student engagement**

Responses	No. of pre-service teachers with %
No comment	21 (17.50%)
No idea	7 (5.80%)
Creating and liking more educational pages and groups	31 (25.83%)
Proper use and time management	5 (4.16%)
Creating academic events	6 (5.00%)
Going live	4 (3.33%)
Sharing and expressing views on groups	7 (5.80%)
Another account for educational purpose only	5 (4.16%)
Sharing class information, educational links, audios, videos and assignments on groups	34 (28.33%)

Table 5 shows that 17.50% participants did not give any response to this question, whereas 5.80% do not have any idea about it. Majority of respondents (28.33%) mentioned that Facebook can be used effectively by sharing class information, educational links, audios, videos and assignments on groups and 25.83% stated that creating and liking more educational pages and groups can enhance their engagement. As many as 54.16% pre-service teachers reported that there should be filter option of using Facebook for educational purposes, whereas 54.16% answered that there should be another account for educational purpose only. Rest of the participants reported that creating academic events, going live, sharing and expressing views on groups can lead to better student engagement. Some of the statements given by pre-service teachers were:

*“An academician or teacher can use ‘Go live’ feature for interaction with students”*

*“Facebook can be effective for student engagement if they have another Facebook account to link only for education”*

*“Students may create groups with their friends and talk related to study”*

*“Students can post or share educational materials with classmates”*

The study revealed that general Facebook pages and Facebook activities (including news feed and wall activities) were positively correlated with active and collaborative learning, and hence calls for the institutions to change their traditional way of engaging students by using Facebook. Findings are consistent with study of Clements (2015) who also suggested that Facebook can be used for promoting and developing engagement in an educational institution.

As, respondents suggested that Facebook should be used by faculty, academicians and their peers (pre-service teachers) for sharing class information, educational links, audios, videos and assignments on groups as well as creating and liking

more educational pages and groups. Thus, the study confirms the findings of Fagioli et al. (2015) that student teachers were interested to use Facebook in their education because it provides interesting learning environment. Although, this study found some challenges faced by pre-service teachers such as privacy issue but this may be due to ignorance about privacy setting. So, efforts should be directed towards training of pre-service teachers to maintain privacy of their Facebook account to limit the audience. As per the current study, usage of Facebook pages was significantly related with active and collaborative learning. So, institutions should make efforts to increase use of Facebook in educational settings especially for level of academic challenge. Teacher educators may use Facebook for pre-service teachers as part of their educational experiences so that they can use online system of learning via live videos because majority of pre-service teachers were found to be active in using Facebook.

## CONCLUSION

The study reflects the usage of Facebook among pre-service teachers and brings forth the student engagement among pre-service teachers. In addition, the study also provided an understanding whether general use of Facebook correlated with student engagement. As per the results emanating from this research, the researchers concluded that using Facebook in education can be rewarding for pre-service teachers in the 21<sup>st</sup> century as positive but not significant relationship was found between Facebook usage and engagement of pre-service teachers. Learning environment can be changed from traditional to technical, as innovations are taking place in Facebook day-by-day. Various features of Facebook can be used to increase student engagement, but there exists some challenges which cannot be overlooked.



In the light of the findings of this research, some recommendations are made for future researches. Further researches can be conducted on other teacher education institutions with respect to other social networking sites and applications such as WhatsApp, Twitter, Imo, You Tube, etc.

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# THE EASE OF DOING BUSINESS AND STANDARDS OF BUSINESS OPERATIONS OF KINFRA INDUSTRIAL PARKS IN KERALA

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## ABSTRACT

*Industrial parks are receiving increasing attention in the sustainability discourse and its basic mandate is to nurture appropriate industries along with expanding the industrial base of the economy with global standards in quality, technology and management. As an innovative industrial initiative, the establishment of KINFRA industrial parks attempts to explore an ecosystem where productive and innovative entrepreneurship germinates, sustains and grows leading to the creation of a more vibrant and dynamic industrial economy in Kerala. Within 25 years of functioning, KINFRA has ventured many industrial parks in the fast growing core competency sectors and at their best, these industrial parks align the infrastructure provision and agglomeration economies to jolt the industrial growth of the State. It is in the context, the paper attempts to explore the economic imperative and operational efficiency of KINFRA industrial parks in terms of the 'ease of doing' and 'standards of business operations' indices.*

**KEYWORDS:** *Kerala Industry, Industrial Promotion, KINFRA, Industrial Parks, Ease of Doing Business, Standards of Business Operations.*

## 1.1. INTRODUCTION

The Kerala Industrial Infrastructure Development Corporation, popularly known as KINFRA, is a statutory body set up by an Act of State Legislature in February, 1993. It stands as a flagship of Kerala's industrial fleet as it ventures into the high seas of global commerce. Being the industrial catalyst of the State, KINFRA promotes the concept of 'industrial parks' in Kerala. Its vision is to create a State where industry thrives in the midst of the rich green environs and where people flourish in an achievement that fosters growth and the freedom to innovate. Its mission is to enable development across the State by identifying and promoting core competency industries of each region, creating walk-in and manufacture environments and wooing discerning investors from across the world. It has catered to the industry-specific infrastructure requirements of the State by creating walk-in and

manufacture environments in ready-to-use 'industrial complexes' that provide all the facilities required in the starting and nurturing of an industry. As the industrial facilitator of Kerala, KINFRA has completed 25 years of its operation and is having 22 fully operational parks, 7 premier ongoing projects and about 9 major projects on anvil at present. The ambience and flawless infrastructure facilities available in the industrial parks aim to provide a typical business or entrepreneurial culture in the State for the development of a high-tech, non-polluting and export-oriented industries and thereby create top-notch 'industrial spots' or 'industrial townships' in Kerala.

## 1.2. RESEARCH PROBLEM

The low level of industrial development in the backward regions of Kerala is one of the major developmental issues confronting the State today.



Development of adequate and commendable infrastructure is an essential pre-requisite for rapid industrialisation and the inadequacy of appropriate infrastructure is a major factor hindering the industrial development of the backward regions of the State. Industrial parks can develop certain synergies and a typical entrepreneurial culture in the industrial economy of any country in terms of excellent institutional framework, support services and physical infrastructure and are aptly treated as policy drivers to foster sufficing investments, employment, competitiveness, sustainable business strategies and regional economic development. Thus, it becomes significant to examine the economic imperative of KINFRA industrial parks with particular reference to the ‘ease of doing business’ and ‘standards of business operation’ indices.

### 1.3. OBJECTIVES OF THE STUDY

By pioneering the concept of ‘industrial parks’, KINFRA provides an ambience for the enterprise and innovation to flourish and thereby profoundly influence the industrial economy of Kerala. KINFRA unleashes the industrial potential of the State and thereby enables its progressive and sustainable industrial development. In the context, the study attempts two major objectives, namely: (i) to examine the extent of ‘ease of doing business’ as envisaged by KINFRA industrial parks in Kerala and (ii) to explore the ‘standards of business operations’ as provided by KINFRA industrial parks on the industrial economy of the State.

### 1.4. HYPOTHESES & TEST(S)

Within the last 25 years of its operation, KINFRA is busy with a mission to make Kerala the most favoured destination for competitive industrial development with the provision of commendable infrastructure and support services. Within the framework of the research objective, the study attempts to test two hypotheses as: (i) the operational efficiency of KINFRA industrial parks in terms of the ‘ease of doing business’ is nugatory and (ii) the operational efficiency of KINFRA industrial parks in terms of its ‘standards of operations’ is also nugatory. The hypotheses are being tested by using Wilcoxon Signed Rank Test, based on the ‘median’ value of the data collected.

### 1.5. METHODOLOGY

KINFRA has completed 25 years of its operation in Kerala. The study takes into account only a decennial period of its operation, that is, from 2003 to 2015 for exploration and analysis. There are a total of 22 fully operational industrial parks set up by KINFRA as on 31<sup>st</sup> March, 2019. The study takes into account only the case of those industrial parks which have been set up before the year 2010. So the total number of sample is 18 fully operational parks out of a total of 22. The study uses both primary and secondary data. Data have been collected and arranged by using a 5-point likert scale as shown below:

Scale Value	Choice of Evaluation	Standard Score
1	Completely Agree	100
2	Mostly Agree	75
3	Neither Agree Nor Disagree	50
4	Mostly Disagree	25
5	Completely Disagree	00

### 1.6. ANALYSIS OF EASE OF DOING BUSINESS

Ease of doing business is one among the parameters selected for measuring the operational efficiency of KINFRA industrial parks. KINFRA plays a pivotal role as the industrial catalyst of the State and as such, it provides a conducive environment for the existing industries to consolidate and new industries to come up. By enabling growth and a typical entrepreneurial as well as business culture, KINFRA industrial parks assure quality standards and a congenial ambience for the easy starting and sustainable growth of industries in the

State. Thus, it becomes imperative to explore the viability of the business environment provided by KINFRA with respect to the ‘ease of doing business’ which is presumed as a composite index having certain parameters addressing the operational effectiveness of KINFRA.

#### 1.6.1. Ease of Doing Business – Aspects for Evaluation

The major aspects for evaluating the ‘ease of doing business’ as provided by the KINFRA industrial parks in Kerala are given below:



Parameters	Description
1	Affordable premium and better lease out period.
2	Flexible terms and conditions for the entrepreneurs.
3	Excellent infrastructure and other support services.
4	Excellent common facilities for smooth business.
5	Well organised and hassle free business environment.
6	Consistent and continuous communication of the key initiatives.

**1.6.2. Ease of Doing Business – Operational Efficiency**

The responses on the major aspects of evaluation of ‘ease of doing business’ of KINFRA industrial parks in Kerala are given below:

Evaluation Parameters	Scale and Proportion					Majority	
	1	2	3	4	5	Response	Per Cent
Parameter-1	06	12	00	00	00	Mostly Agree	66.7
	(33.3)	(66.7)	--	--	--		
Parameter-2	07	11	00	00	00	Mostly Agree	61.1
	(38.9)	(61.1)	--	--	--		
Parameter-3	12	06	00	00	00	Completely Agree	66.7
	(66.7)	(33.3)	--	--	--		
Parameter-4	05	10	03	00	00	Mostly Agree	55.5
	(27.8)	(55.5)	(16.7)	--	--		
Parameter-5	06	11	01	00	00	Mostly Agree	61.1
	(33.3)	(61.1)	(05.6)	--	--		
Parameter-6	04	12	02	00	00	Mostly Agree	66.7
	(22.2)	(66.7)	(11.1)	--	--		

Source: Survey Research.

**1.6.3. Ease of Doing Business – Statistical Testing & Interpretation:**

The major aspects and responses on the ‘ease of doing business’ of KINFRA industrial parks in Kerala are given below:

<b>H<sub>0</sub></b>	The operational efficiency of KINFRA industrial parks in terms of “ease of doing business” is nugatory.
<b>Test</b>	Wilcoxon Signed Rank (Median) Test
<b>Hypothetical Median</b>	3
<b>P-value</b>	6.699 <sup>-5</sup>
<b>Observed Median</b>	2 (True location is less than 3)
<b>Decision</b>	Reject the null hypothesis (H <sub>0</sub> ) and accept the alternative hypothesis (H <sub>1</sub> ).
<b>H<sub>1</sub></b>	The operational efficiency of KINFRA industrial parks in terms of “ease of doing business” is ‘mostly effective.’



The responses on each of the select parameters of the criteria ‘ease of doing business’ is analysed and the status of operational efficiency in terms of the chosen parameters is recorded with corresponding scores. Having been set the null hypothesis as ‘the operational performance of KINFRA industrial parks in terms of “ease of doing business” is nugatory’, the study uses Wilcoxon Signed Rank Test for testing the hypothesis. Assuming a hypothetical median value of 3 in a 5-point likert scale, the observed median is 2 with a P-value of 6.699<sup>-5</sup>. The null hypothesis is therefore rejected and the study accepts the alternative hypothesis, signifying the operational performance of KINFRA industrial parks in terms of the parameter ‘ease of doing business’ is mostly effective.

**1.7. ANALYSIS OF STANDARDS OF BUSINESS OPERATIONS**

Most businesses experience some operational issues that can be resolved with the identification of certain best practices called the standards of business operations. Being the industrial facilitator of the State, KINFRA generally follows some standard ways of doing things complying with the requirements of its stakeholders. It aims at producing superior results with its strategic planning and best

practice methods. KINFRA always attempts to make both quantitative and qualitative improvements in the industry-specific infrastructure requirements of the State, by complying certain benchmarks and standards of operations. By stimulating diverse avenues of business, KINFRA drives the direction and pace of innovation that underpins the future industrial growth of the State. The industrial parks set up by KINFRA are actually the innovation hubs of the State for its diverse and dynamic industrial development. Keeping strict adherence to quality and other standards of operations, KINFRA took the lead in promoting a typical business or entrepreneurial culture in Kerala. The study presumes ‘standards of business operations’ as a composite index having certain aspects which can be used to obtain some basic reflections on the operational efficiency of KINFRA.

**1.7.1. Standards of Business Operations – Aspects for Evaluation:**

The major aspects for evaluating the ‘standards of business operations’ as provided by the KINFRA industrial parks in Kerala are given below:

Parameters	Description
1	Excellent business environment at affordable cost and time span.
2	Fullest utilisation of the capacity of industrial units.
3	Optimum use of resources and technology for the industrial units.
4	Support to the entrepreneurs to manage their operating risk.
5	Promotional activities for the betterment of industrial units.
6	Support to deliver high standards of quality in businesses.

**1.7.2. Standards of Business Operations – Operational Efficiency**

The responses on the major aspects of evaluation of ‘standards of business operations’ of KINFRA industrial parks in Kerala are given below:

Evaluation Parameters	Scale and Proportion					Majority	
	1	2	3	4	5	Response	Per Cent
Parameter-1	11	07	00	00	00	Completely Agree	61.1
	(61.1)	(38.9)	--	--	--		
Parameter-2	05	10	03	00	00	Mostly Agree	55.6
	(27.7)	(55.6)	(16.7)	--	--		
Parameter-3	04	12	02	00	00	Mostly Agree	66.7
	(22.2)	(66.7)	(11.1)	--	--		
Parameter-4	00	04	04	10	00	Mostly	55.6



	--	(22.2)	(22.2)	(55.6)	--	Disagree	
Parameter-5	11	07	00	00	00	Completely Agree	61.1
	(61.1)	(38.9)	--	--	--		
Parameter-6	06	12	00	00	00	Mostly Agree	66.7
	(33.3)	(66.7)	--	--	--		

Source: Survey Research.

### 1.7.3. Standards of Business Operations – Statistical Testing & Interpretation

The major aspects and responses on the ‘standards of business operations’ of KINFRA industrial parks in Kerala are given below:

<b>H<sub>0</sub></b>	The operational efficiency of KINFRA industrial parks in terms of “standards of business operations” is nugatory.
<b>Test</b>	Wilcoxon Signed Rank Test
<b>Hypothetical Median</b>	3
<b>P-value</b>	5.339 <sup>-5</sup>
<b>Observed Median</b>	2 (True location is less than 3)
<b>Decision</b>	Reject the null hypothesis (H <sub>0</sub> ) and accept the alternative hypothesis (H <sub>1</sub> ).
<b>H<sub>1</sub></b>	The operational efficiency of KINFRA industrial parks in terms of “standards of business operations” is ‘mostly effective.’

The responses on each of the select parameters of the criteria ‘ease of doing business’ is analysed and the status of operational efficiency in terms of the chosen parameters is recorded with corresponding scores. Having been set the null hypothesis as ‘the operational performance of KINFRA industrial parks in terms of “ease of doing business” is nugatory’, the study uses Wilcoxon Signed Rank Test for testing the hypothesis. Assuming a hypothetical median value of 3 in a 5-point likert scale, the observed median is 2 with a P-value of 6.699<sup>-5</sup>. The null hypothesis is therefore rejected and the study accepts the alternative hypothesis, signifying the operational performance of KINFRA industrial parks in terms of the parameter ‘ease of doing business’ is mostly effective.

### 1.8. CONCLUSION

Being the industrial catalyst of the State, KINFRA facilitates the setting up and management of theme-based industrial parks so as to modernise and diversify the industrial economy of Kerala. The infrastructure and support services offered by KINFRA industrial parks attract entrepreneurs from across the world to the industrial landscape of Kerala and have positively contributed to its industrial

development. KINFRA industrial parks are beneficial in the fact that they apply modern technologies and innovations, bring economic and innovative potential or internationally well-proven know-how and thus support the hasty industrial development of the State. As an innovative and promising strategy for the sustainable industrial development of the regional economy, industrial parks integrate business success, environmental excellence and community connections with certain cascading effects on the regional industrial economy. The operational performance and efficacy of KINFRA industrial parks in terms of the ‘ease of doing business’ and ‘standards of business operation’ indices ratify the fact.

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## **PATHOMORPHOLOGY OF OVARULAR CELL ADENOMAS**

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### **SUMMARY**

*In this work, we studied the macroscopic and microscopic features of clear cell ovarian adenoma. The results showed that clear cell ovarian adenoma is macroscopic, as a rule, single-chamber, up to 30 cm in diameter, often associated with endometriosis. The microscopic characteristic of clear cell ovarian adenoma is that the tumor epithelium has a diffuse, tubulo-cystic, tubular location, sometimes with papillary growth. Sometimes the epithelial cells of the tumor with abundant light cytoplasm rich in glycogen are flattened, form nests, fields and contain a hyaline-like mass in the lumen of the cysts*

**KEY WORDS:** ovaries, cysts, cystic tumors, adenoma, clear cell adenoma.

### **THE RELEVANCE OF THE PROBLEM**

Light-cell (mesonephral) tumors make up 3-5% of all ovarian tumors or 7-11% of all malignant neoplasms. Histogenetically develop from the integumentary ovarian epithelium and are associated with endometriosis in 25% of all cases. Tumors are predominantly one-sided (95%). The average age of people with a newly established diagnosis is about 53 years (1,2). The macroscopic appearance of this neoplasm is nonspecific - the tumor mass in the ovary can be represented by both cystic and solid components. Necrosis and hemorrhage are uncharacteristic. Until now, malignant clear cell ovarian tumors remain one of the most poorly studied morphological forms of ovarian cancer, due to the extremely low frequency of this pathology. According to the literature, in various clinics, the analysis of clear cell ovarian adenocarcinoma is based on a small number of observations, which does not allow to fully determine the features of the clinical course of the disease, its diagnosis, therapy results and prognosis factors(5,6). Most of the publications are descriptive in nature, based on isolated cases of the disease, and sometimes based on the analysis of literary sources over many years. The

morphological parameters of clear cell adenocarcinoma of the ovaries, which, to one degree or another, can affect the methods of treatment and the outcome of the disease, have not been fully studied. According to the literature (O.K., Khmel'nitsky, 1994), the frequency of mixed epithelial tumors of the ovaries is about 10% of all epithelial ovarian tumors, according to other sources (A.E. Kolosov, J.I.H. Mkrtychyan, 1986) mixed tumors of epithelial origin are found very rarely and even less often diagnosed. Among them, two-component forms predominate, and three-component forms of a tumor are much less often determined. The overwhelming majority of mixed epithelial tumors have a combination of serous and mucinous epithelial structures, much less often - serous and endometrioid, even less often other variants in the form of a combination of serous, mucinous or endometrioid structures with a clear cell epithelial component. All of the above suggests that mixed ovarian epithelial tumors are the least studied ovarian neoplasms and their studies are necessary to develop the correct treatment tactics. The results of the treatment of malignant clear-cell neoplasms of the ovaries remain unsatisfactory. This is due to the low





sensitivity of these neoplasms to chemotherapy, including the use of platinum preparations(7,10). Despite the search for new treatment regimens for clear cell neoplasms, the leading method of treating these tumors is still surgical, the main purpose of which is to remove or maximize the reduction of the mass of tumor tissue. Identification of the main prognostic factors will facilitate the choice of adequate therapy methods and improve the long-term results of treatment of this pathology. A clear cell ovarian tumor was first described in 1899 by Peham N. as "ovarian hypernephroma" because of its similarity to renal cell adenoma. However, in 1939, Schiller W. discovered a histological similarity between the structures of clear cell ovarian adenoma and mesonephric tubules and suggested that it comes from the remains of a primary kidney tumor (11). Tumors of this histogenesis are called the term "mesonephroma" and are divided into the following groups: true mesonephroma, characterized by glomeruloid-like bodies with a single vessel on the leg "glomerulus", tubular structures lined with epithelioid cells, and having the appearance of a wallpaper nail, incapable of producing endogenous mucins stellate cells; parvilocular cystomas, which are characterized by the absence of glomeruloid-like bodies, small cysts scattered in the fibrous stroma, lined with mucin-producing epithelial cells, including those similar to light, optically empty cells; adeno fibroma from the remains of ovarian tissue(13).

The causes of clear cell ovarian tumors are still unknown and are the subject of much discussion. Clear cell ovarian adenocarcinoma was first described in 1899 by Peham N. (12) as "ovarian hypernephroma" because of its similarity to renal cell carcinoma. However, in 1939, Schiller W. (12) found a histological similarity in the structures of clear cell ovarian carcinoma with mesonephral tubules and suggested that it originates from the remains of a primary kidney tumor. Tumors of this histogenesis, he called the term "mesonephroma" and divided them into the following groups: 1. true mesonephroma, characterized by glomeruloid bodies with a single vessel on the stem of the "glomerulus", tubular structures lined with epithelioid cells, and having the form of a wallpaper nail, "hop-nail" unable to produce mucin and solid areas formed by endothelial-like stellate cells; 2. Parvilocular cystomas, which are characterized by the absence of glomeruloid bodies, small cysts scattered in the fibrous stroma, lined with mucin-producing epithelial cells, including those similar to "hop-nail" cells, or light, optically empty; 3. Adeno fibromas from the remains of ovarian tissue. The author considered all the listed types of neoplasms to be histologically related, but he singled out the "true mesonephroma" in a special group (1, 3). In 1944, Saphir O. and

Lackner J. presented 2 observations of "hypernephroid carcinoma" and proposed an alternative term - "clear cell carcinoma" (9). Subsequently, the term "clear cell adenocarcinoma" began to refer to tumors, once described by Schiller W. as "parvilocular cystomas", and hypernephroid tumors of the ovaries, described by Saphir O., Lackner J.

All these types of neoplasms are histologically related, however, "true mesonephroma" is allocated in a special group (3,4,5).

## PURPOSE OF WORK

To study the macroscopic and microscopic features of clear cell ovarian adenoma.

## MATERIAL AND RESEARCH METHODS

The research material was the operationally removed cystic ovarian masses with a diagnosed clear cell ovarian tumor and studied in the Department of General Pathology of the RPAC of the Ministry of Health of the Republic of Uzbekistan for 2009-2019. Histological sections were stained with hematoxylin-eosin, SIC reaction, which was studied under a NOVEL light microscope under a lens 10,20,40.

## RESULTS

The results of the study showed that macroscopically clear cell ovarian adenoma was manifested by large pelvic tumors, sizes ranged from 2-3 to 20-30 cm. Sometimes it ranged from 2 to 30 cm. The tumor was a cystic mass, usually single-chamber, with one or several solid nodules yellow or light brown in color, bulging into the cavity of the cyst. Brush contains serous fluid or mucin. Sometimes, the tumor comes from an endometrioid cyst, the fluid is "chocolate" in color, and brown "islands" may be present in the cyst lining. The outer surface of the tumor is often uneven due to the presence of adhesions, the cause of which is concomitant endometriosis.

The microscopic characteristics of clear cell adenomas are characterized by diffuse, tubulo-cystic (Fig. 1), papillary and less often trabecular growth patterns. Tumor cells of a clear cell adenoma had a prismatic shape with various contours of the cytoplasmic membranes, abundant glycogen and an eccentric nucleus (Fig. 2). The main type of cellular elements are light, clove and flattened cells. Light cells resemble those of the tubules of the kidney. Their cytoplasm is rich in glycogen and may contain lipids. Some cells are found in most light-cell tumors and are characterized by scanty cytoplasm, the presence of a vesicle-like nucleus, which protrudes



into the lumen of the tubules or cystic formations (Fig. 3). Complex papillae with hyaline bodies may occur (Fig. 4). Mucin is often present in the lumen of tubular structures and cysts, but like serous and endometrioid tumors, it is usually located on the apical surface of cells. During histological examination of areas of a clear cell tumor, solid, glandular, tubular, papillary, cystic areas, or combinations thereof can be found. According to the literature, clear cell carcinomas are often found in mixed forms in combination with endometrioid tumors (4,10). In the literature, 9 cases of clear cell ovarian adenomas are reported, in which a significant proportion of cells with abundant and eosinophilic cytoplasm were present. These are the so-called "oxyphilic clear cell adenomas", which pathologists can often be confused with tumors of other histological types. The diagnosis was made on the basis of the detection in each studied neoplasm of signs of clear cell adenoma: tubules and cysts lined with cubic, flattened cells, nests and cell fields with abundant light cytoplasm containing glycogen, as well as the presence of an adenofibromatous component. In cases where the tumor contains oxyphilic cells, it is necessary to perform a complete examination of the tumor node in order to identify areas of the tumor typical of clear cell adenoma and to avoid erroneous diagnosis (12).

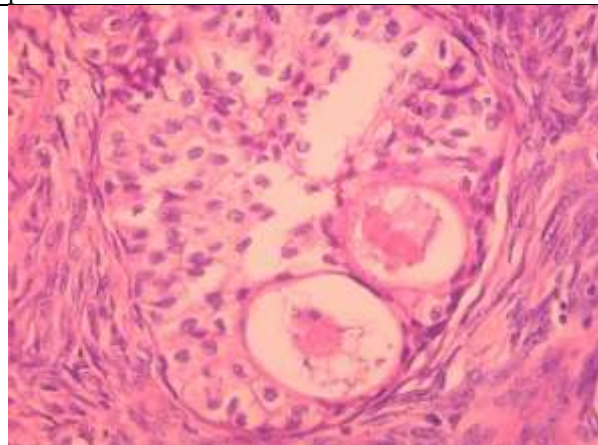
## DISCUSSION

Describing the features of tumor growth of clear cell adenocarcinoma, many authors note the predominant unilateral lesion of the ovaries - in 80%

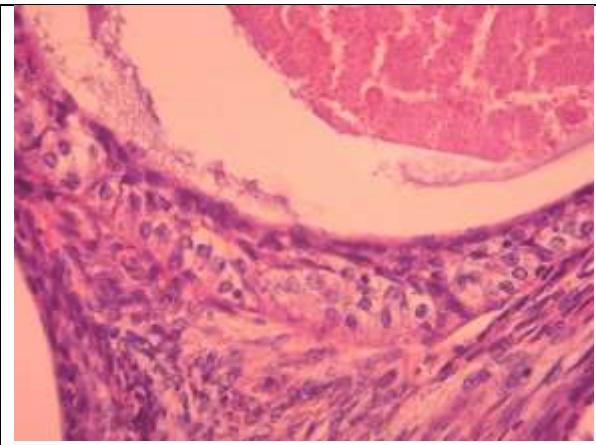
of cases (1,6,9). Macroscopic features of clear cell ovarian adenocarcinomas. Clear cell ovarian adenocarcinoma is usually represented by large pelvic tumors. According to K. Behbakht et al. the size of the tumor in clear cell ovarian cancer ranges from 2-3 to 20-30 cm. Most authors describe the size of the tumor, which ranges from 2 to 30 cm (2, 6, 9, 10). Macroscopically, clear-cell adenocarcinomas are usually represented by a cystic formation, usually unicameral, with one or more solid yellow or light brown nodules bulging into the cyst cavity. Cysts may contain serous fluid or mucin. However, in cases where the tumor originates from an endometrioid cyst, the fluid may be "chocolate" in color, and brown "islets" may be present in the cyst lining. The outer surface of the tumor is often uneven due to the presence of adhesions, which are caused by concomitant endometriosis (8). Microscopic characteristics of clear cell ovarian cancer.

## CONCLUSIONS

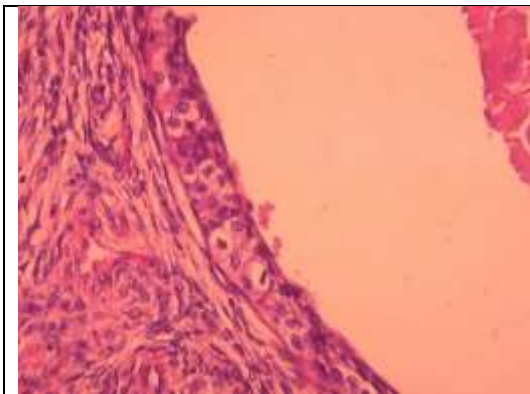
1. The clear cell ovarian adenoma is macroscopically, as a rule, single-chamber, up to 30 cm in diameter, often combined with endometriosis.
2. The microscopic characteristic of clear-cell ovarian adenoma is that the tumor epithelium has a diffuse, tubulo-cystic, tubular location, sometimes with papillary growth
3. Sometimes the epithelial cells of the tumor with abundant light cytoplasm rich in glycogen are flattened, form nests, fields and in the lumen of the cysts contain hyaline-like mass.



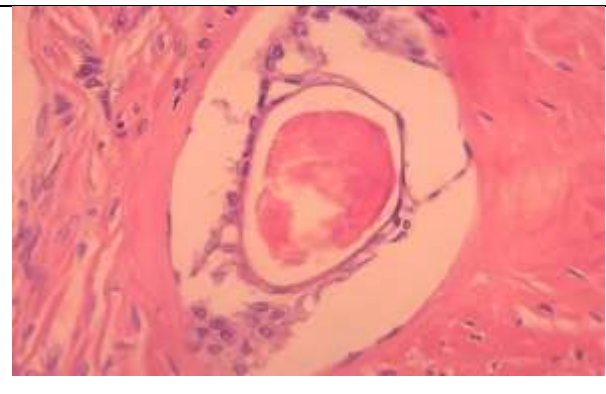
**Figure 1. Diffuse and tubulo-cystic arrangement of light adenoma cells. Coloring: G.E. X: approx. 10, vol. 40**



**Figure 2. There is a lot of glycogen in the cytoplasm of the bright cells of the adenoma. Coloring: G.E. X: approx. 10, vol. 20**



**Fig 3. Multirow light epithelium in the cyst wall. Coloring: G.E. X: approx. 10, vol. 20**



**Figure 4. Hyaline bodies in the lumen of the cyst. Coloring: G.E. X: approx. 10, vol. 20**

Thus, malignant clear cell neoplasms of the ovaries have some features of the clinical course. This disease is most common in the older age groups - from 51 to 60 years. For clear cell neoplasms ovaries are not characterized by a family hereditary history. Unlike other tumors histotypes, patients with malignant clear-cell neoplasms have a history of a greater number of pregnancies - from 2 to 4. However, about 20% of patients suffered from primary or secondary infertility. In almost half of the observations the disease was preceded by inflammation of the uterine appendages, pathological processes in the endometrium, uterine myoma, and in 1/3 of cases clear cell neoplasms were accompanied by endometriosis

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# **MOTIVATION AND CAUSES OF CHILD LABOUR: A STUDY FROM EMPLOYER AND PARENTS PERSPECTIVE**

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## **ABSTRACT**

*The objective of the study is to analyse the status and nature of child labour and interstate variation in India. This study is based primary and secondary data collected from census of India. The primary data are collected from 200 child labourers, 50 parents and 50 employers in printed questionnaire for our analysis summary statistics, tabular and graphical representation are used. This paper analyses opinions of parents and employers on child labour. The number of child labour who economically active in the age-group of 5 -14 years was 1.07 crores in the 1971 census which increased to 1.26 crores in 2001 and reduced to 1.01 in 2011. Rural child labour is 90.62 % whereas urban child labour is only 9.38 %. Since the landless labourers and marginal farmers are poor they send their children agriculture fields. So child labour are more concentrated in rural area. If gender wise composition of child labour is analysed, the female child labour is 92.26percent whereas male child labour is 89.06 percent. Among the child labourers main workers are 18.36 percent whereas female workers is 14.97 percent. The average child labour in a district is 11147 with higher percentage of male child labour (53.56 %) than female child labour (46.45 %). In India number of schools sanctioned is 3820 and financial projects are 100 which help for the child labour. In Odisha, there are 18 child labour projects with 614 child labour schools. The Government may provide income generating activity in the area which will curtail the child labour.*

**KEYWORDS** *Child labour, Census, Employer, Female, Financial, Income, Occupation, Wage*

## **INTRODUCTION**

The study on child labourer bears importance not only for social causes but for economic ones. The issue of child labour effects not only the economy but also the education of the society. Thus the human capital of a country is largely affected due to child labour. A child is also physically and mentally less developed. UNICEF has conducted a study on the child labour and established the fact that, a child between the age group of 5 to 11 years, then he/she does at least one hour of economic activities per day. If he is engaged in domestic work then he does at least 28 hours of work in a week. The period of work varies in case a child is between 12-14 years of age. She/he has to do 14 hours of economic activity or if in domestic

work he has to do 42 hours of work in a week. The 2001 census of India reveals the fact that, a child below 17 years of age is called a child worker if he is engaged in any economic productive activities. According to the report of the ILO (International labour organisation), participation in a work by a child cannot be regarded as remunerative and the child cannot be taken as the child labourer if that work does not affect his health and personal development. Rather his involvement in work or activities can be regarded as something positive. The UNO (United Nations Organisation) report on child labour reflects that, amount 217 million child are branded as labourers throughout the world. In India approximately 12.6 million children are identified as labourers. A comparative study on child labour reveals



that, India has the largest number of working children in the world. The child labourers are found in different sectors but in domestic or industrial. They have to work more for a less wage. Even they do not get sufficient food to eat rather those help their families to enhance the income. It is an irony of country like India where 17 out of 100 children are school dropouts. Majority of children are dropouts during their study from class I to class viii. In village areas this rate is also very high. According to UNICEF Report, around 42 million children in the age group of 6-14 years do not attend schools in India.

The state of Odisha is not far behind on the matter of child labour. In comparison to other states of India. Our state is less developed and mainly agriculture based economy. Hence, the present study which is based on secondary data reveals the causes and consequences of child labour in Odisha. The total population our state is around 4.195 cores out of which the rural population is around 3.5 core only 0.69 cores people live in urban areas. In our state, the child population in the age group of 0-6 male are around 27,14,258. This figure has taken from the census done during last decade i.e. from 2001 to 2011. It is the compulsion for the child to do in hazardous conditions because of poverty of their parents. It is a great social and economic issue as the small children are forced to work and being to abuse in workplaces. They have to work either in homes or in industries, hotels, etc. In India, the highest number of child labour are found in Uttar Pradesh, West Bengal has performed the worst in NCLP. A report on child labour reveals the fact that, during 2010-13, only 12,788 children were brought to main stream in West Bengal whereas 38,500 in Odisha and 38,000 children in M.P were brought to the mainstream.

Now many of the third world countries, the antisocial of child labour is known either as a painful reality or as an unavoidable essential. United inter-linkages of economies and societies through the world have resulted in fulfilment developing consent that child labour attitudes a serious hazard. While in turn continuing poverty and compromising with the objectives of reaching economic growth along with social justice (ILO, 2002). In point of fact both supply and demand factors are responsible for the existence of child labour is positively determined by the socio-economic status of parents. The world-wide distribution of child labour is similarly a reproduction of the country's economic position, the poorer the country the higher the prevalence of child labour. The problematic of child labour is more affecting in India, so that children in the poor families are sent to work to

addition the family income and subsequently the poor do not have resources to send them to schools. In fact the supply of child labour is not their individual but that of their parents' decision, though the child labour is widespread in Odisha.

## LITERATURE REVIEW

Nidhiya Menon (2015) observed the fact that how the minimum wage affects the status of a child labour in India. This study takes used the data from NSSO of India during the period from 1983 to 2008. The state level wages were taken into consideration to estimate the rate of employment. There is a relationship among the minimum wage and the level of child labour. However the minimum wage laws passed by the states helps the labour class to improve their economic standards. In rural areas the child labour gets less than the minimum wages especially for boys.

Mridul Maheshwari Manjari Singh W.P (2008) mentioned that child labour issue needs special attention of the decision makers to redress the problem for the formulation of an effective policies factors of child labour should be examined. In 35 states and union territories the author has examined these factors. In this study total population in urban and rural areas are examine and proved that the most important factors are education, fertility and participation. The economic variables differs from locality and to men to women.

Sujay Mitra (2003) focussed on the problem of child labour as multi-dimensional. It encompasses the difficult of child labour not only in industrial sectors but also in other non-industrial areas also. The author is very much apprehensive about the damage it youthful future of the child and deprivation from education. As a consequences of the bleak future of the children, the future of the society and the country will be like that. He predicts that, the poverty of the country will not be eradicated overnight, rather effective measures may be taken to overcome it.

Jyotirmayee kar (2002) studied the inter relationship between the concept Supply and demand. The participation of children in work is related to this supply and demand factors. Due to poverty and illiteracy, there is an escalation in supply of child labour. But demand for the child labour is only for unorganised sectors, which is less. The study suggests that, by improving the economic conditions of the poor families, the supply of child labour can be reduced. However, the possibilities for more employment can be fruitful for the curtailment of the child labour.

Basudeb Sahoo (1999) analysed a number of factors which are responsible for child labour. Agriculture, illiteracy, disintegrated family system,



social in securing etc. are the main causes of child labour. They are economically exploited, mentally disturbed and physically damaged. The Government as well as on the NGOs should work together to eradicate this social problem.

Neera Burra (1987) was conducted in a lock industry in Aligarh and found the child labour in most hazardous work. They were exploited by the employer by facing them to work for 12 to 14 hours. As they are working in industries so there is every possibility of loss of their fingers are hands during work. Hence, the

study reveals the result of appointment of children and the impact on health.

### **MAGNITUDE OF CHILD LABOUR IN INDIA**

As per the Census 2011, there are 1.26 cores economically active children in the age-group of 5 -14 years. The number was 1.07 cores in the 1971 census. The incidence of working children in the states as per the 1971 to 2001 census is given below in table-1.

**Table-1 State-wise Distribution of Working Children in the age group 5-14 years**

S.No.	Name of the State/UT	1971	1981	1991	2001	Percent
1	Andhra Pradesh	1627492	1951312	1661940	1363339	10.76
2	Assam	239349	--	327598	351416	2.77
3	Bihar	1059359	1101764	942245	1117500	8.82
4	Gujarat	518061	616913	523585	485530	3.83
5	Haryana	137826	194189	109691	253491	2.00
6	Himachal Pradesh	71384	99624	56438	107774	0.85
7	Jammu & Kashmir	70489	258437	--	175630	1.39
8	Karnataka	808719	1131530	976247	822615	6.49
9	Kerala	111801	92854	34800	26156	0.21
10	Madhya Pradesh	1112319	1698597	1352563	1065259	8.41
11	Maharashtra	988357	1557756	1068427	764075	6.03
12	Chhattisgarh	NA	NA	NA	364572	2.88
13	Manipur	16380	20217	16493	28836	0.23
14	Meghalaya	30440	44916	34633	53940	0.43
15	Jharkhand	NA	NA	NA	407200	3.21
16	Uttaranchal	NA	NA	NA	70183	0.55
17	Nagaland	13726	16235	16467	45874	0.36
18	Orissa	492477	702293	452394	377594	2.98
19	Punjab	232774	216939	142868	177268	1.39
20	Rajasthan	587389	819605	774199	1262570	9.97
21	Sikkim	15661	8561	5598	16457	0.13
22	Tamil Nadu	713305	975055	578889	418801	3.31
23	Tripura	17490	24204	16478	21756	0.17
24	Uttar Pradesh	1326726	1434675	1410086	1927997	15.22
25	West Bengal	511443	605263	711691	857087	6.77
26	Andaman & Nicobar	572	1309	1265	1960	0.02
27	Arunachal Pradesh	17925	17950	12395	18482	0.15
28	Chandigarh	1086	1986	1870	3779	0.03
29	Dadra & Nagar Haveli	3102	3615	4416	4274	0.03
30	Delhi	17120	25717	27351	41899	0.33



31	Daman and Diu	7391	9378	941	729	0.01
32	Goa	NA	NA	4656	4138	0.03
33	Lakshadweep	97	56	34	27	0.00
34	Mizoram	NA	6314	16411	26265	0.006
35	Pondicherry	3725	3606	2680	1904	0.02
	Total	10753985	13640870	11285349	12666377	100.00

Source- Census of India, Various Years

According to the table-11 the State with the maximum child labour population in the country is Uttar Pradesh, followed by Andhra Pradesh. Other states where child labour population is more than 1 million are Rajasthan, Bihar, Madhya Pradesh and West Bengal. While there has been a weakening in the incidence of child labour in few states like Andhra Pradesh, Maharashtra, Karnataka, Gujarat, Orissa and Tamil Nadu, there has been an increase in Bihar, Haryana, Rajasthan, and Uttar Pradesh & West Bengal. According to 2001 census there are 12.66 million child labour in India. But the number may be higher as children engaged in the domestic and agriculture sectors are not covered in the

Census India 2001. The total child labour in India in 1971 was 10.75 million, then it increases to 13.64 million in 1981, then there was a little decrease and it comes to 11.28 million in 1991 and again in 2001 it increases to 12.66 million. Out of 12.66 million children engaged in labour approximately 5.78 million were identified as main workers who worked more than six calendar months per year. The other 6.88 million were marginal workers. If we study the table in context of Odisha we find that the total child labour in Odisha in 1971 was 492477, then there was great increase in 1981 and it rises to 702293, then in 1991 it decreases to 452394 and again in 2001 it decreases to 377594.

**Table-2 Child Labour in Major Indian States, 2009-10 (Age group 5-14)**

States	Male	Female	All	% Share Of Child Labour
A.P.	108923	125739	234662	4.71
Assam	156488	32666	189154	3.80
Bihar	235309	41213	276522	5.55
Chhattisgarh	4305	7321	11626	0.23
Delhi	18576	0	18576	0.37
Gujrat	166432	224255	390687	7.84
Haryana	53737	21459	72196	1.45
H.P.	4456	2942	7398	0.15
J & K	12413	16872	29285	0.59
Jharkhand	67807	14661	82468	1.65
Karnataka	110589	115908	226497	4.54
Kerala	1182	1583	2765	0.06
M.P.	149142	41875	191017	3.83
Maharashtra	120600	140073	260673	5.23
Odisha	90912	43651	134563	2.70
Punjab	32466	16370	48836	0.98
Rajasthan	136239	269697	405936	8.14
Tamilnadu	3471	13880	17351	0.35
U.P.	18029	9342	27371	0.55
Uttarakhand	1160114	615219	1775333	35.62
West Bengal	389211	162373	551584	11.07
All India	30,57,998	19,25,873	49,83,871	100.00

Source- Census of India & NSSO( 66<sup>th</sup> Round)

According to NSSO (66th round of Survey) on child labour in major Indian states, 2009-10. Total

child labour in India between age group 5-14 was 49,83,871 where total number of males were 30,57,998



and total number of females were 19,25,873. The highest number of child labour were in Uttarakhand says 17, 75,333 and it also constitute the highest number of child labour percentage of 35.62 from the total percentage of child labour in India. Kerala had the lowest number of child labour says 2765 and 0.06% of the total. The highest male and female child labour found in Uttarakhand says 11, 60,114 and 17, 75,333 respectively. The lowest female child labour were in Kerala says 2765 only whereas nil t male child labour found in Delhi. In Odisha the total number of child labour was 13, 45, 63 constitute 2.70% of the total.

Where 90912 were males and 43651 was female child labour.

### CHILD LABOUR EMPLOYER ANALYSIS

The study is conducted in Khurdha district of Odisha where state capital Bhubaneswar is situated. The data are collected fro 200 child labourers in Bhubaneswar, 50 parents and 50 employers of child labourers. The views of child labour employer are collected which is presented about gender and marital status in table-3

**Table- 3 Gender and Marital Status of Employer**

Gender	frequency	Percent	Marital Status	frequency	Percent
Male Employer	47	94	Unmarried	16	32
Female employer	3	6	Married	34	68
Total	50	100	Total	50	100

Source- Field Data

It is found that 47 male employer (94%) and 3 female employer. There are 68 percent who are married.

**Table- 4 Education of Employer**

Education	Frequency	Percent
Primary	9	18
Secondary	11	22
Graduate	14	28
Others	06	12
ITI	04	8
Vocational	03	6
Automobiles	03	6
Total	50	100

Source- Field Data

The table-4 explains that the education of employer under study. 14 Employers have higher qualification as graduation which is 28% and 11 employers have secondary education which is 22%. It implies that 9 employer have primary education. It found that 04 employer (08%) have ITI education. It

clarified that 06 employers have others education found. The employer have other education joined 03 vocational from their qualification is 06%.

**Table- 5 Number of Workers below 14 years**

Number of Workers	Frequency	Percent
1-3	31	62
4-6	14	28
6-10	05	10
More than10	00	00
Total	50	100

Source- Field Data





Table-5 shows that out of 50 employer survey, it is observed that 62 percent employers have 1 to 3 child labourers in their occupation. It is an interesting

research among the child labour surveyors to know the channels of coming of child labour.

**Table- 6 Channel of Coming of child labour**

Channel	Frequency	Percent
Sent by Parents	19	38
Came on their own	20	40
Through Intermediaries/Middle men	11	22
Total	50	100

Source- Field Study

Table-6 reveals that 32 percent child labourers are sent by their parents, 40 percent come on their own and 22 percent child labourers came through

middlemen. Hence parents are the major source of supply of child labourers in the study area.

**Table- 7 Incentives to Child Labour**

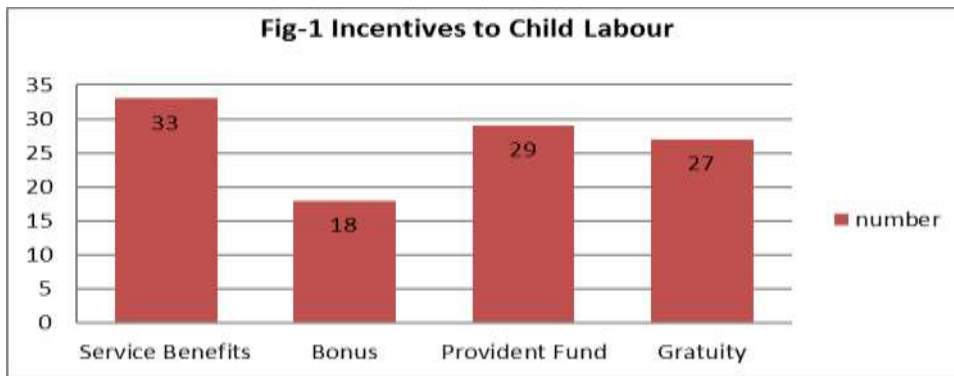
Incentive	Yes	No	Total	% of Yes
Service Benefits	33	17	50	66
Bonus	18	32	50	32
Provident Fund	29	21	50	58
Gratuity	27	23	50	54

Source- Field Study

The analysis of incentives are presented in table-7. There are 66 percent child labourers who receive

service benefits where as 32 percent receive bonus, 58 percent receive provident fund in organised sector.

**Fig-1 Incentives to Child Labour**



The bar diagram in Fig-1 shows incentives to child labour as per the information of employers.

**ANALYSIS OF VIEWS OF PARENTS OF CHILD LABOUR**

The attempt was made to collect data from 50 employers regarding child labourers.

**Table-8 Nature of Employment of Child Labour**

Employment	Frequency	Percent
Employed in own farm	13	26
Working at home for employer	11	22
Working under employer	9	18
Daily wager	10	20
Government Servant	4	8
None of the above	3	6
Total	50	100

Source- Field Study and Authors Computation 2018

It is observed that 20 percent child labour are employed as daily wager and 22 percent work at home of employers. 8 percent child labourer's work in Government servant's houses.

**REASONS OF CHILD LABOUR**

Causes of sending child labour has been an interesting study and field of research. The present study interviewed parents about reasons for sending children for work and views are analysed in table-9.

**Table- 9 Reasons for child labour (percentage)**

Cause	Frequency	Percent
Poverty	20	40
Low wages of Adults	7	14
Unemployment of Adults	2	4
Large size of the family	6	12
No importance given for education	4	8
Mastering skill	6	12
No information about special school	5	10
Total	50	100

Source- Field Study

The information collected from parents in study area shows in table-6.30 that 40 percent child labourers are working due to poverty. 12 percent child labourers are due to large family and 14 percent are due to low wages of adults.

**Table- 10 Opinion of parents on child labour**

Opinion	Yes	Percent	No	Percent	Total
Is your child willing to work and earn	15	30	35	70	50
Do you strongly advocate child labour	28	56	22	44	50
Are you aware of the constitutional obligation and the fundamental right to provide education to children	11	22	39	68	50
Are you aware of the Universal Compulsory primary education	19	38	31	62	50
Have you participated in the awareness programme of the N.G.O.s against child labour	17	34	33	66	50
Was any of the programme able to sensitise you in a positive manner	31	62	19	38	50



Have you admitted your child for formal/non formal/special school education	15	30	35	70	50
If admitted, whether the child continues the schooling	14	28	36	72	50
Do you compel the children to continue their education	22	44	28	56	50
Are you motivated to send your children to school	17	34	33	66	50
Are you aware that child labour is a crime	20	40	30	60	50
Are you aware that child labour will cause adult unemployment	21	42	29	58	50
Are you willing to send the child for schooling, if alternative income is assured	13	26	37	72	50
Are you willing to work if employment opportunity is provided?	17	34	33	66	50

Source- Field Study and Authors Computation

The opinion of parents on child labour in table-6.31 reveals that 15 out of 50 child labourers are willing to work and 28 parents strongly advocate in favour of child labour. There are 26 percent parents

told that they would like to send their children to school if opportunity is available. 40 percent parents revealed that they know that child labour is a crime.

**Table-11 Motivation to Parents to send children to school**

Motivation from	Frequency	Percentage
Political Leaders	6	12
Trade Unionists	7	14
School authorities	10	20
Voluntary Organisations	21	42
Others	6	12
Total	50	100

Source- Field Study and Authors Computation2018

There are 6 political leader, 7 trade unions, 10 school authorities, and 21 voluntary organisations motivated parents to send their children to school.

**Table-12 descriptive statistics of monthly income of Parents of Child labour**

Statistical Measure	Value
Mean	1997
S.D	828.53
Minimum	850
Maximum	4000
Range	3150
Skewness	.681
Kurtosis	-.310

Source- Computed by the Author using SPSS 2018

The table-12 shows that the average monthly income of parents of child labour is only Rs 1997/- which is extremely low. It implies that poverty is the

main cause of child labour. The maximum monthly income of parents is also Rs 4000/- only.



## **SUGGESTIONS AND RECOMMENDATIONS**

The following suggestions are forwarded for reducing menace of child labour in India as well as in the study area.

### **1) Laws**

Child labour laws are getting in that makes it illegal employed for work. They are not recognized to work beyond a certain maximum number of hours and paid a minimum wage when that time teenagers do begin to work. Such laws do not just provide a categorical statement that child labour involved various work. Many times children are join from combat situation so makes child labour in certain wages.

### **2) Reduce poverty**

Poverty is a vital reason for the existence of child labour. When a family lives in poverty, they may sending their children very frequently from work at an early age. When wages are very low even if everyone else in the family is working as well as additional child labour may be desired to support the whole family. This situation is aggravated if parents is absent, fallen ill and passed away.

### **3) Education**

All children have studies show time to time that provided free and good quality of education to reduce the incidence of child labour about the world. This is a particularly the schools provide that free meals, uniforms and necessary things so that poor families do not have to go without instruction to send their children to school. Education is broadens children's perspectives and shows them that they have so many more options in life than simply to labour at difficult, low paid jobs from childhood into old age.

### **4) Ethical consumerism**

Consumers can help to stop often unconsciously spending their money wisely support of child labour. By considering the companies or employer that you have buy goods from declining hand over your cash towards organise child labour. You can stop currency to sweatshops and other corrupt businesses that are taking away the childhoods of young people across the world.

### **5) Look after your employees**

If you run a company and you can ask questions how you pleasure your employees make sure to set off a good example for us. Do not just follow to the final authorised requirements for fair labour, but go beyond them, certifying that everyone who works for you are taken great care of employees.

### **6) Be alert and ready to act**

If you should have seen any examples of child labour are engaged different works happening do not be afraid to explosion them. Keep your eyes open and if you have spare time as well you could also train to work on a helpline, giving advice and support to children so you converse with a variety of problems including child labour.

### **7) Donate to charities**

Donate your money to charities that help children to escape the trap of child labour. Donate, too, to charities that work to end poverty and lack of education more generally because these are two factors that contribute especially heavily to conditions in which child labour can flourish.

## **CONCLUSION**

Childhood has been imposing as a most important period of life. They are the prospering flowers of the garden of a society and valuable asset of a nation. During this situation child are details shape of the life and take place the behavior of attitudes are developed by the family. The predominance of child labour has seen in all periods of time, it varies in nature and size of depending on the current socioeconomic structure of the society. Whenever Child labour is generally required by economic forces of the parents. Their life is measured by low education, poor living standards, unethical working and living conditions, uncertainty of jobs, low income, long hours of work etc. Some reasons of child labour facing in different health impacts are adult workers, large families, and lack of educational facilities, illiteracy and ignorance of parents about the importance of education. It is unfortunate to say that tragically most of the child life is lost due to child work that main reasons are given to rise extensive of income, poverty and unemployment. It is clear that from this study child labor has higher likelihood to create negative impacts on future life. Since child worker does not get opportunity to get better education, they cannot get better job chances in future life. Sometimes children are making work under hazardous conditions such as mining, auto repair, battery recharging, saw milling, welding, and rickshaw pulling, garments manufacturing and working with dangerous machinery. Child labour can be reduced than ensure the pragmatic educational program and vocational training to make them skilled, then the negative effects significantly. The Government may provide awareness programmer, family planning, and income generating activity in the area and control the high population growth which will curtail the child labor.



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**1. Introduction**

Appell's Hypergeometric Function  $F_1(x, y), F_2(x, y), F_3(x, y), F_4(x, y)$  are defined as (see [7]):

$$F_1[a; b, c; d; x, y] = \sum_{m=0}^{\infty} \sum_{n=0}^{\infty} \frac{(a)_{m+n} (b)_m (c)_n x^m y^n}{(d)_{m+n} m! n!}, \quad \max\{|x|, |y|\} < 1 \tag{1.1}$$

$$F_2[a; b, c; d, e; x, y] = \sum_{m=0}^{\infty} \sum_{n=0}^{\infty} \frac{(a)_{m+n} (b)_m (c)_n x^m y^n}{(d)_m (e)_n m! n!}, \quad |x| + |y| < 1 \tag{1.2}$$

$$F_3[a, b; c, d; e; x, y] = \sum_{m=0}^{\infty} \sum_{n=0}^{\infty} \frac{(a)_m (b)_n (c)_m (d)_n x^m y^n}{(e)_{m+n} m! n!}, \quad \max\{|x|, |y|\} < 1 \tag{1.3}$$

$$F_4[a, b; c, d; x, y] = \sum_{m=0}^{\infty} \sum_{n=0}^{\infty} \frac{(a)_{m+n} (b)_{m+n} x^m y^n}{(c)_m (d)_n m! n!}, \quad \sqrt{|x|} + \sqrt{|y|} < 1 \tag{1.4}$$

A generalized hypergeometric function  ${}_pF_q(a_1, \dots, a_p; b_1, \dots, b_q; z)$  is a function which can be defined in the form of a hypergeometric series, i.e., a series for which the ratio of successive terms can be written

$$\frac{c_{k+1}}{c_k} = \frac{P(k)}{Q(k)} = \frac{(k + a_1)(k + a_2) \dots (k + a_p)}{(k + b_1)(k + b_2) \dots (k + b_q)(k + 1)} z. \tag{1.5}$$

Where  $k + 1$  in the denominator is present for historical reasons of notation [Koepl p.12(2.9)], and the resulting generalized hypergeometric function is written

$${}_pF_q \left[ \begin{matrix} a_1, a_2, \dots, a_p & ; \\ b_1, b_2, \dots, b_q & ; \end{matrix} \middle| z \right] = \sum_{k=0}^{\infty} \frac{(a_1)_k (a_2)_k \dots (a_p)_k z^k}{(b_1)_k (b_2)_k \dots (b_q)_k k!} \tag{1.6}$$

where the parameters  $b_1, b_2, \dots, b_q$  are positive integers.

The  ${}_pF_q$  series converges for all finite  $z$  if  $p \leq q$ , converges for  $|z| < 1$  if  $p = q + 1$ , diverges for all  $z, z \neq 0$  if  $p > q + 1$  [Luke p.156(3)].



The function  ${}_2F_1(a, b; c; z)$  corresponding to  $p = 2, q = 1$ , is the first hypergeometric function to be studied (and, in general, arises the most frequently in physical problems), and so is frequently known as "the" hypergeometric equation or, more explicitly, Gauss's hypergeometric function [Gauss p.123-162]. To confuse matters even more, the term "hypergeometric function" is less commonly used to mean closed form, and "hypergeometric series" is sometimes used to mean hypergeometric function.

The hypergeometric functions are solutions of Gaussian hypergeometric linear differential equation of second order

$$z(1-z)y'' + [c - (\alpha + b + 1)z]y' - aby = 0 \tag{1.7}$$

The solution of this equation is

$$y = A_0 \left[ 1 + \frac{ab}{1!c}z + \frac{a(a+1)b(b+1)}{2!c(c+1)}z^2 + \dots \right] \tag{1.8}$$

This is the so-called regular solution, denoted

$${}_2F_1(a, b; c; z) = \left[ 1 + \frac{ab}{1!c}z + \frac{a(a+1)b(b+1)}{2!c(c+1)}z^2 + \dots \right] = \sum_{k=0}^{\infty} \frac{(a)_k (b)_k z^k}{(c)_k k!} \tag{1.9}$$

which converges if  $c$  is not a negative integer for all  $|z| < 1$  and on the unit circle  $|z| = 1$  if  $R(c - a - b) > 0$ .

It is known as Gauss hypergeometric function in terms of Pochhammer symbol  $(a)_k$  or generalized factorial function.

Kummer's function of the first kind  $M$  is a generalized hypergeometric series introduced in (Kummer 1837), given by:

$$M(a, b, z) = \sum_{n=0}^{\infty} \frac{(a)_n z^n}{(b)_n n!} = {}_1F_1(a; b; z) \tag{1.10}$$

The Jacobi polynomials are defined as follows:<sup>[1]</sup>

$$P_n^{(\alpha, \beta)}(z) = \frac{(a+1)_n}{n!} {}_2F_1\left(-n, 1 + \alpha + \beta + n; \alpha + 1; \frac{1}{2}(1-z)\right) \tag{1.11}$$

**Pochhammer symbol:**

In mathematics, the falling factorial or Pochhammer symbol (sometimes called the descending factorial, falling sequential product, or lower factorial) is defined as the polynomial [Steffensen p. 8]

$$(x)_n = x(x-1)(x-2)\dots(x-n+1) = \prod_{k=1}^n (x-k+1) = \prod_{k=0}^{n-1} (x-k) \tag{1.12}$$

**2. Main Generalized Formula**

$${}_2F_1\left[\begin{matrix} a, -n-\alpha; \\ c \end{matrix}; \frac{1}{2}\right] = \sum_{k=0}^{\infty} \left[ \frac{\{2^{-c-k-n} \Gamma(c) \Gamma(-c-n) (-a+c)_k (a+c+n)_k\}}{k! \Gamma(a) \Gamma(-a-n) (1+c+n)_k} + \frac{\{2^{-k} \Gamma(c) \Gamma(c+n) (a)_k (-a-n)_k\}}{k! \Gamma(-a+c) \Gamma(a+c+n) (1-c-n)_k} \right] \tag{2.1}$$

for  $c+n \notin \mathbb{Z}$





**3. Integral Representation of Main Generalized Formula**

$${}_2F_1 \left[ \begin{matrix} a, -n-a; \\ c \end{matrix}; \frac{1}{2} \right] = \frac{1}{\Gamma(-a-n)} \int_0^\infty e^{-t} t^{-1-a-n} {}_1F_1 \left[ a; c; \frac{t}{2} \right] dt \text{ for } \operatorname{Re}(a+n) < 0. \quad (3.1)$$

$$= \frac{\Gamma(c)}{\Gamma(a+c+n)\Gamma(-a-n)} \int_0^1 (1-t)^{-1+a+c+n} \left(1 - \frac{t}{2}\right)^{-n} t^{-1-a-n} dt \text{ for } \operatorname{Re}(c) > -\operatorname{Re}(a+n) > 0. \quad (3.2)$$

$$= \frac{\Gamma(c)}{\Gamma(a+c+n)\Gamma(-a-n)} \int_0^\infty (1+t)^{a-c} \left(t + \frac{1}{2}\right)^{-n} t^{-1+a+c+n} dt \text{ for } \operatorname{Re}(c) > -\operatorname{Re}(a+n) > 0. \quad (3.3)$$

$$= -\frac{i \Gamma(c)}{2\pi \Gamma(a) \Gamma(-a+c) \Gamma(a+c+n) \Gamma(-a-n)} \int_{-\infty+i\gamma}^{\infty+i\gamma} 2^s \Gamma(a-s) \Gamma(-a-n-s) \Gamma(s) \Gamma(c+n+s) ds$$

for  $\max(\theta, -\operatorname{Re}(c+n)) < \gamma < \min(\operatorname{Re}(a), -\operatorname{Re}(a+n))$

(3.4)

**4. Special cases of the formula**

If  $a = c = 0$ , then

$${}_2F_1 \left[ \begin{matrix} 0, -n; \\ 0 \end{matrix}; \frac{1}{2} \right] = \left( \frac{\Gamma(0) \Gamma(1) P_0^{(-1, -n)}(0)}{\Gamma(0)} = \Gamma(1) P_0^{(-1, -n)}(0) \right), \quad (4.1)$$

$$= \sum_{k=0}^{\infty} \frac{{}_2F_1(k, k-n; k; z_0) (-n)_k \left(\frac{1}{2} - z_0\right)^k}{k!} \text{ for } (\text{not } \{z_0 \in \mathbb{R} \text{ and } 1 \leq z_0 \leq \infty\}) \quad (4.2)$$

$$= \frac{1}{\Gamma(-n)} \int_0^\infty e^{-t} t^{-1-n} {}_1F_1 \left( 0; 0; \frac{t}{2} \right) dt \text{ for } \operatorname{Re}(n) < 0 \quad (4.3)$$

If  $a = c = 1$ , then

$${}_2F_1 \left[ \begin{matrix} 1, -n-1; \\ 1 \end{matrix}; \frac{1}{2} \right] = \Gamma(1) P_{-1}^{(0, -1-n)}(0) \quad (4.4)$$

$$= \sum_{k=0}^{\infty} \frac{{}_2F_1(1+k, -1+k-n; 1+k; z_0) (-1-n)_k \left(\frac{1}{2} - z_0\right)^k}{k!} \text{ for } (\text{not } \{z_0 \in \mathbb{R} \text{ and } 1 \leq z_0 \leq \infty\}) \quad (4.5)$$

$$= \frac{\sum_{j=0}^{\infty} \operatorname{Res}_{s=-j} \left(-\frac{1}{2}\right)^{-s} \Gamma(-1-n-s) \Gamma(s)}{\Gamma(-1-n)} \quad (4.6)$$

$$= -\frac{2}{\Gamma(2+n) \Gamma(-1-n)} \int_0^1 \frac{(1-t)^{1+n} t^{-2-n}}{-2+t} dt \text{ for } -2 < \operatorname{Re}(n) < -1 \quad (4.7)$$

$$= \frac{1}{\Gamma(2+n) \Gamma(-1-n)} \int_0^\infty \frac{t^{1+n}}{\frac{1}{2}+t} dt \text{ for } -2 < \operatorname{Re}(n) < -1 \quad (4.8)$$

$$= \frac{1}{\Gamma(-1-n)} \int_0^\infty e^{-t} t^{-2-n} {}_1F_1 \left( 1; 1; \frac{t}{2} \right) dt \text{ for } 1 + \operatorname{Re}(n) < 0 \quad (4.9)$$

If  $a = c = 2$ , then

$${}_2F_1 \left[ \begin{matrix} 2, -n-2; \\ 2 \end{matrix}; \frac{1}{2} \right] = \left( \frac{\Gamma(-1) \Gamma(2) P_{-2}^{(1, -2-n)}(0)}{\Gamma(0)} \right), \quad (4.10)$$

$$= \sum_{k=0}^{\infty} \frac{{}_2F_1(2+k, -2+k-n; 2+k; z_0) (-2-n)_k \left(\frac{1}{2} - z_0\right)^k}{k!} \text{ for } (\text{not } \{z_0 \in \mathbb{R} \text{ and } 1 \leq z_0 \leq \infty\}) \quad (4.11)$$



$$= \frac{\sum_{j=0}^{\infty} \text{Res}_{s=-j} (-\frac{1}{2})^{-s} \Gamma(-2-n-s) \Gamma(s)}{\Gamma(-2-n)} \quad (4.12)$$

$$= \frac{4}{\Gamma(4+n) \Gamma(-2-n)} \int_0^1 \frac{(1-t)^{3+n} t^{-3-n}}{(-2+t)^2} dt \quad \text{for } -4 < \text{Re}(n) < -2 \quad (4.13)$$

$$= \frac{1}{\Gamma(4+n) \Gamma(-2-n)} \int_0^{\infty} \frac{t^{3+n}}{(\frac{1}{2}+t)^2} dt \quad \text{for } -4 < \text{Re}(n) < -2 \quad (4.14)$$

$$= \frac{1}{\Gamma(-2-n)} \int_0^{\infty} e^{-t} t^{-3-n} {}_1F_1\left(2; 2; \frac{t}{2}\right) dt \quad \text{for } 2 + \text{Re}(n) < 0 \quad (4.15)$$

If  $a = c = n$ , then

$${}_2F_1\left[\begin{matrix} n, -2n \\ n \end{matrix}; \frac{1}{2}\right] = \left(\frac{\Gamma(1-n) \Gamma(n) P_{-n}^{(-1+n, -2n)}(0)}{\Gamma(0)}\right) \quad (4.16)$$

$$= \sum_{k=0}^{\infty} \frac{{}_2F_1(k+n, k-2n; k+n; z_0)(0)_k (\frac{1}{2} - z_0)^k}{k!} \quad \text{for } (\text{not}(z_0 \in \mathbb{R} \text{ and } 1 \leq z_0 \leq \infty)) \quad (4.17)$$

$$= \frac{1}{\Gamma(-2n)} \int_0^{\infty} e^{-t} t^{-1-2n} {}_1F_1\left(n; n; \frac{t}{2}\right) dt \quad \text{for } \text{Re}(n) < 0 \quad (4.18)$$

### 5. Derivation of the formulae

Applying computational Technique the formulae can be established.

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## **SOCIO-CULTURAL CONTEXT OF DISTANCE LEARNING FOREIGN LANGUAGES**

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### **ANNOTATION**

*The article discusses issues that reflect the peculiarities of the selection of the content of teaching foreign languages for a distance course, taking into account the specifics of the subject "Foreign language", as well as the features of the organization of the educational process in the distance form. The article identifies a problem of a pedagogical nature: the lack of a clear understanding of what didactic, psychological and pedagogical tasks can be solved using modern information and communication technologies and digital devices in the educational process. Internet resources and technologies are considered as one of the possibilities for increasing the volume of speech communication in a foreign language in full-time and distance learning, and a blog is considered as a platform for organizing distance learning.*

**KEY WORDS:** *distance learning, e-learning, specificity, foreign language, Internet resource.*

### **DISCUSSION**

At the heart of modern paradigms of education are scientific theoretical concepts, reflecting the basic features of reality. These include personalized education, individualization and differentiation of educational activities, the formation of motivation of the teachings, self-development of the trainees, etc. These conceptual ideas of education are successfully implemented in the modern information and education environment, which provides the organization of the educational process through information and communication technologies both in person and remotely. Modern paradigms of teaching foreign languages reflect the main features of the modern education system. Consider distance learning as one of the topical areas of modernization of education, as well as the peculiarities of distance learning of foreign languages. The role of foreign language as a means of intercultural communication is increasing markedly in the current conditions of socio-economic and political development of Uzbekistan. Computer technologies, Internet resources, digital devices, distance learning are increasingly used in the education system.

However haphazardness, unregulated use of modern information technologies in the educational process reveals the problem of pedagogical nature: the lack of teachers a clear understanding of what didactic, psychological and educational problems can be solved with the help of new technologies. The process of introducing distance learning into the education system in different countries has its own peculiarities. This depends on the country's public policy: either distance learning is recognized as a form of education along with other forms of education, or remote educational technologies are used in the education system as a means of learning. Let's clarify the concepts of distance learning, e-learning and remote educational technologies. Distance learning is both a form and a component of the entire education system. "Remote learning is a form of learning in which the interaction of teachers and students between each other is at a distance and reflects all the inherent components (goals, content, methods, organizational forms, learning tools) implemented by specific Means of Internet Technologies or other means of interactivity." Should self-education be seen as distance learning, since without the resources of the Internet and distance



courses, self-education is hardly possible today? Yet in this case, this type of education is seen only as a form of education, and not as an independent form of education in the general education system. The new law refers to remote educational technologies and e-learning: - Remote educational technologies are understood to be educational technologies, implemented mainly with the use of information and telecommunications networks in an indirect (at a distance) interaction between students and educators.

Electronic training refers to the organization of educational activities using the information contained in databases and the information used in the implementation of educational programs and providing for its processing of information technologies, technical means, as well as information and communication networks, providing communication of the information, interaction of students and educators. There is 1. Integration of face-to-face and distance learning. 2. Networking: Autonomous distance learning; Information and education environment (virtual school, department, university). 3. Networking and case technology. 4. Video conferencing, interactive television. The choice of model depends on the goals of the training and on the conditions under which it is possible to provide training in a remote form.

In the second half of the twentieth century in the work "General methodology of teaching foreign languages in secondary school" was first identified a special group of subjects, the task of which is to develop skills related to communication. These subjects include languages: native and foreign. Another feature of the subject "Foreign language" can be considered non-objective, understood as the ability to communicate on any topic that matches the age and interests of students. This term was proposed by I.A.Zimnyaya, later it was clarified from the standpoint of selecting topics for communication in a foreign language. A language is a carrier of information (information about the history, culture of the country of the target language, information from other areas of knowledge, etc.). The goal of teaching a foreign language is the formation of communicative skills (communicative competence), and not the study of a certain range of ideas and concepts. The exception is linguistic concepts and knowledge about the language system, which are necessary for the functioning of the language as a means of communication.

Thus, a foreign language acts both as a goal and as a means of learning. The essential difference between the subject "Foreign language" and the subject "Native language" is the density of communication (the volume of speech practice). The spheres of

communication in the native language are extensive, and communication in a foreign language is limited by the scope of the lessons (the number of hours per week). The authors of the methodology of teaching foreign languages as the specificity of the subject "Foreign language" also highlight the volume of educational activities necessary for successful communication in a foreign language. Obviously, the high density of communication, maintained over a long period of time, also provides a large volume of communication. These features are interrelated. The specificity of the subject "Foreign language" correlates with the specificity of distance learning, the main features of which are network (remote) interaction of all participants in the educational process and a relatively large volume of independent work carried out in the "Just in time" mode, interactivity, selection and structuring of educational material (authentic texts), pedagogical technologies, etc. Working with information based on reading texts and watching videos in a foreign language allows you to use Internet resources, expanding the content of the textbook with authentic and relevant information (recent events in the world (sports, cultural, political, etc.) texts of native speakers (speeches of politicians at conferences, seminars, information from leading TV programs, films, videos, electronic libraries, etc.).

Up-to-date information helps to increase the motivation to learn a foreign language. In this case, the potential number of individual educational trajectories turns out to be significantly larger than in traditional education. However, at present, far from any text from Internet resources can be used in the educational process, since not all texts are suitable directly for educational purposes. It is possible to increase the volume of verbal communication or the density of communication in a foreign language both orally and in writing by means of Internet technologies (blog, forum, chat, Skype, etc.), multimedia means within the framework of the integration of full-time and distance learning; within the framework of a single information educational environment for general and additional education, as well as in specialized training (elective course, network model of distance learning). Blogging is now widely used in education. A blog (blog) is a tool for publishing materials on the web with the ability to read them, as well as a platform for distance learning. There are many servers for creating blogs, for example [www.blogger.com](http://www.blogger.com): <http://www.ning.com>. With the help of a blog, you can solve didactic tasks such as teaching various types of reading, writing, speaking and writing. One of the requirements for the content of a modern foreign language textbook is the presence of



tasks related to project activities. On the one hand, such tasks contribute to the development of creative, research activities, on the other hand, the formation of information and communication competence of schoolchildren, since in the course of project research, as a rule, educational resources of the Internet are involved, which, in turn, require the ability to work with information.

Communication with native speakers plays an essential role in the acquisition of a foreign language by schoolchildren and students. It is participation in international educational projects that makes it possible to implement communication in a foreign language with peers of foreign countries, native speakers. Sites of international projects: European School Network (<http://www.eun.org>), I \* EARN (<http://iearn.org>), KIDLINK ([www.kidlink.org](http://www.kidlink.org)), etc. Using the capabilities of the site for voice communication, the teacher can organize students for voice communication on educational topics on-line within a distance course, thereby increasing the volume of speech communication in a foreign language. Communication of people in the modern information world is carried out using digital devices of various types (mobile phones, smartphones, iPhones, tablet computers, etc.). It is also possible to increase the density of speech practice in a foreign language due to mobile learning, which is currently developing in the form of the BYOD concept - bring your own device and "Just in time" technologies.

Experience of distance learning in foreign languages: Possible areas of application of distance learning in foreign languages in educational institutions: profile training (elective courses); integration of formal and non-formal education; professional development of teachers / trainers. Prospects for the development of distance learning in foreign languages Working with information in the future will allow using the means of automatic preparation of texts received directly from the Internet for their use in the educational process. The volume of educational activities will grow due to the use of the currently developing automated systems of intelligent dialogue, working with both text and multimedia.

The density of communication in the future may increase even more as a result of the use of augmented reality technologies (a computer device in the form of glasses that reproduce the outside world along with information about its objects, this technology develops modern QR code technology to a new level).

## MAIN CONCLUSIONS

1. Distance learning is a motivating factor in the study of foreign languages, contributes to the achievement of personal, meta-subject, subject learning outcomes and, ultimately, the achievement of the goal of teaching foreign languages: the formation of foreign language communicative competence.
2. Distance learning contributes to the implementation of modern educational paradigms such as individualization and differentiation of educational activities, self-education and self-development of students.
3. The introduction of information and communication technologies in teaching foreign languages reveals a pedagogical problem. Pedagogical science is faced with the task of methodological mastering of existing modern teaching aids, the study of new technical means that are promising in teaching a foreign language.

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## MODERN PROBLEMS OF TEACHING TRANSLATION AND TRAINING TRANSLATORS

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### ABSTRACT

*Nowadays the role of interpreting is increasing by development of technologies, diplomatic attitude towards between different countries. In this progressive period there should be noted that educating and preparation of professional translators is most necessary more important than ever. The problems –solutions, concepts and the ways of preparation of young, professional translators are given to the following article. In the article is considered following sequence as research of consecutive translation problems and note taking of translation. In the following research is analyzed works of native, Russian and foreign translators dedicated to consecutive translation and particularly works which comprises note taking of translation in consecutive interpretation. There have been studied methods and techniques used note taking in translation*

**KEY WORDS:** *translation, market relations, language, knowledge, acquisition, the methodology of teaching translation, fiction, traditional model, problematics of teaching universal translation skills, cultural barrier background knowledge, inter language and intercultural communication*

### DISCUSSION

A well-known translator and translation scientist I.S.Alekseeva notes that traditionally, in our region, translators of fiction have long been considered translators. Domestic translation experts focused their attention on literary text as one that deserves priority attention [Alekseeva 2008].

As a result, due to the lack of scientific substantiation, effective technologies and methods for training translators, the theory and practice of training interpreters was not designed for the mass consumer and did not receive proper development.

In recent decades, in the era of new market relations, the need for translators has been acutely felt. The training of translation personnel is massive.

The level of professional training sometimes does not correspond to the principles and objectives of teaching translation. Director of the All-Russian Translation Center Ubin notes that if we compare the training of a translator in European countries, the United States, a number of Latin American countries, where a person with a translator's diploma or who has undergone a rigorous professional certification procedure can engage in translation, then in the regions of Russia and Central Asia a person can translate with higher and sometimes incomplete

higher education, not necessarily translation [Ubin 2007]. Often, the requirements for a professional translator come down to only banal knowledge of the original language and native language.

Even V.N Komissarov, speaking about the formula for the qualification of a translator "In order to translate, knowledge of two languages and the subject of speech is necessary", explained its inconsistency, emphasizing that the factors indicated in this formula "by themselves do not provide the ability to translate professionally, which is necessary not just know two languages, but know them "in translation", ie. in combination with the rules and conditions of translation from units of one language to units of another" [V.N. Komissarov 2003].

In the conditions of mass training in translation, there is an insufficient knowledge of students not only in foreign, but also in their native language, and in translation classes it is necessary to "clean up" the actual language knowledge and correct the native language.

Many professionals in the field of translation compare the mass training of translators with a "conveyor belt" [Ermolovich 2006], thereby explaining the decline in the level of training of future specialists and the emergence of mediocre



translators on the labor market - "people with very ordinary knowledge of the original language ..., with poor imagination, poor native language, without erudition and with a dubious sense of responsibility".

Thus, the translation activity is undergoing a number of quantitative and qualitative changes, requiring a thorough study of all factors that give rise to the corresponding problems and affect the course and results of training qualified translators.

In this regard, we highlight the following main factors that impede the systematic educational process.

1. Despite the fact that in recent years the number of scientific studies, dissertations on the problem of training translators has significantly increased and textbooks, teaching aids for translation, undoubtedly of theoretical and practical value, have appeared, nevertheless, there is a clear lack of training materials for the translation course ... Member of the Board of the Union of Translators of Russia P.S. Brook notes that "college education as a linguist-translator remains strongly influenced by traditional education in the mid-twentieth century, and far from its best aspects.

The training of future translators is still based mainly on working with literary texts, the theory of translation is illustrated with examples from fiction, in the total amount of study time, the priority of theoretical disciplines remains at the expense of translation practice and the acquisition of professional production skills by students" [P.S. Brook 2006]. This point of view is shared by E.R. Porshneva, stressing that "the system of mass training of translators is built according to the traditional model, which was developed for training a limited number of specialists in a closed society without taking into account the prospects for the development of the profession."

This point of view is shared by E.R. Porshneva, stressing that "the system of mass training of translators is built according to the traditional model, which was developed for training a limited number of specialists in a closed society without taking into account the prospects for the development of the profession." There is "the absence of a specific methodological, professionally oriented approach to teaching native and foreign languages, excessive theorization, and a lag in introducing future translators to the latest technologies" [E.R. Porshneva 2008].

It should be noted that there is no consensus among professional translators and translation teachers about what should be a teaching manual for translation. There are still disputes about the structure of the manual, the selection of texts, the availability of theoretical (in the form of recommendations for a

future translator or translation comments) and practical (in the form of a well-thought-out system of exercises) components, the types of translation and language exercises themselves, as well as the technical equipment of the educational process.

2. In addition to the insufficient number of teaching aids on translation, there is still an urgent need for a methodology for teaching translation and related programs. One of the founders of the Russian school of translation studies and teaching translation L.K. Latyshev admits that "the methodology of teaching translation is a very little developed area of pedagogical science. The very problematics of teaching universal translation skills, necessary in all types of translation - oral, written, sequential and synchronous, is practically unclear" [L.K. Latyshev 2008].

A. A. Zaichenko's research also testifies to insufficient scientific and educational-methodological support of the process of teaching translation. He considers it necessary to unify the requirements for the content and ultimate goals of training, the forms of final control and the duration of training [A.A. Zaichenko 2006]. N.N. Gavrilenko recognizes the obvious fact that "the absence of a methodological system for teaching translation ... leads to a decrease in the level of professional training of translators" [N.N. Gavrilenko 2008]. In this case, we are of the opinion that it is advisable to carry out methodological work on the creation of an educational and methodological manual for translation in accordance with the requirements of a particular educational institution and its focus.

3. An important factor influencing the course of teaching translation is the different level of training of students. Also, psychological difficulties that students experience are not always taken into account for a number of reasons, namely: a feeling of fear, self-doubt, anxiety, resentment. Moreover, in practice, we often have to face such a problem as false motivation of students. Unfortunately, a mistake in choosing a profession is not an isolated case.

4. The question of what kind of teaching staff provides training for translators remains relevant. There are teachers, at best, qualified teachers of a foreign language who are not familiar with translation activities as such. P.S. Brook sees the reason for the problem in the fact that "translation departments do not have a sufficient number of qualified teaching staff to train translators in accordance with the new, changed conditions, with the needs of the real economy.

The lack of modern teaching aids - computer classes, modern classrooms for teaching interpretation - has not been eliminated. Unfortunately, when such classrooms appear, a



significant part of teachers are not professionally ready to work in them, they cannot rebuild training courses that have been developed over the years, where the main technical means are a blackboard, chalk and a tape recorder" [P.S.Bruk 2006]. The fact that the professionalism of a teacher implies an understanding of the structure of his professional activity, which is designed to ensure the graduate's readiness for professional activity and his professional growth, is not realized.

The concept of modernization of education provides for the optimization of teaching methods to achieve a new quality of vocational education. At the same time, the main goal of vocational education is "training a qualified employee of the appropriate level and profile, competitive in the labor market, competent, responsible, fluent in his profession and oriented in related fields of activity, capable of effective work in his specialty at the level of world standards, ready for permanent professional growth, social and professional mobility; satisfaction of the needs of the individual in obtaining an appropriate education" [Deiser-Bolinger U. 1991].

In this regard, it seems obvious that there is a serious scientific rethinking of the advanced domestic and foreign experience in training translators in modern market conditions, when new scientific, innovative approaches and pedagogical technologies are taken as a basis.

The terms "competence" and "competence" are interpreted differently. For example, N.N. Gavrilenko correlates the concept of "competence" with the resources necessary for a professional to act, and "competence" - with the ability to select, combine and mobilize "competencies", the resources that are at his disposal [N.N.Gavrilenko 2008]. In turn, I.A. Zimnyaya believes that the terms "competence" and "competence" are often used in identical meanings and are "synonymous" [I.A.Zimnyaya 2006].

Indeed, in the "Dictionary of the Russian language" S.I. Ozhegov, the following meanings of these terms are given: "competence is a range of issues in which someone is well aware", "competence is knowledge, awareness in a certain area" [S.I.Ojogov 2012]. However, E.V. Alikina, based on her own research, notes that "the basis for the formation and development of competence is competence, which acts as awareness, the degree of acquaintance, knowledge, experience in any activity, a personality trait" [E.V.Alikina 2010].

By competence, we mean the characteristics of a student that determines the success of a certain activity and is based on his knowledge, skills, abilities and motivation. Later, already in the course

of professional activity, competence can be transformed into competence.

For the successful performance of his work, a translator must have professional competence, namely, translation. A lot of works are devoted to the issues of translation competence, and there are several definitions of translation competence (hereinafter PC). So, in particular, L.K. Latyshev considers the PC as "a set of knowledge, skills and abilities that allow the translator to successfully solve their professional tasks" [L.K. Latishev 2008].

N.N. Gavrilenko, in turn, interprets PC as a person's ability to transmit (both in writing and orally) information from one language to another, taking into account the difference between two texts, communicative situations and two cultures [N.N.Gavrilenko 2008]. But the most complete and, in our opinion, the most comprehensive definition of translation competence is given by A.D. Schweitzer:

"Translation competence is a complex and multidimensional category that includes all those qualification characteristics that allow the translator to carry out the act of interlanguage and intercultural communication; special "translational" proficiency in two languages (at least receptive proficiency in the source language and reproductive proficiency in the target language), in which languages are projected onto each other; the ability to "translate" the interpretation of the source text (ie, to see it through the eyes of a speaker of another language and another culture); knowledge of translation technologies (ie, a set of procedures to ensure adequate reproduction of the original, including modifications necessary to successfully overcome the "cultural barrier"); knowledge of the norms of the target language; knowledge of translation norms that determine the choice of translation strategy; knowledge of the norms of a given style and genre of text; a certain minimum of "background knowledge" required for an adequate interpretation of the source text, and in particular what is called "knowledge of the subject", which is necessary for successful translation within the framework of the translator's specialization" [A.D.Shveitsar 2009].

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# THE CONTRIBUTION OF GOVERNMENT SPONSORED HEALTH INSURANCE SCHEMES TOWARDS INDIAN HEALTH SECTOR

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## ABSTRACT

*Today, there are thirty four general insurance companies including the Export Credit Guarantee Corporation of India Ltd (ECGC) and Agriculture Insurance Corporation (AIC) of India and 24 life insurance companies operating in the country. Barring the AIC and ECGC, all other 32 insurers transact health insurance business, of whom six are stand-alone health insurers. Although there are number of insurers and different types of health insurance products available in the market, three-fourth health-insured Indians still gets covered only by a government-sponsored health insurance scheme (GSHIS) like PMJAY. Of all the health insurance premiums underwritten in the year 2019-20, 10 per cent came only from the GSHIS. In terms of number of persons covered, 73 per cent health-insured people are governed by one or other GSHIS. Looking at the profitability of the health insurer also, the incurred claims ratio is just 97.22 per cent in GSHISs. Thus, the health insurance premium, penetration and profitability—all of these are significantly sponsored and subsidized by the government through GSHIS, incorporating the public-private partnership (PPP) mode. This article details the role of GSHIS in the health insurance segment, taking the performances of the Indian health insurance sector in the year 2019-20.*

**KEYWORDS:** *Government sponsored health insurance schemes, health insurance, health premium, incurred claims ratio, insurance, insurance regulatory and development authority, standalone health insurers.*

**JEL Classifications: I13, I18**

## The contribution of Government Sponsored Health Insurance Schemes towards Indian Health Sector

According to the sigma research publication on world insurance by the Swiss Re Institute, insurance markets were on a solid growth path before the COVID-19 pandemic, with total global direct premium written increased near three per cent in 2019 from the year before. In India also, on the one hand, Life insurance industry recorded a premium income of Rs.5.73 lakh crore during 2019-20 as against Rs.5.08

lakh crore in the previous financial year, registering growth of 12.75 per cent. On the other hand in the General Insurance sphere also, out of 28 private insurers operating in India, 24 insurers reported an increase in premium underwritten in the year 2019-20 as compared to the previous year.

During the year 2019-20, General and Health Insurance companies collected a Rs.50,758 crore as Health Insurance premium (excluding Personal Accident and Travel Insurance premium) registering a growth of 13 per cent over the previous year. The four



public sector general insurers continued to hold a larger market share with 49 per cent during the year 2019-20. However, there was a reduction in the market share of public sector insurers from 52 per cent in 2018-19.

The health insurance segment has witnessed a spectacular growth during the last decade which is substantially higher than the Compounded Annual Growth Rate (CAGR) of non-health non-life segment growth. But the contribution of Government Sponsored Health Insurance Schemes (GSHISs) through the Public Private Partnership (PPP) to this growth is to be realized and recognized at this juncture.

Of all the health insurance premiums underwritten in the year 2019-20, 9.69% came only from the GSHIS. In terms of number of persons covered, 73% health insured people are governed by one or other the GSHIS. Looking at the profitability of the health insurer also, the incurred claims ratio is just 97.22% in GSHISs. Thus the health insurance premium, penetration and profitability- all these are significantly sponsored and subsidised by the Government through GSHIS, incorporating the PPP mode. This paper deals with the role of GSHIS in the Health insurance segment in detail, taking the performances of the Indian health insurance sector in the year 2019-20.

Till the end of the last decade, health insurance was generally meant for rich and even to them mainly as a mode of evading income tax. The entry of private sector, meticulously guided by the IRDA and the introduction of GSHISs changed the whole scenario. In an environment challenged by low public financing for health, entrenched accountability issues in the public delivery system, and the persistent predominance of out-of-pocket spending, particularly by the poor, GSHISs have introduced a new set of arrangements to govern, allocate, and manage the use of public resources for health, including an explicit package of services, greater accountability for results, and a "built-in" bottom-up design to reach universal coverage by first covering the poor. In 2010, about 240 million Indians were covered by GSHISs. (LaForgia, Gerard, and Somil Nagpal, 2012). There are a number of GSHISs launched in the recent years including Rashtriya Swasthya Bima Yojana (RSBY), Rajiv Aarogyashri in Andhra Pradesh, Vajpayee Aarogyashri in Karnataka, RSBY Plus in Himachal Pradesh, Apka Swasthya Bima Yojana (ASBY) in Delhi, and Chief Minister's Comprehensive Health Insurance Schemes in Tamil Nadu. Now, all these schemes were integrated with the AB-PMJAY and 50 crore people got covered by the

GSHISs alone which strengthens supplements the Indian Health Insurance Industry substantially.

### **Pradhan Mantri Jan Arogya Yojana**

To top all the Government Sponsored Health Insurance Schemes, the world's largest health insurance scheme with the aim of offering universal coverage for the nth Indian, Pradhan Mantri Jan Arogya Yojana (PM-JAY) was launched on September 23, 2018. It is a flagship scheme of Government of India under Ayushman Bharat scheme providing a health cover of five lakh rupees per family per year for secondary and tertiary care hospitalization to poor and vulnerable households. PM-JAY was earlier known as the National Health Protection Scheme (NHPS) which subsumed the Rashtriya Swasthya Bima Yojana (RSBY) which had been launched in 2008. The scheme is fully funded by the Government and cost of implementation is shared between the Central and State Governments.

Other Government Sponsored Socially Oriented Insurance Schemes include Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather Based Crop Insurance Scheme (RWBCIS)2016, Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), a government subsidized one year cover Term Life Insurance Scheme to people in the age group of 18 to 50 years having a bank account who give their consent to join / enable auto-debit for the life cover of two lakh rupees, Pradhan Mantri Jan Dhan Yojana (PMJDY) with an extended accidental insurance cover up to two lakh rupees, Pradhan Mantri Suraksha Bima Yojana (PMSBY) which is available to people in the age group 18 to 70 years with a bank account upto two lakh rupees for accidental death and full disability and one lakh rupee for partial disability and Pradhan Mantri Vaya Vandana Yojana (PMVVY) which is to protect elderly persons and to provide social security during old age.

### **Compound Annual Growth Rate of GSHIS**

Though the figures for the number of the persons covered and gross health premium underwritten under the GSHIS fluctuate in the past decade, nearly three fourth of the health insured in all the years were covered so only by GSHISs. On account of conservative nature of health cover offered under GSHISs, the Government health premiums in this period grew only with a CAGR of 11.98% whereas the total health segment premium grew with a CAGR of 18.66% in the bygone decade.



**Table No.1: Number of Persons and Gross Premium in Government Sponsored Health Insurance Schemes**

YEAR	GSHIS*		No. of persons in 'Lakhs TOTAL*		Premium in Rs. Crores RATIO OF GSHIS TO TOTAL**	
	No. of Persons in lakhs	Premium in crores	No. of Persons in lakhs	Premium in crores	No. of Persons	Premiu m
2009-10	1674	1587	N.A.	8109	N.A.	20%
2010-11	1891	2198	2535	11030	75%	20%
2011-12	1612	2225	2118	13069	76%	17%
2012-13	1494	2347	2073	15452	72%	15%
2013-14	1553	2082	2162	17495	72%	12%
2014-15	2143	2425	2880	20096	74%	12%
2015-16	2733	2474	3590	24448	76%	10%
2016-17	3350	3,090	4375	30392	77%	10%
2017-18	3593	3981	4820	37029	75%	11%
2018-19	3571	5672	4720	44873	76%	13%
2019-20	3,620	4921	4,987	50,758	73%	10%
CAGR	8.02%	11.98%	7.81%	18.66%		

Source: \* Source: Compiled from the Various Annual reports of IRDA \*\*Authors' calculations

**GSHIS Penetration**

In the following paragraphs, the performance of the GSHISs in the year 2019-20 is analysed taking four parameters namely, the number of persons, number of policies, gross premium underwritten and

incurred claims ratio. For the purpose of present analysis Travel and personal accident insurances and health policies carried-out in foreign countries are not considered as health insurance policies.

**Table No.2: Health Insurance Business of General and Health Insurers: Class of Business-wise**

Class of Business	Item	No.of Policies in Lakhs		No of Lives in Lakhs		Gross Premium in Crores	
		2018-19	2019-20	2018-19	2019-20	2018-19	2019-20
Government Business	No./ Premium	0.003	0.002	3571.17	3619.71	5672.1	4920.62
	Growth(%)	-3.04	-4.71	-0.60	1.36	42.47	-13.25
	Share(%)	0.001	0.001	75.65	72.58	12.64	9.69
Group Business (Excl. Govt Business)	No./ Premium	10.90	7.61	728.54	935.17	21676.01	25880.83
	Growth(%)	68.78	-30.20	-18.55	28.36	22.08	19.40
	Share(%)	5.27	4.24	15.43	18.75	48.31	50.99
Individual Business	No./ Premium	195.91	171.72	420.64	432.25	17524.64	19956.63
	Growth(%)	39.11	-12.35	26.41	2.76	14.61	13.88
	Share(%)	94.73	95.76	8.91	8.67	39.05	39.32
Total	No./ Premium	206.82	179.33	4720.35	4987.13	44872.76	50758.07
	Growth(%)	40.41	-13.29	-2.06	5.65	21.18	13.12
	Share(%)	100	100	100	100	100	100

Source: IRDA Annual report 2019-20 p.58

**Number of GSHIS policies**

Of all the 179.33 lakhs number of policies, only 0.02 lakhs policies were underwritten in favour of GSHISs in the year 2012-13. As all the GSHISs'

policies are group ones, the number accounts for only around a quarter per cent of the total.

**Number of Persons Covered under GSHIS**

Nearly 498.71 million Indians were now by one or other health insurance policy in the 2019-20 out of which nearly 361.97 million Indians are covered by GSHISs. In other words, the GSHISs alone gave coverage to 73% health insured Indians.

**Health Premium under GSHIS**

In the year 2019-20 a total of 507.58 billion rupees of health premium was received by Indian Insurance sector. In the same year, the central and state Governments paid 49.21 billion rupees as premium to the insurers under GSHISs. In other words, around 10% of health insurance premium comes from the exchequer to give health cover to the poor Indians.

The segment-wise insurer-wise data is available only till the year 2017-18. The segment wise data classification for this year says that 9% of the total health premium received by the multiline private sector non life insurers, 13% of the health premium of the public sector non life insurers and 1% of the premium of the standalone health insurers are towards the cover by GSHISs. Further comparing with the total health premium of each insurer, a whopping 49% of the gross premium income of Reliance General Insurance, came only from GSHISs being highly benefitted from the Government's commitment to provide healthcare cover to everyone.

**Table No.3: Net Incurred Claims Ratio of select Insurers for 2017-18 in GSHIS  
(Excluding Travel -Domestic/Overseas and Personal Accident Insurance)  
(Net Earned Premium & Net Incurred Claims in ₹ Lakh)**

Select Insurers	Government Sponsored Schemes			TOTAL		
	Net Earned Permium	Claims Incurred (Net)	Incurred Claims Ratio (Net)	Net Earned Permium	Claims Incurred (Net)	Incurred Claims Ratio (Net)
Bajaj Allianz	3179	4072	128%	106917	93091	87%
Future Generali	232	408	176%	16107	16407	102%
ICICI Lombard	3704	3990	108%	111458	86485	78%
IFFCO Tokio	9051	6059	67%	44454	39374	89%
Reliance	28763	34420	120%	58741	67190	114%
<b>Private Total</b>	<b>44929</b>	<b>48949</b>	<b>109%</b>	<b>507935</b>	<b>406017</b>	<b>80%</b>
National	92276	105809	115%	374353	436262	117%
New India	71364	81528	114%	589698	613265	104%
Oriental	2982	3913	131%	341368	349409	102%
United India	59441	70810	119%	441981	491640	111%
<b>Public Total</b>	<b>226062</b>	<b>262060</b>	<b>116%</b>	<b>1747400</b>	<b>1890576</b>	<b>108%</b>
Max Bupa	378	346	92%	57034	28613	50%
Religare	725	1025	141%	57050	32477	57%
Star Health	2469	2133	86%	265699	165257	62%
<b>SAHI Total</b>	<b>3572</b>	<b>3504</b>	<b>98%</b>	<b>532189</b>	<b>328129</b>	<b>62%</b>
<b>Grand Total</b>	<b>274563</b>	<b>314513</b>	<b>115%</b>	<b>2787524</b>	<b>2624722</b>	<b>94%</b>

Source: Compiled from the Various Annual reports of IRDA

Among the public sector insurers, National Insurance Company is the prime beneficiary receiving 25% of its premium income just from the GSHISs. Every standalone health insurer is in receipt of 1% of its premium income so.

Looking at the pay-out destinations of the total premium paid under the Government Sponsored Health Insurance Scheme in the year 2017-18, the public sector insurers collectively received 82% of the premium of GSHISs, followed by the multiline private sector insurers receiving 16% and standalone private sector insurers receiving the rest 1% of the premiums

paid for GSHISs. The insurer-wise analysis of the premium payments in 2017-18 reveals that a high 34% of the GSHIS premiums went into the hands of the National Insurance Company, followed by the New India Assurance Company receiving 26% of the GSHIS premiums. It shows how the GSHISs help the market leaders to sustain their positions.

**Incurred Claims Ratio of GSHIS**

The incurred claims ratio is the ratio between the Net Earned Premium and Net Premium Incurred. There is an improvement in Incurred Claims Ratio of health business excluding Personal Accident



and Travel Insurance Business from 91 per cent in the year 2018-19 to 88 per cent in the year 2019-20. The incurred claims ratio of public sector insurers improved from 105 per cent in 2018-19 to 102 per cent in 2019-20 and for private sector insurers improved from 84 per cent in 2018-19 to 82 per cent in 2019-20. (IRDA, 2020).

This ratio for the total health insurance business in the year 2019-20 was 88.43% and the claim ratio for the GSHISs was 97.22%. This means

that the health insurers in Indian health insurance industry stood obviously gained by the GSHISs all through the years till 2019-20. While private sector multiline health insurers' incurred claims ratio was 82.19%, the claim ratio of GSHISs of theirs was 96.74%. Though the health segment burnt the fingers of public sector insurers with 102% claim ratio, the same under the GSHISs component was just 99% in 2019-20.

**Table No.4: Incurred Claims Ratios of Indian Health insurers in 2019-20**

Class of Business	Government Business		Group Business		Individual Business		Total	
	2018-19	2019-20	2018-19	2019-20	2018-19	2019-20	2018-19	2019-20
Public Sector Insurers	86.27	99.45	114.78	106.18	90.35	91.73	104.99	101.54
Private Sector Insurers	92.62	96.74	91.34	87.19	65.99	66.53	84.01	82.19
Stand-alone Health Insurers	182.21	78.4	78.48	85.82	56.55	59.18	62.73	66.16
Total	90.18	97.22	104.98	98.84	72.13	72.86	90.96	88.43

Source: Compiled from the Various Annual reports of IRDA

The ICR for the year 2017-18 of the Indian Health Sector's GSHISs was at 115% which is contributed by public sector at 116%, by the private sector at 109% and by the Stand Alone Health Insurance sector 98%, signifying the public sector's justifying role of public welfare in delivering the GSHISs. On the other hand, the overall ICR for the year 2017-18 of the Indian Health Sector's was only at 94% which is contributed by public sector at 108%, by

the private sector at 80% and by the Stand Alone Health Insurance sector 62%.

The trend analysis also reveals that the ICR of the GSHISs keeps on going north right from the year 2013-14. It has been on steady increase from 93.2% in 2013-14 to 122% in 2016-17 and was at 115% in 2017-18 after a slight recovery from the private and public sector general insurers.

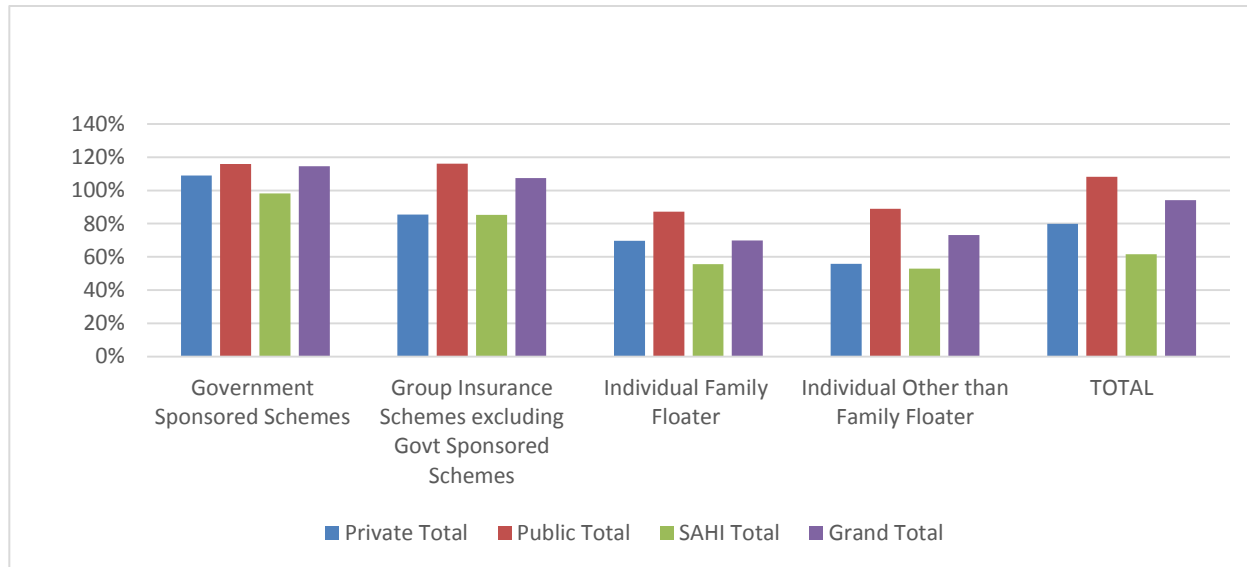
**Table No.5: INCURRED CLAIMS RATIO OF GSHIS FROM 2013-14 TO 2017-18**

GSHIS	2013-14	2014-15	2015-16	2016-17	2017-18
<b>Private Total</b>	<b>79.6%</b>	<b>87.7%</b>	<b>82.0%</b>	<b>115%</b>	<b>109%</b>
<b>Public Total</b>	<b>105.5%</b>	<b>116.5%</b>	<b>117.3%</b>	<b>124%</b>	<b>116%</b>
<b>SAHI Total</b>	<b>55.7%</b>	<b>48.7%</b>	<b>74.9%</b>	<b>55%</b>	<b>98%</b>
<b>Grand Total</b>	<b>93.2%</b>	<b>107.7%</b>	<b>109.2%</b>	<b>122%</b>	<b>115%</b>

Source: Compiled from the Various Annual reports of IRDA

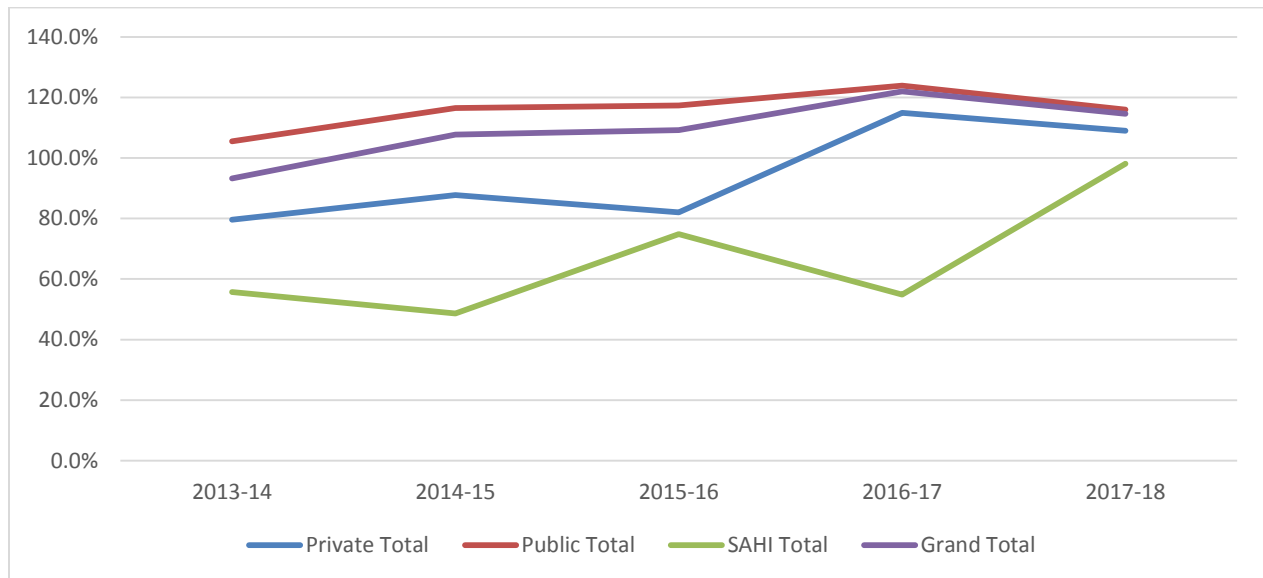


**FIG 1: INCURRED CLAIMS RATIO OF HEALTH INSURANCE IN 2017-18**



Source: Compiled from the Various Annual reports of IRDA

**FIG. 2: INCURRED CLAIMS RATIO OF GSHIS FROM 2013-14 TO 2017-18**



Source: Compiled from the Various Annual reports of IRDA

## CONCLUSION

Worldwide every year 150 million people face catastrophic health-care costs because of direct payments, while 100 million are pushed into poverty – the equivalent of three people every second (Xu, K, et

al., 2007). Though the Universal Health Coverage is considered as a utopian panacea to this problem, the compulsory enrolment of at least the BPL people, completely funded by the Government is a welcome step towards the justification of the welfare state



concept. At the same time, the voluntary health insurance for the above-BPL population should also be encouraged by the Government and the Authority.

The above analysis about the GSHISs figures figure out the fact that the Government not only helps the poor people to get health cover but also help the health insurers to improve their revenue figures. It also helps the health insurers in another way by insuring the BPL families and thus creating sense of need for health insurance among the uninsured-above-BPL population which could be tapped by the insurers in the course of time. Here, the role of IRDA is increasingly needed since the GSHISs breed their own inherent inefficiencies and complications. On the one hand portability and standardization movements bring harmonisation in the health insurance segment, paving for country-wide uniformity and better transparency. On the other hand GSHISs flourish with different size and shape, as each GSHIS is different and tailor-made. For example, the state government sponsored health insurance scheme in Tamil Nadu reserves certain treatments only to the Government Hospitals and not to the private hospitals while other schemes do not insist so. Similarly each GSHIS is subject to positive change with increased sum assured, increased treatment coverage and better hospital network every now and then. The replacement of the 'Chief Minister Kalaingar's Insurance Scheme for Life Saving Treatments -2009' by the 'Chief Minister's Comprehensive Health Insurance Scheme-2011' in Tamil Nadu is the perfect example to the dynamism of GSHISs. Now all the GSHISs are brought under one umbrella PMJAY.

Though GSHISs for those below the poverty line is widely praised as a success but offers limited financial protection, suffers from corruption, abuse, and cost escalation, and has skewed public resources to curative rather than preventative care (Balooni K, et al, 2012). The very nature of Government interventions, heterogeneity in operations and beneficiaries considering the GSHIS as yet another subsidy, not realizing the very nature of health insurance, make the system uncontrollable. For example the proof for BPL family to be given to obtain the smartcard and for getting treatment is decided by the State Government in case of State Government Sponsored Health Insurance Schemes. The complaint of denial of the treatment because of inadequacy of the proof or other reasons can be handled only by the Appellate authorities constituted for that purpose. Whatever be the case, the GSHISs need applause for disseminating the concept of health insurance to fifteen crore people in a very short span of

time and making quality health care affordable to all and thus ensuring the Gross Domestic Healthiness.

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## **A REVIEW ON PHARMACOLOGICAL ACTIVITIES OF *POLYALTHIA LONGIFOLIA* L**

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### **ABSTRACT**

*Polyalthia longifolia L. is an ornamental tree (mostly used as an avenue tree) which belongs to Annonaceae. As per the review of the research papers it also has so many important chemical constituents in its different parts. These chemicals are alkaloids, flavonoids, phenols, terpenoids and essential oil etc that can be used for the preparation of different medicines for several diseases. In this review authors focused on the pharmacological properties and ethnomedicinal properties of the plant parts and their implementation in the pharmacological science. The plant part different extracts showed different types of pharmacological activities like Antibacterial activity, Antifungal activity, Antitumor (Anticancer activity), cytotoxic activity, Anti-oxidant activity, Anti-inflammatory activity, Antimalarial activity and Antiulcer activity. Even the plant also has so many traditional medicinal uses. So, its not just an ornamental tree but it can be good resource for the secondary metabolites and considered as medicinally important plant.*

### **INTRODUCTION**

Medicinal plants play an important role in human's life. Herbs and humans have a great relation with each other. At present days medicinal plants play vital role in scientific development and holds much more hidden treasure to be explored as almost eighty percent human population in developing countries dependent on plant resources for their primary health care (Chandaka *et al*, 2018) [1]. Plant

based therapy has been used as a vital component in traditional medicine system and also serves as the main source of inspiration for pharmaceutical drugs used in the defence against various diseases (Prateek Dixit. *et al*, 2014) [2]. The genus *Polyalthia* includes about 120 species found mainly in Africa, South and South Eastern Asia, Australia and New Zealand. *Polyalthia longifolia* is one of the most important indigenous medicinal plant in Indian medicinal literature. Almost all the parts of this plant are used



in india for medicinal purposes for the treatments of various ailments and the significant medicinal properties was further reported through scientific researches (Subramanian L. Jothy. *et al*, 2013) [3]. The plant grows throughout the tropical and subtropical parts of India up to an altitude of 1500 meter. A tall, evergreen, handsome, pyramid like, columnar tree, univided, growing up to 12m or more. Branches short about 1-2 m or long, glabrous and pendulous. Leaves are alternate, exstipulate, mildly aromatic and it belongs to the family Annonaceae (Ram Bahor Saket and SB Singh. 2017) [4]. Number of chemical constituents has been identified from the leaves such as azafluorene alkaloid and three new Aporphin N-oxide alkaloids (Doshi. *et al*, 2015) [5].

**Scientific Name:** *Polyalthia longifolia* L.

**Common Names:** False Ashoka, Buddha Tree, Green champa, Indian mast tree, and Indian Fir tree.

#### **Taxonomical classification (According to Bentham & Hooker)**

**Kingdom:** Plantae

**Sub kingdom:** Phanerogams

**Class:** Dicotyledons

**Sub class:** Polypetalae

**Series:** Thalamiflorae

**Order:** Ranales

**Family:** Annonaceae

**Genus:** *Polyalthia*

**Species:** *longifolia* L.

**Morphological Characters:** The plant grows throughout the tropical and subtropical parts of India up to an altitude of 1500 m. The plant is tall, evergreen, pyramid-like, columnar tree. Main stem straight, univided, growing up to 12 m or more. Branches slender, short, about 1-2 m long, glabrous, and pendulous. Young plants have straight trunks and weeping pendulous branch. The longest branch is seen at the base and shorter at the end of the trunk, it gives conical crown appearance. Leaves are long narrow dark green and glossy. Leaf blade are ovate-oblong shape to ovate-lanceolate shape with wavy margins. Flowers are delicate pale green colour with wavy petals. The flowers last for a short period. It is usually two to three weeks. Seals are ovate-triangular. Petals are greenish yellow. Fruits are borne in clusters of 10-20. It is usually void in shape. Initially fruits are green in colour but later it turns in to purple or black when ripe. Seeds are pale brown in colour and ovoid in shape. (Chandaka Lavanya *et al*, 2018) [1], (K.V Katkar *et al*, 2010) [6].

#### **PHARMACOLOGICAL ACTIVITIES**

**Antibacterial Activity:** Ghosh G. *et al*, 2011 [7] described that the petroleum ether extract of *Polyalthia longifolia* var. *angustifolia* stem bark can yield a highly potent form of novel antibacterial molecule due to presence of steroidal alkaloid, by the process of tube dilution of petroleum ether extract against *Escherichia coli*, *Bacillus subtilis*, *Salmonella typhi*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Klebsiella sp.*, *Staphylococcus aureus*. Manasa M. *et al*. 2014 [8] described antibacterial activity of methanolic extract of *Polyalthia longifolia* against a Gram-positive bacterium *Staphylococcus aureus* NCIM-2079 and two Gram negative bacteria *Salmonella typhi* MTCC-734 and *klebsiella pneumoniae* NCIM-2957 by inoculation in sterile nutrient broth at 37° C for 24-hour incubation, by the process of Agar well diffusion method Kavitha P A. *et al*, 2013 [9] described that the flavanoids of leaves of *Polyalthia longifolia* from methanolic extract is very effective bioactive compound against *Staphylococcus aureus*, *Streptococcus faecalis*, *Pseudomonas aeruginosa*, *Bacillus subtilis* and *Escherichia coli*.

**Anticancer Activity:** Hepatocellular carcinoma (HCC) is one of the most common life-threatening malignancies which accounts for nearly 85% of the primary malignant tumours of liver and is the third most common causes of cancer. A.J.M Christina. *et al*, 2014 [10] described that the methanolic extract of fruit of *Polyalthia longifolia* shows antioxidant activity, which reduced the effect of Diethylnitrosamine that causes DNA mutation in rats by dose dependent manner. S Rupachandra and D V L Sarada 2014 [11] shows the cytotoxic peptide isolated from the seeds of *Polyalthia longifolia* with an average mass of 679.8 by the process of Liquid chromatography-electrospray ionization-Mass spectrometry (LC-ESI-MS/MS) analysis, plays significant antiproliferative role against lung (A549) cancer cells at concentration of 10 µg/ml and cervical (HELA) cancer cell lines at 30 µg/ml, respectively. Verma Monika *et al*, 2008 [12] described that the leaves extract (A001) and its chloroform fraction (F002) of *Polyalthia longifolia* inhibited cell proliferation of various human cancer cell lines in which colon cancer cells SW-620 showed maximum inhibition with IC50 value 6.1 µg/ml. According to Gaurav Mahesh Doshi and Hemant D. Une, 2015 leaves and root extract of *Polyalthia longifolia* and *Carissa congesta* respectively, shows good anticancer activity on human leukemia cell line MOLT4 and human breast cancer cell line MCF7, respectively by the process of sulforhodamine B (SRB) assay.

**Antifungal Activity:** Satish S, *et al*. 2010 [14] shows the fraction of petroleum ether extract of leaves of *Polyalthia longifolia* recorded highly significant



antifungal activity against all the test bacteria like *Fusarium equiseti*, *Fusarium lateritium*, *Aspergillus candidus* and *Penicillium chrysogenum* etc, by the process of poisoned food technique. Dileep N, *et al.* 2013 [15] described antifungal activity of leaf and pericarp of *Polyalthia longifolia* against mycelial growth of two pathogenic fungi *Fusarium oxysporum* and *Pythium aphanidermatum* which are isolated from soft rot specimen of ginger by the process of poisoned food technique. K.V Katkar. *et al.* 2010 [16] shows the diterpenoids like 16 $\alpha$ -hydroxy-cleroda-3,13(14)-Z-diene-15,16-olide and 16-oxo-cleroda-3,13(15)-E-diene-15-oic acid, isolated from the hexane extract of the seeds of *Polyalthia longifolia*, demonstrated significant antibacterial and antifungal properties by the method of Bioassay monitored isolation. Swami Narsinghchandra Dev and Kantishree De, 2016 [16] described that the ethanolic and methanolic extract of bark and leaf of *Polyalthia longifolia* showed antifungal potential against *Candida albicans* and *Candida krusei* by agar well diffusion method.

**Anti-inflammatory Activity:** Sharma R K. *et al.* 2011 [17] reported that the aqueous extracts of *Polyalthia longifolia* show significant antiinflammatory activity as evident by decrease in the weight of granuloma tissue when compared to the standard drug Indomethacin by Cotton pellet granuloma test. Shibajee Mandal. *et al.* 2012 [18] shows antiinflammatory activity in both the ethanolic and aqueous extracts of leaves of *Polyalthia longifolia* due to the presence of flavonoids and phenolic compounds at various time intervals that was evaluated by Carrageenan-induced paw edema model. Denaturation of protein is well documented cause of inflammation. Ogbomade R.S. *et al.* 2019 [19] documented anti-inflammatory effect of 56.74 $\pm$ 0.99 % in ethanolic extract, 55.57 $\pm$ 0.22 % and 35.59 $\pm$ 3.39 % in fresh and dry leaves aqueous extract respectively, which shows inhibitory effect on protein denaturation by using (comparing) diclofenac sodium the standard drug. Chandaka Lavanya *et al.* 2018 [1] revealed the most anti-inflammatory effect of the three doses of methanolic extract (300, 600, 900 mg/kg) of *Polyalthia longifolia* leaves by comparing it with standard Diclofenac sodium. Chandi Vishala Thonangi and Annapurna Akula 2018 [20] described that the methanolic extract from seed of *Polyalthia longifolia* exhibit significant dose dependent 58.46% anti-inflammatory activity with comparison of 56.92% diclofenac standard drug by inhibiting the acute inflammatory mediators released by egg albumin.

**Anti-malarial Activity:** D. Santha kumari. *et al.* 2016 [21] concluded that the methanolic extract of fruit of *Polyalthia longifolia* contain major chemical classes such as phenols and alkaloids which exhibits good in vitro antiplasmodial activity against CQ-

Resistance strain of *plasmodium falciparum*. Bethel Kwansa-Bentum. *et al.* 2019 [22] described that the ethyl acetate extract of leaves of *Polyalthia longifolia* exhibits antiplasmodial activity with IC50 value of 9.5  $\mu$ g/ml by using SYBR Green assay method. Stephen Y Gbedema. *et al.* 2015 [23] described that the obtained compounds such as 16-hydroxycleroda-3,13(14)-dien-16, 15-olide,16-oxocleroda-3,13(14)E-dien-15-oic acid and 3,16- dihydroxycleroda-4(18),13(14) Z-dien-15,16-olide from the ethanolic extract of stem bark of *Polyalthia longifolia* shows potent antiplasmodial activity for treating malaria.

**Antioxidant Activity:** According to Goutam Ghosh. *et al.* 2010 [24] the methanolic extract of *Polyalthia longifolia* showed increased scavenging activity against free radicals due to presence of more antioxidant principles. The phytochemical study on extract of *Polyalthia longifolia* has showed that flavonoids and tannins are abundant in this plant. Flavonoids and tannins have been reported to be antioxidative action in biological system, acting as scavenger of singlet oxygen and free radicals. From the study, Dileep N. *et al.* 2012 [25] found that the phenolic content in the ripe pericarp of *Polyalthia longifolia* could be responsible for the antioxidant activity which was observed by the DPPH free radicle scavening method. Shibajee Mandal *et al.* 2012 [18] shows antiinflammatory activity in both the ethanolic and aqueous extracts of leaves of *Polyalthia longifolia* due to the presence of flavonoids and phenolic compounds at various time intervals that was evaluated by Carrageenan-induced paw edema model in the presence of standard Indomethacin against Albino rats. Santhepete N Manjula. *et al.* 2010 [26] shows DPPH scavenging activity of *Polyalthia longifolia* in methanol at room temperature with the presence of ascorbic acid as standard, which reduce ferric ion and inhibited lipid peroxidation which proves its antioxidant activity. According to Subramanion L Jothy. *et al.* 2015 [27] the antioxidant molecules in *Polyalthia longifolia* leaf extract might also play an important role in the prevention of genotoxic damage, Therefore, the genoprotective effect of *Polyalthia longifolia* leaf extract may have also rendered a radioprotective effect as observed in the present study. Ojewuyi O.B. *et al.* 2014 [28] described that the obtained phenols by the Harborne standard detection chemical test from the young and mature leaves of *Polyalthia longifolia* shows antioxidant activity which prevent oxidative damage to biomolecules such as DNA, lipids, and proteins that play a role in chronic diseases such as cancer and cardiovascular disease.

**Antiulcer Activity:** P Malairajan. *et al.* 2008 [29] described that the ethanolic extract of leaves of *Polyalthia longifolia* are used with some standard drug like ranitidine, sucralfate, and omeprazol to performe three different mechanisms like



Antisecretory, Cryoprotective, Proton pump inhibition, which eventually prove reduction of ulcer in Rats. O Timothy *et al*, 2019 [30] also described that 800 mg/kg methanolic extract of leaves of *Polyalthia longifolia* shows 100% inhibition of gastric ulcer in rats with comparison of standard drug, ranitidine. According to Prateek Dixit. *et al*, 2014 [2] the ethanolic extract of *polyalthia longifolia* was investigated for anti-ulcer activity against aspirin plus pylorous ligation induced gastric ulcer in rats, HCl – ethanol induced ulcer in mice and water immersion stress induced ulcer at 300 mg/kg body weight which showed a significant reduction in gastric volume, free acidity and ulcer index as compared to control.

**Cytotoxic Activity:** O Atolani *et al*, 2019 [31] carried out cytotoxic assay to evaluate the potential cytotoxicity of Soxhlet extraction of seed of *Polyalthia longifolia* by using HFF on human foreskin fibroblast cells. Phadnis AP *et al*, 1988 [32] described cytotoxic activity of well known diterpenes compounds such as (-)-16-oxocleroda-3, 13(14) Edien-15-oic acid and (-)-16 $\alpha$ -hydroxycleroda-3,13 (14)Z-dien-15,16-olide which are obtained from the leaves of *Polyalthia longifolia*. Alagbe J.O, 2017 [33] described Pharmacological studies on the bark and leaves of the *Polyalthia longifolia* which shows effective antimicrobial activity, cytotoxic function and hypotensive effects.

### ETHNOMEDICINAL USES

(Tripta Jain and Kanika Sharma 2011) [34] described ethanopharmacological uses of *Polyalthia longifolia* like traditionally dried bark powder is given with milk for relief in menorrhagia and leucorrhoea, decoction made from bark is used to cure mouth ulcers, the seeds of this plant were used as febrifuge, the bark is also used as a febrifuge in Balasore district of Orissa. It is also used as a very popular herb in Bangladesh due to its traditional uses in treatment of rheumatism, bone fracture and gastric ulcer (Md. Moniruzzaman. *et al*, 2015) [35]. The bark is used in skin diseases, fever, diabetes, hypertension and helmenthiasis. (M. Marthanda Murthya. *et al*, 2005) [36]. The leaves, stem bark and root extracts of *Polyalthia longifolia* var. *Pendula* possess high antipyretic activities comparable to aspirin. This may provide scientific evidence for its use as a traditional remedy for fever (K. Annan. *et al*, 2013) [37]. The bark is used for the treatment of pyrexia and other bleeding disorders in India (Chandaka Lavanya. *et al*, 2018) [1]. Tribal people of Kharagone, Madhya Pradesh use stem bark to cure malignant tumor also the fresh stem bark juice is used in the treatment of the various digestive disorders. (Prashith Kekuda TR *et al*, 2014) [38], (Rashmi Saxena Pal. *et al*, 2016) [39]. The leaves of *Polyalthia longifolia* is also prescribed as herbal recipe by traditional medicine practitioners

(TMP) in Ilorin, Kwara State for the treatment of Diabetes mellitus, malarial fever, cough and hypertension (M. K. Bello and L. Lajide 2011) [40]. (Sengottuvelu S. *et al*, 2014) [41] shows its uterine disorder, and wound healing activity in rats from the ethanolic extract of leaves of *Polyalthia longifolia*. The plant has its utility in colitis, diarrhea, anorexia, sore throat, cough (Shazid M. D. Sharker. *et al*, 2010) [42] and helminthiasis as well as vitiated condition of Vatta and Pitta. (Patil Ankita Sanjeev and Gaurav Mahesh Doshi 2018) [43].

### CONCLUSION

In this review we attempted to bring together the pharmacological, phytochemical and ethnomedicinal information on *Polyalthia longifolia*, a medicinally important *Polyalthia longifolia* used in the traditional system of medicine and an ancient remedy to be explored for novel therapeutic uses. The medicinal applications of this plant and the countless possibilities for investigation still remain in relatively newer areas of its function. So, we can say that the plant is not only used for an ornamental purpose but its good medicinal plant that can be further studied with phytochemistry aspects.

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## **THE NATURE OF ANCIENT PATTERNS, SYMBOLS, IMAGES**

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### **ANNOTATION**

*Any image originally had a religious, mysterious, magical meaning. They are passed down from generation to generation, and sometimes forgotten symbols that have only aesthetic sounds have a magical effect on us. Drawings that the designer used in his work: birds, animals, fruits, each of the geometric shapes has its own meaning.*

**KEY WORDS:** *Motive, mysticism, symbol, image, magic, amulet, sign, sense, meaning, creative, aesthetic sound, magical influence, spring cloud.*



Creativity in every epoch is noted with an individual style, stable motives that have been assumed from previous generations, the prototypes of which we inevitably meet in ancient, in myths and legends. If we turn to ancient pictorial motives, we can see that the origins and meaning of the images were identical among different peoples. Any images originally bore a religious, mystical, magical meaning. They were passed down from generation to generation and sometimes forgotten symbols, having only aesthetic sound, subconsciously have a magical influence on us.

The most popular symbols of the sun in the traditional art of many nations are circle, cross and rhombus. In Central Asia, these symbols have used from time immemorial, often in combination with other solar and astral signs. In a number of symbolic signs, the first place has a square divided into four parts, a cross with four dots, a circle with a cross that inscribed in it, and other geometric figures similar in character. The circle is an amulet from the dark power; it is a symbol of God, the Sun, and the Universe. This is the most harmonious and perfect figure with many meanings. In the very name of the pattern, including the circle, security magic has already been laid. Sometimes the “sun” looked like a wheel with spokes and heads on rim (“Wheel of the Life”).

The center of the wheel is immeasurable depression, the rim is immeasurable circle, and its



inner space contains good and evil, life and death, darkness and light. The image of the “Wheel of the Life” is associated with a cross, a swastika – symbols of the sun, the fire of heaven, and the “vortex sign.” It had two meanings – if it is directed to the right, then it is a symbol of eternal movement, birth, if it is directed to the left, then it is a symbol of destruction, death. In India, the wheel of the sun god is a circle with spokes, and in Sogda a wheel with pearls is a kind of necklace, a symbol of the celestial body and the kingdom of light, where the deceased enters.

Spirals, revolving disks, concentric circles, crosses inscribed in circles, rosettes, stars and zigzags belong to cosmogonical symbols. Wavy and laminar patterns represent the flows of life-giving force. *Abr and bahor* is a “spring cloud,” a symbol of rain and associated with it fertility.

Birds were bearers of ideas, symbols, and metaphors. The bird is a sign, symbol and sensual image of the universe and nature, which contains the physical and spiritual world. They embody the soul of man and are intermediaries between the real and mythical world. Birds and the “Tree of the Life” are related to each other – a bird with a leaf in its beak is a function of a messenger. The rooster, peacock and pheasant belonged to “solar” birds, bearers of ideas of light, beauty and prosperity. The rooster was ascribed to a protective function; it was considered the *muezin* of animals. The mythopoietic image of a peacock, due to the shape of the tail, has astral

symbolism. This is *Cosmos* in its entirety, a starry sky with lunar and solar circles. The image of the peacock, framed by vegetable ornaments, embodies the idea of a paradise garden. Eagle is a king of birds, astral-cosmic and dynastic symbol. Pheasant, partridges are bearers of the idea of light, beauty, prosperity. Falcon is cosmic forces and a sign of heraldry. Dove is an attribute of a female deity. The “bird of happiness” hovers over flowers scattered on embroidered fabrics. This is a metaphor; it expresses joy, happiness, sun, light, love, the whole world of poetic foreign tales. The bird weaves into a plant ornament filling the background of epigraphic inscriptions, or, like other inhabitants of the paradise garden, participates in multi-figure scenes.

Plant ornament was created based on observation of nature. The often-found image of the “Tree of the Life” is associated with ancient myths, embodying the concept of paradise, the source of life. It is often depicted with luminaries, horses, bulls, fabulous creatures. A tree with lights, birds, horses is a symbol of the sky; a tree with animals is a symbol of the underworld. On silk tissues, there are compositions of heraldic meaning and value, usually associated with the idea of a tree that is guarded by two lions. “Bouquet of flowers,” “vase,” “tree in a vase” delight the eye, being an aesthetic moment. The pink rose is a symbol of sophistication, courtesy, and elegance, courtesy and courtesy.



The fruit of pomegranate is an expression of the magical ideas of fertility, a symbol of abundance, satiety, and grace







Barbaris flower is a symbol of longevity and tranquility,



Lotos is a symbol of purity, perfection and beauty



violets are the symbol of shyness, poppy is a symbol of silence and sleep, lilies are the symbol of fertility, their whiteness is a symbol of purity of thoughts, narcissists is a symbol of knowledge, synonymous with the eye or eye pupil (“narcissus sighted,” “narcissus weeping”). Iris is an idea of the unity of opposites; its form implies the duality of the nature of the earthly lord, who on the one hand is inspired by high spiritual, and on the other hand, invariable thoughts, is a symbol of sorrow.

The ornament, which is called “bodom,” “kalampur,” “eastern cucumber,” is considered divine favor, protection from disease – this is a cosmic symbol of revival, the universe. The tulip was associated with symbols of the awakening nature, with the meeting of Navruz, it was a symbol of beauty, love, innocence. The tulip bud meant the heart of the lover, and his petals - the mouth of the lover.

Grain is a symbol of fertility, the beginning and birth of new seedlings.

In the ornament, subject matter is also widely found, which also has symbolic significance. “Ofhtoba” is a symbol of living water. In ancient images, it is found as a vessel from which the “Tree of the Life” grows. Sharp and pointed objects are of

particular importance, like amulets, protecting and driving away misfortunes and evil spirits; they are a symbol of vitality.

Masters, depicting birds and animals, gave them a resemblance to plants - this is the process of florization. Therefore, the tail of the bird ended in a lush bush, the mouth of the predator turned into a curl, the tail into a palmette, the wings were interpreted with rhythmic lines or circles.

In the ornament was also the symbolism of color associated with the psychology of its perception. Therefore, the blue color was an amulet, a symbol of constancy, justice, perfection, reflection and peace; red was a symbol of victories, personifications of joy; white was a symbol of purity, happiness, chastity and luck; yellow was a symbol of sanctity; green was a symbol of the color of spring, nature, freedom, joy, revival, a symbol of immortality.

Later, the ornament became more and more decorative, the connection with the image was lost, the significance of the patterns decreased, the magical and ritual functions of the symbolic ornament were forgotten. Modernity fills them with new content, implements a new sense into them, and gives them a



new sound: it bears a gene memory of the past and introduces us into the future, amazing us with “gorgeousnessof the universe and the stream of symbols.”

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## **THE CREDIT-MODULE SYSTEM IS A SENSIBLE WAY TO ACHIEVE TRANSPARENCY OF EDUCATION AND INDEPENDENT WORK OF THE STUDENT**

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### **ANNOTATION**

*In this state development, the concept of a modular-credit system in higher education is such an effective organization of students' independent activity. The urgency of the state is declared by the fact that in it the experience of foreign countries in organizing a modular credit system is presented. The existing and used in various countries of the world credit systems differ not only in their main purpose, but also in the approach to understanding and defining "credit".*

**KEY WORDS:** *Modular credit system, assessments of the development of educational programs, units of labor input, academic mobility, focused on the accumulation of loans, the acquisition of knowledge, skills and abilities.*

Credit-module system is a process of organizing education, which is a model of assessment based on a set of modular technologies of teaching and credit measurement. Carrying it as a whole is a multifaceted and complex systemic process. The credit-module principle focuses on two main issues: ensuring the independent work of students; assessment of students' knowledge on the basis of ratings.

Higher professional education in the leading countries of the world is based on the use of credit systems for evaluating the development of educational programs in terms of labor intensity. Existing models of credit systems can be divided into several types:

- credit systems focused mainly on the transfer of loans for academic mobility, for example, ECTS (European Credit Transfer System), USTS (UMAP Credit Transfer Scheme – a system for crediting universities in the Asia-Pacific region);

- credit systems focused on the accumulation of loans, for example, USCS (United States Credit System-a system of loans used in US universities).
- credit systems of a mixed type, focused on the transfer and accumulation of loans at the same time CATS (Credit Accumulation and Transfer System – the credit system of universities in the UK).

Existing and used in various countries of the world credit systems differ not only in their main purpose, but also in the approach to the concept and definition of "credit". Credit-credit systems, as a rule, proceed from the concept and definition of credit as a unit of assessment of labor costs for the development of an educational program or part of it. Credit-accumulative systems, in general, define credit as a unit of evaluation of the results of the development of educational programs – acquired knowledge, skills and abilities.

The importance and necessity of developing a domestic system of credit units is due to the



implementation of educational goals in the context of the student's academic freedom; the comparison of curricula with plans of foreign universities with included training or training internships; the balance of mandatory and elective disciplines; the ratio of the student's classroom and independent workload; forms of control and assessment of knowledge based on a point-rating system.

In American practice, credits are a fixed category that expresses the quantitative amount of course content in the context of degree requirements. For educational institutions where the academic year is divided into semesters, one credit unit consists of one hour of classroom classes (contact with teachers) or two hours of practical work for fifteen weeks, as well as two hours of independent training of students per week. Bachelor's degree candidates are expected to earn 30 credit units per year. In higher education institutions, credit units are defined as 120 credits for a 4-year program of study.

In addition to the term "credits" in the US education system terms such as \* Credit course (credit course) - a discipline at the end of which a student receives academic credit units within a certain program of study. \* Credit system – a system where the degree or diploma program is divided into specific blocks (segments), each of which is an element of the training direction. Credit units are assigned after the successful completion of the study of each block. To get a degree or diploma, you need to collect a certain number of credits.

Mutual recognition of credit units (credit transfer) - recognition by a higher education institution of credit units or qualifications obtained by a student at another educational institution so that he/she can move from one educational institution to another without losing credits.

Recognized credit units (transfer credits) - loans, received by the student in the educational institution to which he/she is transferred as recognition of the work done in another educational institution.

A distinctive feature of American higher education is the phenomenon of a modular course with its "credit units". The requirements for obtaining degrees are expressed in credits, not in exam scores. These results, collectively called "credit units", are a kind of measure of circulation, the educational "currency" in the US higher education system. Accumulated and stored "credits" can be transferred from one educational institution to another, from one faculty to another.

This practice makes it possible to temporarily stop training in order to resume it later. The credit system greatly facilitates the transition of students from one institution to another and makes it possible to link interrupted and restored learning. But

this form of accounting for results, by introducing flexibility into the higher education system and allowing students to move from one institution to another or from one faculty to another, reduces the socializing effect of a concentrated period of study at one of the universities several times.

Another distinctive feature is the significant degree of independence and autonomy of American universities, which, together with the modular principle of training and the absence of state exams, makes it relatively easy to create new training courses, levels of education and specialties, courses related to other disciplines.

It should be noted that the organizational structure of mass higher education in the United States was already created about 200 years ago, and has its own problems caused by wide availability and lightweight standards. Currently, there are discussions about the quality of knowledge of applicants entering universities.

A student who has successfully completed the study of the discipline receives the number of credit hours allocated for this subject. He uses the credit hours he receives to further his degree. The difference in the student's success is determined by the assessment, the credit-hour indicates the structure of the learning process, but does not indicate the level of knowledge of the student. In other words, the credit-hour indicates only the time spent on a given subject, it is not related to the concept of the difficulty of a given subject. Some items require a lot of time, but give little credit-hours and vice versa.

Credit-hour is a measure based on the training time. As a rule, one credit hour is the number of weekly 50-minute lessons during one semester, i.e. it means a combination of 1 hour of lectures per week, 2 hours of practical classes, 3 hours of laboratory work plus preparation for them, exam admission / passing tests, homework, coursework.

In the United States, the number of subjects studied during a semester is usually 4-5, the normal course load is about 15 credit hours. This means that students will be in the classroom for approximately 15 hours weekly. A student who scores the specified number of credit hours can earn a certain degree. Credit-hour and degree are interrelated. In the US, it takes an average of 120 credit hours to complete a bachelor's degree, 30 to 35 credit hours for a master's degree, and 6 to 12 credit hours for graduate students each semester.

In the higher education system, the credit hour is used in various forms, it serves as the basis for making estimates of funding provided by the state. The workload of departments, teachers and students is determined by the credit hour, on the basis of which the question of the student's transition to the next course is decided. Tuition fees are also paid on



the basis of credit hours. There is a contradiction in the provision of a credit hour. But in any case, the credit hour plays an important role in planning the budget and expense.

Despite its weaknesses, the credit system has found wide application. It regulates the multilateral activities of the University: a training program, curriculum, class schedules, assessment of students' knowledge, degrees, determination for tuition.

This system makes it possible to really evaluate the activities of the teacher and the student, helps to determine the workload of teachers and regulate the student load, providing the opportunity to work. It provides freedom of learning, which is consistent with market-based economic relations.

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# CASE STUDY ON THE EFFICIENCY OF AN EXECUTION OF NORMAL ARITHMETIC EXPRESSION AGAINST AN EXECUTION OF ARITHMETIC EXPRESSION IN LOOPING CONTROL STRUCTURE IN COMPUTER LANGUAGE

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## ABSTRACT

In computer science arithmetic operators are used to perform various arithmetic operations. The system performs particular operation depending on the type of the operator used in the expression.

All computer languages support all basic types of arithmetic operators, but the representation, meaning and order of execution of an operator in the expression solely depend on the basis of construction compiler or an interpreter.

This manuscript specifically examines the execution of direct method of arithmetic expression or normal arithmetic expression with an arithmetic expression using looping control structure in computer language, and to check how these two methods behaves, further comparing the efficiency of the these two approaches.

**KEYWORDS:** Arithmetic Operators (AO), Unary Operators (UO), Binary Operators (BO), Runtime Execution(RE),  $O(n)$  Big O,  $\Theta(n)$  Big Theta,  $\Omega(n)$  Big Omega.

## 1. INTRODUCTION

We have observed that in all the programming languages operators are used to perform operations on constant values and variables or in other words, operators are the tokens that perform some computation when applied to variable or constant values. The variables to which the computation is imposed are called the operands. The operators +, -, \*, ÷ are most predominantly used arithmetic symbols in day to day life as well as in the computer system too. These operators are basic operators used to perform basic mathematical operations like addition, subtraction, multiplication and division respectively. There are several additional operators such as floor division operator, exponentiation operator, remainder operator.

## 2. CLASSIFICATION OF OPERATORS

Operators can be classified as Unary Operators(UO) and Binary Operators(BO). The unary operator are '+' and '-'. Always the unary '+' precedes an operand. When the

two operands are involved in conjunction with the operator, classifies binary operator(BO). For example the two add two numbers we form an expression a+b, this + operator acts as binary operator in the given expression. The resultant of the expression will be the sum of two values which are represented in the form of operands.

This manuscript specifically examines the execution of direct method of arithmetic expression or normal arithmetic expression with an arithmetic expression using looping control structure, and to check how these two methods behaves, further comparing the efficiency of the these two approaches.

## 3. RELATED WORK

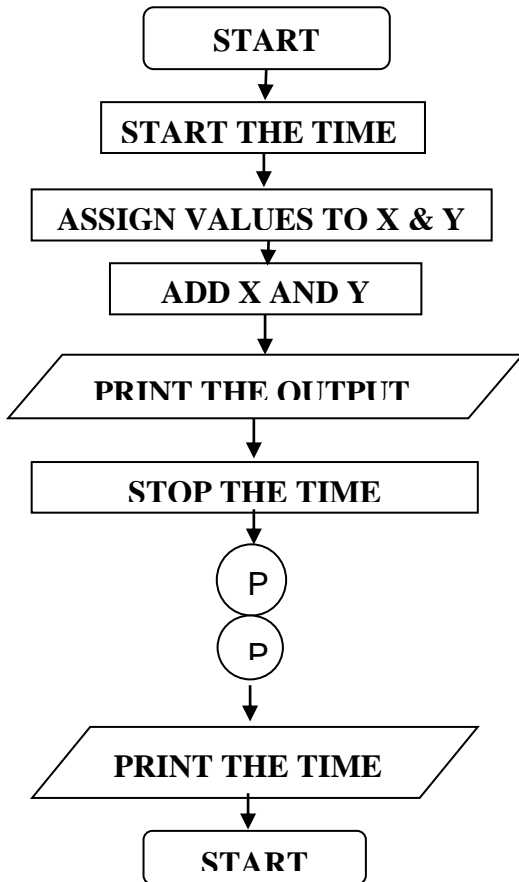
**Algorithm for adding two numbers using normal arithmetic expression:**

Step-1: Start  
Step-2: import time module  
Step-3: Start the time  
Step-4: assign values to x & y



- Step-5: Add x and y
- Step-6: Print the output
- Step-7: Stop the time
- Step-8: Print the time taken
- Step-9: Stop

**Flowchart for adding two numbers using normal arithmetic expression:**



**Snippet for adding two numbers using normal arithmetic expression:**

```

import time
start = time.time()
x=1
y=1
add=x+y
print("addition of two using + Operator number is :",add)
end = time.time()
print("Runtime of the program is:", end - start)
  
```

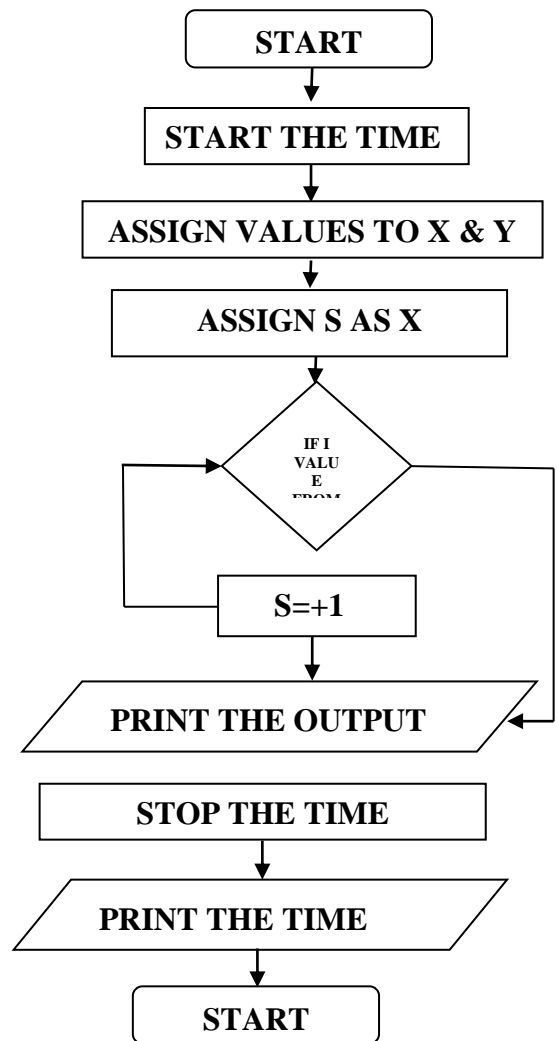
**ARITHMETIC EXPRESSION IN LOOPING CONTROL STRUCTURE**

**Algorithm for adding two numbers using Looping Control Structure:**

- Step-1: Start

- Step-2: import time module
- Step-3: Start the time
- Step-4: Assign values to x & y
- Step-5: Assign s as x
- Step-6: if i is in range 1 to y+1
- Step-7: s will be increased by 1
- Step-8: go to step 6(repeat if condition is true)
- Step-9: Print the output
- Step-10: Stop the time
- Step-11: Print the time taken
- Step-12: Stop

**Flowchart for adding two numbers using Looping Control Structure:**



**Snippet for adding two numbers using Looping Control Structure:**

```

import time
start = time.time()
x=1000
y=1000000
s=x
  
```



```

for i in range(1,y+1):
    s+=1
print("addition of two number is using looping
structure :",s)
end = time.time()
print("Runtime of the program is: ",end-start)

```

#### 4. RUN TIME EXECUTION (RE) OF NORMAL ARITHMETIC EXPRESSION

USING NORMAL ARITHMETIC EXPRESSION		
<u>X VAL</u>	<u>Y VAL</u>	<u>Time</u>
0001	0001	0.03
2000	5000	0.034
1000	10000	0.049
1000	100000	0.054
1000	1000000	0.05

#### 5. RUN TIME EXECUTION (RE) OF ARITHMETIC EXPRESSION IN LOOPING CONTROL STRUCTURE

USING LOOPING CONTROL STRUCTURE		
<u>X Val</u>	<u>Y Val</u>	<u>Time</u>
0001	0001	0.03
2000	5000	0.04
1000	10000	0.047
1000	100000	0.12
1000	1000000	0.61

#### 6. SPACE COMPLEXITY AND TIME COMPLEXITY

In computer science, analysis of algorithms is a very crucial part. It is important to find the most efficient algorithm for solving a problem. It is possible to have many algorithms to solve a problem, but the challenge here is to choose the most efficient one.[1]

There are multiple ways to design an algorithm, or considering which one to implement in an application. When thinking through this, it's crucial to consider the algorithm's **time complexity** and **space complexity**.[2]

##### SPACE COMPLEXITY

The space complexity of an algorithm is the amount of space (or memory) taken by the algorithm to run as a function of its input length, n. Space complexity includes both auxiliary space and space used by the input.[2]

Auxiliary space is the temporary or extra space used by the algorithm while it is being executed. Space

complexity of an algorithm is commonly expressed using Big  $O(n)$  notation.[2]

The Space complexity is ignored in this research paper, since the space complexity of particular problem is not considered so important.

##### TIME COMPLEXITY

The time complexity of an algorithm is the amount of time taken by the algorithm to complete its process as a function of its input length, n. The time complexity of an algorithm is commonly expressed using asymptotic notations:[2]

**Big O -  $O(n)$**

**Big Theta -  $\Theta(n)$**

**Big Omega -  $\Omega(n)$**

It's valuable for a programmer to learn how to compare performances of different algorithms and choose the best time-space complexity to solve a particular problem in the most efficient way possible.[2]

##### Time Complexity for adding two numbers using normal arithmetic expression:

**Big O** notation is used in Computer Science to portrait the performance or complexity of an algorithm.

**Big O** specifically defines the worst-case scenario of an algorithm, and can be used to describe the execution time required or the space used (e.g. in memory or on disk) by an algorithm. here  $O$  stands for order of growth.

Time Complexity for adding two numbers in using normal arithmetic expression (**worst case scenario**) is calculated as:

$$O(3)$$

Whereas, Time Complexity for adding two numbers using normal arithmetic expression (**worst case scenario**) is calculated as:

$$O(n)$$

##### CONCLUSION

The performance of these two methodologies exhibits that, the efficiency for calculating normal arithmetic expression is slightly higher when it is compared with the calculation time of arithmetic expression in the looping control structure. Further the worst case analysis is Big  $O(3)$  and Big  $O(n)$ . In addition to this it is observed that the execution of expression also depends on the hardware configuration.

##### ACKNOWLEDGEMENT

Apart from the efforts of me, the success of any project depends largely on the encouragement and guidelines of many others. I take this opportunity to express my gratitude to the people who have been instrumental in the successful completion of this project.

I express deep sense of gratitude to almighty God for giving me strength for the successful completion of the project.





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## **HOW TO MAKE LANGUAGE LEARNING PROCESS MORE EFFECTIVE THROUGH THE ASSISTANCE OF COMMUNICATIVE LANGUAGE TEACHING (CLT)**

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### **ABSTRACT**

*This article discusses Communicative language teaching (CLT), or the communicative approach, as an approach to language teaching that emphasizes interaction as both the means and the ultimate goal of study.*

*Language learners in environments utilizing CLT techniques, learn and practice the target language through the interaction with one another and the teacher, the study of "authentic texts" (those written in the target language for purposes other than language learning), and through the use of the language both during the lesson and outside of the lesson.*

*Learners talk about personal experiences with partners, and instructors explain topics outside of the realm of traditional grammar, in order to promote language skills in all types of occasions. This method also proves to encourage learners to incorporate their personal experiences into their language learning environment, and to focus on the learning experience in addition to the learning of the target language.*

*In CLT, the objective of language education is the ability to communicate in the target language. This is in contrast to previous views in which grammatical competence was commonly given top priority. CLT also focuses on the teacher being a facilitator, rather than an instructor. Furthermore, the approach is a non-methodical system that does not use a textbook series to teach the target language, but rather works on developing sound oral/verbal skills prior to reading and writing.*

**KEY WORDS:** *Communicative Language Teaching (CLT), Second Language Acquisition, Language learning, Approach, grammatical competence, oral/verbal skills.*

***"You simply cannot teach a language to an adult the way a child learns a language. That's why it is such a hard job"***

***By Chomsky***

It is generally said that learning a language can be crucial asset to obtain huge opportunities, that's why it is too important how people learn any language, sometimes they may come across some difficulties in learning period, perhaps, it must be carried out whatever can be able to do something which makes learning more efficient and easier. There are lots of methods which can teach a language in a different way have already accomplished by

scientists and specialists. Language teaching was originally considered a cognitive matter, mainly involving memorization. It was later thought, instead, to be socio-cognitive, meaning that language can be learned through the process of social interaction. Today, however, the dominant technique in teaching any language is communicative language teaching.

This method has already been in common among educational fields of study for a little period of time. In view of the fact that there is considerable improvement on the process of learning of the students. It can be seen that there are some successful researches in such an effective way which were carried out by the specialists.



It was Noam Chomsky's theories in the 1960s, focusing on competence and performance in language learning, that gave a promotion to communicative language teaching, but the conceptual basis for CLT was laid in the 1970s by linguists Michael Halliday, who studied how language functions are expressed through grammar, and Dell Hymes, who introduced the idea of a wider communicative competence instead of Chomsky's narrower linguistic competence. The rise of CLT in the 1970s and early 1980s was partly in response to the lack of success with traditional language teaching methods and partly due to the increase in demand for language learning. In Europe, the advent of the European Common Market, an economic predecessor to the European Union, led to migration in Europe and an increased population of people who needed to learn a foreign language for work or for personal reasons. At the same time, more children were given the opportunity to learn foreign languages in school, as the number of secondary schools offering languages rose worldwide as part of a general trend of curriculum-broadening and modernization, and foreign-language study ceased to be confined to the elite academies. In Britain, the introduction of comprehensive schools, which offered foreign-language study to all children rather than to the select few in the elite grammar schools, greatly increased the demand for language learning.

According to "The appeal and poverty of CLT" by Robert O'Neill and he said 'the belief is so widely held and so frequently repeated that language is a means of communication is wrong in a way that has been devastating to any adequate conception of what humans are and how they differ from other species. Communication is just one use to which language can be put'. One of the specialists of CLT is Derek Bickerton stated that Communicative Language Teaching has enormous intuitive appeal. Despite this, I have come to believe that at the heart of CLT- especially in fundamentalist version of it- we find a naive, even impoverished view of language". In CLT 'communication' means using language to make requests, give advice, agree and disagree, complain, praise, to try to persuade people to do things, and so on. The focus should be on meaning, not on form. Some supporters of CLT, like Geoff Thompson argue that this is a misconception of CLT. However, even he admits that there are good reasons for this 'misconception'. To demonstrate it, there is something called a 'communicative syllabus' which replaces and is superior to a structural syllabus. It is often argued that a typical structural syllabus focuses on the grammatical structure of language rather than on the 'communicative' or pragmatic uses of those language. For example, so the argument goes terms like "The Present Continuous", tell us little or nothing

about the fact that typical examples of this form such as 'You are standing in my way' or 'you are driving too fast' are complaints, or that one of the most frequent uses of the Present Progressive is not to talk about actions in the present but about pre-arranged actions in the future, for this reason, many CLT supporters used to argue and still do that language lessons should not be about 'The Present Continuous' or 'Present Perfect', but about 'Giving and getting personal information', 'Asking for and giving directions', 'Expressing opinions' and etc.

It is obviously true that the majority of people who learn any foreign language consider that the process of learning of grammar is a bit difficult because of so many numbers of grammar rules that can make them confuse and lead to unpleasant situations. It is commonly known that there are several types of learning skills such as reading, writing, speaking and listening all of the skills are main parts of learning a language. However, speaking is more significant for everybody who wants to learn a language quickly than the rest of them. In speaking it is not so necessary to speak correctly with all grammar rules. Such kind of rules can cause to slow down of learning. Nevertheless, it does not mean that grammar is unnecessary, it is impossible to learn a language perfectly without grammar, the only thing is that one should not be extremely dependent on grammar. In my point of view, CLT is one of the most effective methods which have already acquired some promising results in learning. Presently, many classrooms are arranged so that all students face forward to the teacher; the manager is clear; the teacher dominates; all information will come from the teacher; interaction between or among students is less valued. Such situations are quietly found boring and monotonous. In fact, it is apparently accepted that one can feel boredom with being in the same situation for a long period. With purpose of diminishing the situation, other various seating arrangements which encourage people to be cooperative, communicative pair-work and group-work have been presented, as a consequence of that the efficiency of learning a language increase with considerable paces. To state the point clearly some examples can be shown. For instance, if students work in a group-work or pair-work, they become more active and feel independently than they work as usual. As well as by working together as a member of a group each student can express their ideas, argue with each other about any topics, they can receive more information from each other.

CLT teachers choose classroom activities based on what they believe is going to be most effective for students developing communicative abilities in the target language (TL). Oral activities are popular among CLT teachers, as opposed to



grammar drills or reading and writing activities, because they include active conversation and creative, unpredicted responses from students. Activities vary based on the level of language class they are being used in. They promote collaboration, fluency, and comfort in the TL. The six activities listed and explained below are commonly used in CLT classrooms.

### **Role-play**

Role-play is an oral activity usually done in pairs, whose main goal is to develop students' communicative abilities in a certain setting.

Example:

1. The instructor sets the scene: where is the conversation taking place? (E.g., in a café, in a park, etc.)
2. The instructor defines the goal of the students' conversation. (E.g., the speaker is asking for directions, the speaker is ordering coffee, the speaker is talking about a movie they recently saw, etc.)
3. The students converse in pairs for a designated amount of time.

This activity gives students the chance to improve their communication skills in the TL in a low-pressure situation. Most students are more comfortable speaking in pairs rather than in front of the entire class.

Instructors need to be aware of the differences between a conversation and an utterance. Students may use the same utterances repeatedly when doing this activity and not actually have a creative conversation. If instructors do not regulate what kinds of conversations students are having, then the students might not be truly improving their communication skills.

### **Interviews**

An interview is an oral activity done in pairs, whose main goal is to develop students' interpersonal skills in the TL.

Example:

1. The instructor gives each student the same set of questions to ask a partner.
2. Students take turns asking and answering the questions in pairs.

This activity, since it is highly structured, allows for the instructor to more closely monitor students' responses. It can zone in on one specific aspect of grammar or vocabulary, while still being a primarily communicative activity and giving the students communicative benefits.

This is an activity that should be used primarily in the lower levels of language classes, because it will be most beneficial to lower-level speakers. Higher-level speakers should be having unpredictable conversations in the TL, where neither the questions

nor the answers are scripted or expected. If this activity were used with higher-level speakers it wouldn't have many benefits.<sup>[11]</sup>

### **Group work**

Group work is a collaborative activity whose purpose is to foster communication in the TL, in a larger group setting.

Example:

1. Students are assigned a group of no more than six people.
2. Students are assigned a specific role within the group. (E.g., member A, member B, etc.)
3. The instructor gives each group the same task to complete.
4. Each member of the group takes a designated amount of time to work on the part of the task to which they are assigned.
5. The members of the group discuss the information they have found, with each other and put it all together to complete the task.

Students can feel overwhelmed in language classes, but this activity can take away from that feeling. Students are asked to focus on one piece of information only, which increases their comprehension of that information. Better comprehension leads to better communication with the rest of the group, which improves students' communicative abilities in the TL.

Instructors should be sure to monitor that each student is contributing equally to the group effort. It takes a good instructor to design the activity well, so that students will contribute equally, and benefit equally from the activity.

### **Information gap**

Information gap is a collaborative activity, whose purpose is for students to effectively obtain information that was previously unknown to them, in the TL.

Example:

1. The class is paired up. One partner in each pair is Partner A, and the other is Partner B.
2. All the students that are Partner A are given a sheet of paper with a time-table on it. The time-table is filled in half-way, but some of the boxes are empty.
3. All the students that are Partner B are given a sheet of paper with a time-table on it. The boxes that are empty on Partner A's time-table are filled in on Partner B's. There are also empty boxes on Partner B's time-table, but they are filled in on Partner A's.
4. The partners must work together to ask about and supply each other with the



information they are both missing, to complete each other's time-tables.

Completing information gap activities improves students' abilities to communicate about unknown information in the TL. These abilities are directly applicable to many real-world conversations, where the goal is to find out some new piece of information, or simply to exchange information.

Instructors should not overlook the fact that their students need to be prepared to communicate effectively for this activity. They need to know certain vocabulary words, certain structures of grammar, etc. If the students have not been well prepared for the task at hand, then they will not communicate effectively.

### Opinion sharing

Opinion sharing is a content-based activity, whose purpose is to engage students' conversational skills, while talking about something they care about.

Example:

1. The instructor introduces a topic and asks students to contemplate their opinions about it. (E.g., dating, school dress codes, global warming)
2. The students talk in pairs or small groups, debating their opinions on the topic.

Opinion sharing is a great way to get more introverted students to open up and share their opinions. If a student has a strong opinion about a certain topic, then they will speak up and share.<sup>[12]</sup>

Respect is key with this activity. If a student does not feel like their opinion is respected by the instructor or their peers, then they will not feel comfortable sharing, and they will not receive the communicative benefits of this activity.

### Scavenger hunt

A scavenger hunt is a mingling activity that promotes open interaction between students.

Example:

1. The instructor gives students a sheet with instructions on it. (e.g. Find someone who has a birthday in the same month as yours.)
2. Students go around the classroom asking and answering questions about each other.
3. The students wish to find all of the answers they need to complete the scavenger hunt.

In doing this activity, students have the opportunity to speak with a number of classmates, while still being in a low-pressure situation, and talking to only one person at a time. After learning more about each other, and getting to share about themselves, students will feel more comfortable talking and sharing during other communicative activities.

Since this activity is not as structured as some of the others, it is important for instructors to add structure. If certain vocabulary should be used in students'

conversations, or a certain grammar is necessary to complete the activity, then instructors should incorporate that into the scavenger hunt.

In the final analysis, language is primarily a tool of communication. Learning a language means learning to perform communicative speech acts with it. We recognize that different learners have different preferred styles of learning. If this is true of learners and their learning styles, it is also true of teachers and their teaching styles. One of such styles is CLT that is really beneficial for both teachers and students. Firstly, it is a good opportunity for students to show their talents and abilities to do something; it is a period of being active as a member of a group; it is a chance of getting along with their groupmates friendly. Secondly, it is an opportunity for teachers to organize the lesson very interestingly and enjoyably; it is a chance to know about more each of the students.

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## **THEORETICAL APPROACHES TO THE CONCEPT OF "FOREIGN POLICY"**

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### **ABSTRACT**

*This article analyzes the content, essence and basic approaches of the concept of foreign policy, focusing on the factors influencing the foreign policy of states, the specifics of international relations and the approaches of the main scientific schools that explain foreign policy.*

**KEYWORDS:** *foreign policy, international relations, public policy, paradigm, world politics, policy factor, domestic policy, scientific school*

### **INTRODUCTION**

Today, in the context of radical changes in the international arena, world politics and the world economy, the growing influence of the balance of power on international relations, the interests of the nation-state are one of the priorities in the foreign policy of states. Foreign policy is based on solidarity with all democratic forces of the world, interested in solving social problems, democracy, humanity and solving global problems on a global scale, more beneficial integration into international structures.

At the present time, as various political and economic relations are developing rapidly, each country is striving to become an active participant in it at the regional and international levels. The effectiveness of such participation was considered to be directly related to foreign policy. That is why today the theoretical and methodological research of foreign policy is of great importance.

### **MATERIALS AND METHODS**

Foreign policy is the activity of the state and other political institutions in society to realize the national interests and needs at the international level, as well as the harmony of mutual interests. Foreign policy is also considered as a strategy, tactics and a

clear step of the foreign policy department and other structures of the state in the implementation of the goals and objectives of national development in the international arena[1]. At the same time, foreign policy is understood as the scope and path of the state in ensuring national interests in international relations.

In general, foreign policy is also understood as the political measures taken by a state in relation to another state or international organizations. These actions are mainly carried out by the governments or higher authorities of that state as the main political actor.

Ensuring national interests and national security is today the main strategic task of sovereign states as subjects of international politics and law, and this, of course, plays a key role in the implementation of foreign policy[2].

Ensuring national interests and national security is today the main strategic task of sovereign states as subjects of international politics and law, and this, of course, plays a key role in the implementation of foreign policy.

The formation of international relations, the tendency to establish relations between states is directly related to the foreign policy activities of



states. Although the theoretical foundations of the term "foreign policy" and its essence have been established in political science through a number of scientific works, there is no single definition of "foreign policy". Each researcher sought to clarify a particular aspect of the concept in the description.

## DISCUSSION

According to the book "International Relations", foreign policy is a priority principle and effort to establish and implement relations with countries around the world[3].

In addition, the textbook "Fundamentals of Political Science" defines foreign policy as follows: "Foreign policy is a type of policy that regulates the relationship between states and peoples"[4]. In addition, the scientific program "Methodological Aspects of International Relations" states: "The foreign policy of a country is the basis of the international policy of the state, developed by the Ministry of Foreign Affairs (or its corresponding foreign policy agencies) in the broadest sense of the word. principles to be implemented"[5].

Foreign policy goals reflect national interests. As long as they are realized, the state will carry out its foreign policy activities. The foreign policy of the state is formed under the influence of both external and internal factors, which are a complex product of each other. It is a fact that the foreign policy bodies of a state play a key role in the implementation of their foreign policy. These tasks include the implementation of the principle of state sovereignty, the implementation of the foreign policy course of the head of state, the protection of state interests and the rights of citizens in foreign countries, international and regional organizations, the country's foreign policy strategy, its foreign policy interests[6].

The American political scientist G. Allinson studied the formation of foreign policy as a topical problem and identified three main models:

The first model is the classical model, in which foreign policy is manifested as a conscious, broadly planned activity of the actor;

The second model is the manifestation of foreign policy as a complex of organized actors and processes;

The third model is that foreign policy is manifested as a result of the activities of a political institution and its leaders[7]. In this model, the author puts forward the Bureaucratic concept. Because in this concept, the role of the political leader is predominant in determining the direction of foreign policy, and the main focus is on his behavior.

Another scientist who has theoretically studied this problem is R. Bosk, who in his book "Sociology of the World" shows that the potential of the state is a set of resources that must be used to

achieve their goals. This is not only an expression of the state's potential, but also the basis for the formation of foreign policy. Accordingly, the potential of the state is interpreted as a set of resources consisting of two factors - physical and spiritual (mental).

The physical factor consists of the following elements:

1. Territory (geographical factor, as well as its advantages and disadvantages);
2. Population (demographic potential);
3. Economy (it also has several forms, including: economic resources; agriculture and industry; military potential);

The formation of the state's foreign policy is not limited to material resources, but also includes spiritual resources. In turn, the following can be distinguished from the moral factors that directly affect the determination of the state's potential, the nature and nature of the state's foreign policy[5]:

1. Political system and ideology;
2. Level of general and technical education of the population;
3. National morality and the moral level of society.

Also, the Russian scientist G.A. Drobot also divided the resources that lead to the rise of the state in the international arena, the formation of a strong foreign policy into two: material and intangible resources. The material resources included the geographical, demographic, economic and military resources of the state. Intangible resources include political, social, ideological, cultural, informational and scientific-technical resources. It is clear that every factor that determines the capacity of a state has a regular impact on the formation of its foreign policy. Accordingly, the sensitivity of foreign policy will also vary depending on the state's position in the international arena. Therefore, the issue of foreign policy and its formation has been the object of research of many scholars.

It should be noted that the goal of any foreign policy is to ensure the integrity and indivisibility of state sovereignty, and today there are two different approaches to it. While one group of experts (called "idealists" in international political terminology) prioritizes global, universal interests and security over national interests in foreign policy, another group of experts (known as "pragmatists") prioritize state sovereignty over foreign policy today and in the near future. that it is acceptable and effective to maintain. But today, at a difficult stage, due to the real processes, the current problems that need to be addressed, all states will have to do something, if necessary, to recognize mutual cooperation through compromise, to move away from diplomatic formalities[8]. In other words, the main goal of





foreign policy is to ensure the national interests of the state in the international arena.

Representatives of the various schools available in this regard have explored this issue in their theories. Therefore, the problem of interdependence and interaction of domestic and foreign policy is one of the most controversial issues in political science. Each branch of international political science derives its problem from its own personal perceptions based on the forces and sources that drive politics.

For example, proponents of political realism cover fundamentally different areas of state activity, while foreign and domestic policy have a single content that ultimately leads to a struggle for power. The basis of national interests will be of a permanent nature, so that the internal factors of state life are not considered by realists to be able to influence the nature of national interests.

For the representatives of neorealism and structuralism, foreign policy is a continuation of domestic policy, while international relations are perceived as a continuation of domestic social relations.

Representatives of the concept of interdependence of the world in the analysis of this issue are based on the idea that domestic and foreign policy have a single basis - the state. State power has two monopolies: the right to use force on its territory, the right to collect legal taxes. But the realization of these two monopolies of the state will be directly related to the level of development of military information and other advanced technologies of the state. For the proponents of this concept, therefore, the primacy of domestic policy over foreign policy, or vice versa, is of absolute importance; in their view, both cases are determined primarily by factors of a technological nature.

## CONCLUSIONS

In general, foreign policy is based on solidarity with all democratic forces of the world interested in solving social problems, democracy, humanity and solving global problems, more beneficial integration into international structures, especially inter-parliamentary structures. Foreign policy is a tool of prudent policy aimed at ensuring the national interests and security of states in the international community, which in turn includes a number of necessary strategies. While these strategies are not always positive in nature, they often reflect the predominance of individual interests over universal interests. Also, the potential of the state in various areas, foreign policy resources, geostrategic location and the determination of the political leader are among the key factors in the effective and thorough organization of foreign policy.

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# USE AND FORMATION OF THE PROFESSIONAL COMPETENCE OF THE TEACHER IN THE PROCESS OF LEARNING THE RUSSIAN LANGUAGE

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## ABSTRACT

*A methodology and system for the use and formation of the professional competence of a teacher in the process of teaching the Russian language in the system of higher education have been developed.*

**KEY WORDS:** *structural components of competence, over the subject function of the Russian language, university education.*

The dynamics of the development of the teacher's professional competence in the process of teaching the Russian language can be assessed from three positions, in accordance with the main theoretical approaches reflected in psychological and pedagogical research. First, it is a differentiated assessment of the manifestation of the structural components of competence (communicative, informational, regulatory, national, psychological and pedagogical); secondly, it is the manifestation of the relevant competencies of the trainees; thirdly, these are the criteria for assessing the quality of the educational process. In the system of higher education, we have defined the admission rate to higher educational institutions as such a criterion. In each of these areas, specific participants are involved, the corresponding functions are implemented and certain interrelated processes take place.

The theoretical analysis of psychological and pedagogical research has made it possible to formulate that competence is a special integrative indicator, characterized by the individual manifestations of the teacher's abilities. A specific feature of the manifestation of the influence of psychological mechanisms lies in the structural changes of the teacher's professional competence, in establishing a stable relationship between the components of competence and psychological

mechanisms, ensuring on this basis the dynamics of the development of the teacher's professional competence in the process of his professional activity.

To assess professional competence means to compare its existing manifestations with "reference" ones, with such structural manifestations that allow solving the problems of the teacher's professional activity on the basis of the identified criteria as efficiently as possible. By "criterion" we mean a distinctive feature on the basis of which phenomena of different quality are compared, differentiated or classified, the main criteria reflect the priority goal of the analysis and assessment of this phenomenon. Indicators are quantitative and qualitative data, which can be used to judge the development, state of something, which allows for each of the selected specific criteria to evaluate a certain phenomenon [1; 2]. In the hierarchy of these concepts, we assumed that the concept of "criterion" is broader in scope than the concept of "indicator", the latter is included in it as a component, being a component of the criterion. When developing a system of criteria for assessing the psychological mechanism of forming the professional competence of a teacher in the system of higher education in teaching the Russian language and their indicators, the work experience



available in various branches of professional pedagogical psychology was taken into account.

The study of the structural elements of the theory and the psychological and pedagogical characteristics of the teacher's professional competence in relation to the quality of his professional activity showed that this integral pedagogical process is characterized by a structurally differentiated internal composition and a variety of external manifestations. It includes a single complex of phenomena, processes, interconnected with each other, interdependent by the dynamics of the development of internal components and external trends in professional activity. Proceeding from this, it seems that in order to assess the professional competence of a teacher and the psychological mechanisms that affect its formation, it is necessary to accept several criteria that could adequately cover all the essential characteristics of the phenomenon under study. As an assessment of the professional competence of a teacher of higher education, it was assumed that each of the structural components of the components of pedagogical competence acts as a criterion and is compared with the quality and effectiveness of the pedagogical process as a whole; in order to study the psychological mechanisms that optimize the process of developing professional competence, an in-depth study of the structure problem is required. professional competence of a teacher in the system prior to university education.

The results of the study of the structure of professional competence were:

- generalizing theoretical model of the studied phenomenon;
- a model of the elementary-structural analysis of the competence-based approach in the system before university education, with an indication of the subject function of the Russian language, which is realized in the learning process, and the function of the subject "Russian (native) language" in the educational system as a whole in the didactic hierarchy;
- a model of the influence of psychological mechanisms of decentration, identification and pedagogical reflection on the formation of a teacher's professional competence.

A review of works on the problem of psychological mechanisms has shown that they have different interpretations. So, mechanisms are considered as ways of transformation, organization of personality, as a natural connection of factors, conditions and means, as a set of internal logical connections and procedures. Psychological mechanisms are not initially inherent in the subject, but develop in the process of mastering professional activity, taking into account the individual-typological characteristics and social factors of life; in this case, the psychological mechanism, as a phenomenon of the psyche, can simultaneously

manifest itself as a mental process, a mental property and a mental state.

To study and evaluate the psychological mechanisms of the formation of the teacher's professional competence, a complex methodology was developed, which includes several successively implemented stages.

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# A REVIEW OF MACHINE LEARNING TECHNIQUES FOR SUBJECTIVE ANSWERS EVALUATION WITH ONTOLOGY

**Sourabh Singh, Ramdeo Yadav, Mayank Kumar Singh**

## ABSTRACT

*The current system of evaluating subjective answers is adverse. As it takes a lot of time for the answers evaluation and it becomes boring also to check the answers of the same question multiple times. Currently, it can be seen that the use of Computer Aided Assessment(CAA) in checking objective answers is used for Objective Answers evaluation, but checking descriptive answers with CAA is a challenging task because the main aim of subjective evaluation is to get insight of student's learning and their knowledge enhancement. The challenges involve getting the semantic meaning of the language written by students, understanding the natural language of humans, assessing appropriately the knowledge obtained by students. Researchers have performed many ML and NLP techniques to apply CAA on descriptive answers. Among those techniques, hybrid techniques (combination of LSA and GLSA with fuzzy logic) have given better results than the rest of techniques. By using java programming language, open source libraries in java, MatLab and Wordnet, the hybrid technique is implemented. Along with this, there are few algorithms included in the preprocessing steps like word tokenization, stop words removal, synonym search and stemming. In 2016, Dr. Himani Mittal et. al has experimented these techniques with and without using Ontology. And they came to a conclusion that with the use of Ontology few algorithms performance improved extremely well but many have given consistent results.*

**KEYWORDS:** Latent Semantic Analysis, Ontology, Subjective Evaluation, Bilingual Evaluation Understudy, Cosine Similarity, Maximum Entropy, WordNet

## 1. INTRODUCTION

Subjective Evaluation of answers is an important method for understanding the learnings of students and their knowledge enhancement. The manual evaluation of subjective answers takes a lot of time, sometimes results are also delayed, etc. In this 21st century, technology has progressed very fast. At the time lockdown, many organizations have opted to work from home, even schools and colleges are taking their classes online and examinations too. But, the process of evaluating the answers is still manual. So there must be some intelligent software that can solve these problems efficiently and also give accurate results when compared to manual evaluation.

There are several Machine Learning (ML) and Natural Language Processing (NLP) techniques that are able to find the semantic similarity between two words, sentences, or paragraphs. Among those techniques, few of them are explored in this paper like Latent Semantic Analysis (LSA), Generalized Latent Semantic Analysis (GLSA), Bilingual

Evaluation Understudy (BLEU), Maximum Entropy and Hybrid Technique. The outputs of all these techniques vary between range 0 to 1. If the output is 1, it means the student answer and the model answer are highly similar and if output is 0 then there is no similarity.

Computerised Evaluation of Answers is not the new concept. Researchers have been experimenting with various algorithms to overcome this problem for decades. Project Essay Grader [23] was developed by Ellis Page in 1994. But he focused on the surface structure more and ignored the semantic aspect of the essay because of which it was criticized at that time. Thomas K. Landauer et.al [1] developed Latent Semantic Analysis- the technique that is mostly used in automated assessment. There are also many Automated Essay Scoring(AES) widely used -- Intelligent Essay Assessor(IEA) [5], E-Rater and Criterion [15], C-Rater [14], IntelliMetric and MyAccess and Bayesian Essay Test Scoring System(BETSY) [12]. In 2016, M.S Devi and Himani Mittal,[3] in their



experiment they applied Latent Semantic Analysis(LSA), Generalized LSA, Bilingual Evaluation Understudy and Maximum Entropy on subjective answers with and without Ontology, they concluded that the results are more accurate with the use of Ontology.

The challenging problem that we are going to face in this project is to compare the answers of users with that of the stored one. Because, everytime we do not answer the question in the same manner. Suppose, if the question is “Where were you last night?”. The answer stored is “Cinema Hall”. Next time, when the application asked him the same question and user answered that “I was watching a movie in the theatre”. We can see that the both answers are different but we understand it, both are semantically correct. Our main goal in this project is that even our application will also be able to mark these types of answers as the correct one.

In this paper, there are a total of 6 sections including this introduction. In the second section, we have explained about some important previous words that got some recognition. In the third section, the general methodology has been explained based on reading all the research papers on Subjective Evaluation. In the fourth section, we have gone through the working plan briefly. In the fifth section, after testing all the techniques with and without Ontology, the results were discussed and in the fifth section, finally given a conclusion about the best techniques and some discussion related to works that can be done in future.

## 2. REVIEW OF RELATED WORK

In 1994, a tool was developed called Project Essay Grade [23] that evaluates the English Essay. The accuracy of output of this tool was 83-87%. However, this tool was only to check the similarity of words. It doesn't consider the semantic meaning of the content. It was only checking on the basis of word length, word similarity, etc.

In 1999, Foltz et al. [9] developed another tool for assessing the english essay by applying a mathematical technique called latent Semantic Analysis. The name of the tool was Intelligent Essay Assessor. In Latent Semantic Analysis, a matrix is constructed that is called term-document frequency (tdf) matrix. Then Singular Value Decomposition is applied on the tdf matrix. Correlation was calculated between output of LSA and human-assigned grades and the value varied from 0.59 to 0.89 whereas correlation value between two human graders varies from 0.64 to 0.84. So the performance of LSA and human graders is comparable.

In 2005, there came an author Diana Perez [15] who developed a system using LSA and BLEU (Bilingual Evaluation Understudy) technique. The output of these two techniques was combined by a linear equation. The success rate was 50%. This work was further extended by Himani Mittal in 2016, where she combined outputs using fuzzy logic and success rate improved from 50% to nearly 85%.

In 2010, Islam and Hoque [14], they extended the work of Foltz. and introduced a technique called Generalised Latent Semantic Analysis for evaluation. In LSA, we are considering

only single but in the GLSA group of words are considered for matrix construction. The accuracy of the results varied from 89% to 96%.

In 2016, Himani Mittal et al. [3] introduced Hybrid Technique. This technique was developed by combining LSA and BLEU with the help of fuzzy logic. The drawback of BLEU is that it neither performs semantic analysis nor measures the grammatical structure. The drawback of LSA is that it doesn't consider the syntactic structure of answers but measures the semantic aspect thoroughly. So the best features of LSA and BLEU are combined and syntactic structure and word similarity are taken care of by the use of WordNet tools.

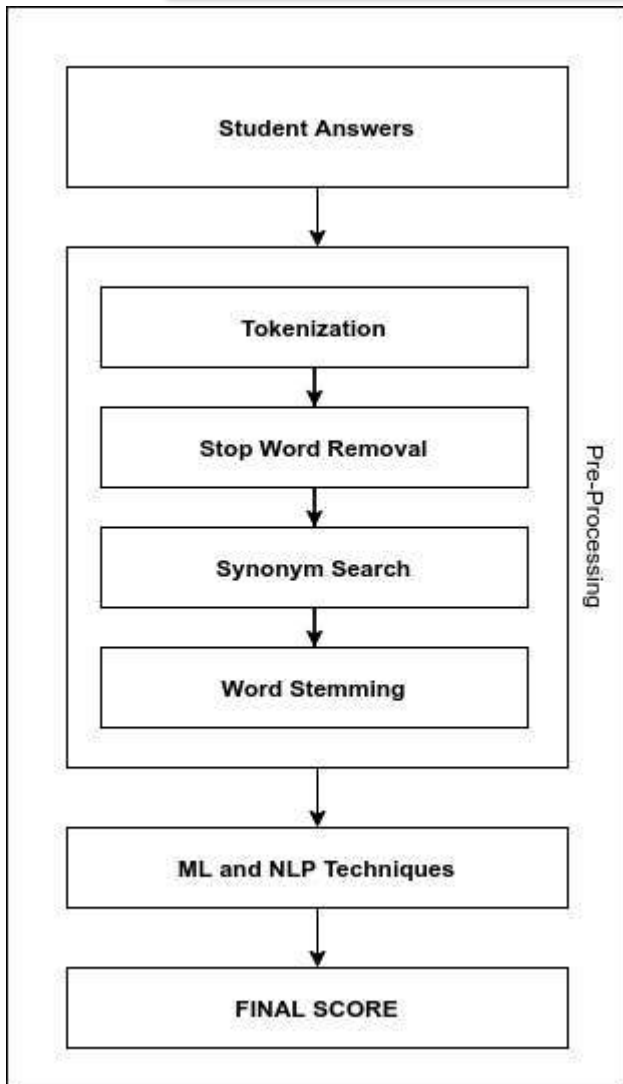
In 2018, Vaibhav Miniyaar et al. [5] developed an android application for Students Marks Evaluation. The Machine Learning and Natural Language Processing techniques they have used have a high agreement (up to 90%) with human performance. In their system, they have used Naive Bayes Classifier and Cosine Similarity.

## 3. GENERAL METHODOLOGY USED FOR EVALUATION

The general approaches that are applied for subjective evaluation are shown in fig 1.

Preprocessing steps are done first on the input answers. And in the pre-processing steps, tokenizations are performed to get individual words. Then stop words (a, an, the, as, etc.) are removed that are common in every sentence. After these steps, synonym search is performed on the rest of the words. Later one more step is performed called word stemming. Stemming algorithms like Porter's Algorithm reduce the words like argument, argues, arguing, etc. to argu i.e. stem words need not to be a word. Finally, Machine Learning and Natural Language Processing techniques like LSA, GLSA, MaxEnt, Cosine Similarity, Bilingual Evaluation Understudy(BLEU), etc. are applied along with the input of keywords provided as a model answer.

Latent Semantic Analysis (LSA) is a technique in natural language processing for the analysis of the relationship between a set of documents and their words. LSA is sometimes referred to as Latent Semantic Indexing(LSI) because of its application to information retrieval.



**Fig. 1: General Approach of Subjective Evaluation Using ML and NLP Techniques**

**4. WORKING PLAN**

This system can be widely used not only by students but anyone who wants to memorise something in question-answer form, they can use this as a reminder also. This can be implemented in different fields like for instant revision during examination, reminder for important works or meeting, etc. So, the techniques that we are going to use in this project will perform tasks like Tokenizing words and sentences, parts of speech tagging, chunking, chunking, lemmatizing words and wordnetting to evaluate the subjective answer.

Fig. 2-Workflow diagram

Users will give answers to the questions asked by application either in text form i.e. through keyboard or by speaking. After getting the answer an editing screen will be opened to correct if the speech-to-text API was able to detect their words correctly or not. After submitting, it will go for preprocessing of the text, i.e NLP techniques will be applied on them to compare the user’s current answer with that of the model answer that was previously stored by the user in the database of the application. The model answers will then be trained by providing keywords and questions specific things(QST). In the user’s answer, the algorithm will search for the presence of keywords . Grammar will be checked by an api as shown in table-1.

**Table-1. Internalization of Grammar**

Grammar Values	Numeric Values
Proper	1
Improper	0

**Table-2. Comparative Study of the techniques for subjective evaluation of answers.**

Author and Year	Tool	Techniques	Results	References
Landauer et al., 2003	Intelligent Essay Assessor	Latent Semantic Processing	59-88%	[1], [4]-[7]
Kakkonen et al., 2008	Automatic Essay Assessor	LSA, Probabilistic LSA, Latent Dirichlet Allocation	LSA better than the rest	[8], [9]
Islam et al, 2010		GLSA	80%	[11]
Rudner et al, 2002	Betsy	Bayes Theorem	80%	[12]



Libin et al., 2008		K-Nearest Neighbor	76%	[13]
Sukkarieh et al., 2012	C-Rater	Maximum Entropy	80%	[14]-[16]
Mittal et al., 2016		Hybrid Technique (combining LSA and BLEU)	72-99%	[3]
Miniyar et al., 2018	Student's Marks Evaluation Application	Naive Bayes, Cosine Similarity	up to 90%	[5]

The research is ongoing for many decades to find a solution for this problem i.e. subjective evaluation. Several machine learning as well as natural language processing techniques were applied to subjective answer evaluation. Table-2 contains comparative study between few techniques used in different tools by different authors.

LSA technique, proposed by Deerwester, is used to establish similarity between two contents. IEA means Intelligent Essay Evaluator was used in the TOEFL exam and accuracy of the results varied from 59 to 87 percent. Similarly, a tool was developed by Diana Perez called Atenea, using a hybrid of LSA and Bilingual Evaluation Understudy. Another was developed called Electronic Essay Rater (E-Rater) uses Natural Language Processing techniques to evaluate sentence structure. It was also used in an exam, GMAT and it has the accuracy of 84 to 93 percent.

## 5. FINDINGS

To test all the subjective evaluation techniques, there is no standard database available. Therefore, by conducting a class test among 50 students is performed and all the answer sheets were first evaluated by human beings. Later, it was applied to all the techniques with and without Ontology. After finding correlations of performance of different techniques with humans, they have concluded that Maximum Entropy performance was improved extremely well and rest of techniques were giving consistent results.

## 6. CONCLUSIONS

What is an Onscreen Marking System? To evaluate the physical copies of the answer sheets in digital form, the Onscreen Marking System is useful. It helps remove location and physical answer sheet handling constraint for the examiners, moderators and result processing authority. Digital evaluation tools like digital annotations, assigning marks, total calculation, moderation is simplified and can be completed in quick time. The figure is well understood. Conclusion The Technique LSA and GLSA discussed and implemented in this project is having good accuracy more than 90% . This project works the same as human beings work considering for evaluation of answer sheets. The accuracy can be increased as per the data set collected. This system can be improved by taking

continuous feedback from teachers and students. The Bilingual Evaluation Understudy technique works like if the number of keywords is less in the student's answers then it will give lower marks to it. So after applying the BLEU technique, the score that it generates can be considered as the minimum marks to be awarded to students. The technique BLEU i.e Bilingual Evaluation Understudy doesn't measure the semantic analysis of the sentences and also grammatical structures and expressions of the sentences. It is only checking exact word matches and dividing it with the total number of keywords. We get the best features of LSA and BLEU by combining them, also we say it is a hybrid technique. Using wordnet tools, we are finding the similarity between words and sentences and finding the syntactic structure of the sentences.. We can conclude that in the lower bound we can put BLEU technique and in Upper bound we can put the LSA technique. Using fuzzy logic, this technique actually helps to combine two scores.

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