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Research Paper

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FOREIGN TRADE POLICY REFORMS IN INDIA: IMPACT ON TRADE PERFORMANCE

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In this paper, researchers study and analyse the impact of foreign trade policy reforms on India's trade performance since independence. Initially after independence, India followed protectionism, using import substitution and strict trade controls to support domestic business and industries. This approach became unsustainable, and resulted in inefficiency and slow growth. In 1991, country was facing a balance of payments crisis. And hence, India started major economic reforms, lowering barriers of trade, ending licensing, and moving towards a market-driven forex rate. These changes started a period of privatisation, liberalization, globalization, trade expansion, and focus on exports.

The researchers used secondary time-series data from 1991–92 to 2022–23 to analyse trends in exports, imports, and total trade. The findings approve a significant improvement in trade performance during the period of reforms. Trade volumes increased sharply, exports became more diversified, and India became more integrated into the world economy. However, growth patterns remained cyclical and were strongly affected by global events such as financial crises and the COVID-19 pandemic. Despite strong growth, total exports remained behind total imports due to ongoing high import demands.

The researchers suggest further policy focus on export diversification, digital trade processes, SME support, and building resilience to global shocks to continue improving India's global trade standing.

KEY WORDS: ***Foreign Trade Policy, Export-Import Policy (EXIM), Economic Reforms, Foreign Trade Performance.***

INTRODUCTION

Foreign trade policy of India has been changed since independence. In the beginning, the country relied on a protectionist approach, and used import substitution and strict regulations for growth of domestic industries and promoting self-reliance (Jadhav & Satpute, 2014). Over the period, this approach began to show its limitations. Industries became less competitive, and the economy struggled to adapt to global changes. External pressures and budding inefficiencies made it clear that a closed economy could not sustain growth persistently (Pedersen, 2000).

A decisive move came in 1991, during a severe balance of payments crisis. The government launched sweeping economic reforms to stabilize the economy and open it to the world. Trade barriers were lowered, import licensing was dismantled, and a flexible exchange rate system was introduced. These changes, driven by the then Finance Minister Manmohan Singh, marked the beginning of India's liberalization era. The careful coordination between exchange rate policy and trade liberalization was crucial to the success of these reforms (Irwin, 2025). The 1991 reforms were more than just a short-term crisis response. They reflected a wider vision—making industries more efficient, boosting exports, and integrating India with the global economy (Panagariya, 2024; Bhala, 2023). Over the next several years, tariff structures were rationalized, systems were modernized, and export promotion became a focus of trade policy.

Further reforms through helped build on these gains. Policymakers also dealt with emerging challenges such as sector-specific support and anti-dumping measures (Vardhan, 2017). Research suggests that liberalization had a clear positive impact: exports expanded rapidly, India's trade partners diversified, and domestic firms grew more competitive (Topalova, 2004).

Studies on the post-reform period highlight steady export growth, stronger balance of payments, and deeper participation in global value chains. Latest trade policy, the Foreign Trade Policy 2023, place emphasis on digitalization, production-linked incentives, and ambitious export targets—signalling India's effort to adapt to a fast-changing global trade environment (Bhala, 2023).

Against this backdrop, the present paper examines how foreign trade policy reforms have shaped India's trade performance. It

draws on academic studies and policy analyses to explore government initiatives and trade trends. The goal is to understand the links between policy reforms and trade outcomes, and to identify the priorities needed to strengthen India's performance in global trade.

LITERATURE REVIEW

Amarasena (2020) in his paper 'Growth and structure of India's foreign trade since the post reform period' discusses foreign trade, WTO, exports, and imports. The objectives were to study the growth of exports and imports in India, and to analyse changes in their composition during the post-reform period. The study is based on time series secondary data from 1990 to 2018, sourced from the RBI handbook of statistics.

Kalyan (2020), through his paper "An analysis of India's foreign trade during pre and post economic policy," argues that foreign trade acts as a catalyst for growth and development. The study covers 48 years of trade, including the pre-reform period (1970–1991) and post-reform period (1991–2018). The analysis, based on time series data, reveals that post-reform import growth exceeded export growth, even though exports and imports both contributed significantly to GDP.

Roy and Roy (2020) analyze the relationship between foreign trade policy and economic growth in India using annual data from 1970 to 2018. Employing Johansen cointegration and VECM, they find both long-term and short-run dynamics, with adoption of the 1991 reforms having a clear positive effect on economic development and trade policy.

Singh and Kumar (2020) empirically examine the relationship between India's GDP, exports, and imports using time-series data from 1995 to 2018. Using unit root tests, cointegration, and VECM Granger causality, they find a bi-directional relationship between GDP and exports and a uni-directional relation from GDP to imports. The results imply important policy directions for India's $5 trillion economy target.

Gurung and Rai (2020) focus on determinants of India's exports over 25 years (1990–2015). Using regression models, they show that world income and relative prices impact export demand, while GDP, REER, and trade openness determine export supply. Their analysis stresses the significance of macroeconomic and international variables in shaping India's exports.

Bhattacharya and Sachdev (2021) in their study "A study on growing Indian Economy in relation to the International Foreign trade" describe India's growing economic integration with the world, highlighting infrastructure development, technology adoption, 100% FDI policies, and the "Made in India" initiative. They argue that foreign trade not only fosters growth but promotes strategic diplomatic ties, with MSMEs playing a crucial role in GDP growth.

Mani (2021) stresses that economic decision-making has become central to governments and examines India's export performance after the 1991 reforms till 2018. Using secondary data from WITS, she shows the trends in exports and imports and evaluates broader post-reform trade performance.

Narlikar (2021) evaluates India's foreign economic policy under the Modi government. He highlights both achievements and limitations, arguing that while domestic economic reforms under Modi were successful, foreign economic reforms remained aligned with earlier cautious approaches at the WTO and other platforms.

Tiwari (2021) compares India's trade before and after the 1991 reforms. Using secondary data and paired t-test analysis, he finds that while trade expanded significantly post-reform, the rate of import growth exceeded export growth. His findings indicate India's dependence on imports, even amid growing exports.

Anusha and Nazneen (2021) study India's major trade partners, particularly the UK and US. Using secondary data from government reports, they explore trade trends in 2019–20 and note persisting trade imbalances. The analysis underscores the importance of bilateral trade terms and global positioning of India's trade policy, including EXIM policy schemes.

Shrestha (2021) focuses on Nepal's foreign trade direction, with India as the largest partner. Using secondary data, he highlights Nepal's growing trade deficit with India, showing India's centrality in Nepal's overall trade patterns.

Pillai (2023), in "Decoding India's Economic Reforms: A 30-Year Review," critically evaluates reforms started in 1991. Using a qualitative review approach with secondary data and case studies, the paper assesses short- and long-term impacts of reforms, including challenges like inequality and environmental stress.

Dwivedi (2023) compares India's trade in pre- and post-reform periods (1970–1990 vs. 1992–2012). Using secondary data with paired t-tests, he finds reforms significantly boosted trade performance, establishing a strong positive relationship between reforms and trade growth.

Barbhuiya (2023) states that foreign trade has been a key growth driver, with exports positively influencing GDP. His empirical study applies regression analysis and ADF test, concluding that despite export growth, India's trade balance remains negative due to high crude oil imports.

Monika and Kirubagaran (2024) studied public opinion on trade and economic growth in Tamil Nadu using convenience sampling of 211 respondents. Survey data revealed mixed attitudes, with evidence of trade contributing to growth but also concerns about external dependence.

Verma (2024) focuses on India's trade policies during Atal Bihari Vajpayee's government, highlighting his role in liberalization, bilateral engagement, and international integration. Using secondary data and descriptive analysis, the paper underscores Vajpayee's significant contributions in boosting India's trade competitiveness.

Kumar (2025) explores India's evolving foreign economic policy in the context of global economic transformations. He emphasizes India's shift from protectionism to liberalization, with policies balancing openness and strategic autonomy.

Aiman (2025) studies India as an emerging economy, concluding that it has become one of the top three developing nations in global trade engagement. He emphasizes trade's role in stimulating growth and investment inflows, supported by both theoretical and empirical evidence.

OBJECTIVES OF THE STUDY

1. To analyse trade performance in the post-reform period by studying trends in exports, imports, and total trade using time-series data.
2. To provide policy recommendations for strengthening India's trade competitiveness and aligning foreign trade policy

HYPOTHESIS

Null Hypothesis (H_0): There is no significant increase in India's trade performance (exports, imports, and total trade) in the post-reform period.

Alternative Hypothesis (H_1): There is a significant increase in India's trade performance (exports, imports, and total trade) in the post-reform period.

RESEARCH METHODOLOGY

The study adopts a **descriptive and analytical research design** based on secondary data, focusing on time-series analysis to evaluate India's foreign trade performance in the post-reform period. Only **secondary data** has been used, from the official annual Economic Survey of India, which provides comprehensive statistics on exports, imports, and total trade over time. The main analysis involves time-series techniques to identify trends, growth patterns, and fluctuations in trade indicators, using Percentage change calculations.

FOREIGN TRADE POLICY REFORMS IN INDIA

After achieving independence, the country followed a **protectionist trade policy**. The Export-Import Policy (EXIM Policy) of India, emphasized over self-reliance. Import substitution was encouraged by Govt. of India, through **high tariffs, stringent licensing, and effective controls**. Exports to the world, were regulated with limited incentives. The main goal of policy was to protect domestic industries and preserve foreign exchange with slight global integration.

Prior to 1985, the Indian Government used to announce export and import policies annually. To maintain uniformity and stability, Govt. decided to prepare export and import policy for 3 years. The first three-year policy was announced in 1985

EXIM Policy 1985: In year 1985, the government launched its **first formal export import (EXIM) Policy**. Aim was to promote exports and ease some of the import restrictions. This policy was a slow shift from protectionism to the liberalization. However, the government still maintained overall trade controls.

EXIM Policy 1988: The Export-Import Policy of 1988 was another 3-year policy. It was announced to promote exports and regulate imports in a balanced way. This policy encouraged Indian industries to compete in global markets. It tried to reduce unnecessary restrictions on exporters. At the same time, it controlled imports to protect domestic industries. Essential raw materials, capital goods, and technology were allowed to be imported more easily. It was a step towards opening India's trade. It laid the foundation for the bigger reforms that came in 1991.

EXIM Policy 1992–1997: In 1991 country faced balance of payments crisis. As a result, the nation adopted **first comprehensive**

EXIM Policy 1992–97. It abolished most import licensing, reduced tariffs, and adopted market-based exchange rates. Export promotion tools like **Duty Drawback** were strengthened, and procedures simplified. This was a historic move toward liberalization.

EXIM Policy 1997–2002: This policy focused on **consolidation**. Tariffs were rationalized, and Special Economic Zones (SEZs) were supported to boost exports. Export diversification and trade infrastructure were prioritized to make country more competitive in global markets.

FTP 2004–2009: The FTP 2004–09 introduced **new export incentives** and technology upgradation schemes. It pushed Indian firms to integrate with global value chains. India signed more **regional and bilateral trade agreements**, strengthening external engagement.

FTP 2009–2014: The FTP 2009–14 improved **digitization of procedures** and recognized high-performing exporters. Special focus was given to SMEs through cluster development programs. India also expanded its network of Free Trade Agreements (FTAs) during this period.

FTP 2015–2020: The FTP 2015–20 made a big push for **digital facilitation**. Paperless trade, online monitoring systems, and simplified compliance were introduced. Policies were aligned with **Make in India** and **Digital India** initiatives. Export basket diversification and new incentive schemes supported India's manufacturing sector.

FTP 2023: The FTP 2023 sets a long-term export target of **$2 trillion by 2030**. It emphasizes sustainable growth, digital trade, and market diversification. New measures include support for **e-commerce exports**, greater role for SEZs, Towns of Export Excellence, and digital single-window systems. The focus is on integrating India with global value chains while ensuring inclusive growth.

ANALYSIS OF TRADE PERFORMANCE

EXPORT, IMPORT, AND TOTAL TRADE DATA FROM 1991-92 TO 2022-23

Year	Exports (In US $ Million)	Exports Growth Rate (YoY%)	Imports (In US $ Million)	Imports Growth Rate (YoY%)	Total Trade (In US $ Million)	Total Trade Growth Rate (YoY%)
1991-92	17,865	------	19,411	------	37,276	------
1992-93	18537	3.8	21,882	12.7	40,419	8.4
1993-94	22,238	20.0	23,306	6.5	45,544	12.7
1994-95	26,330	18.4	28,654	22.9	54,984	20.7
1995-96	31,797	20.8	36,678	28.0	68,475	24.5
1996-97	33,470	5.3	39,133	6.7	72,603	6.0
1997-98	35,006	4.6	41,484	6.0	76,490	5.4
1998-99	33,218	- 5.1	42,389	2.2	75,607	-1.2
1999-2000	36,715	10.5	49,738	17.3	86,453	14.3
2000-01	44,076	20.0	49,975	0.5	94,051	8.8
2001-02	43,827	- 0.6	51,413	2.9	95,240	1.3
2002-03	52,719	20.3	61,412	19.4	114,131	19.9
2003-04	63,843	21.1	78,149	27.3	141,992	24.4
2004-05	83,536	30.8	111,517	42.7	195,053	37.4
2005-06	103,091	23.4	149,166	33.8	252,257	29.3
2006-07	126,414	22.6	185,735	24.5	312,149	23.7
2007-08	163,132	29.0	251,654	35.5	414,786	32.9
2008-09	185,295	13.6	303,696	20.7	488,991	17.9
2009-10	178,751	-3.5	288,373	-5.0	467,124	-4.5
2010-11	249,816	39.8	369,769	28.2	619,585	32.6
2011-12	305,964	22.5	489,319	32.3	795,283	28.3
2012-13	300,401	−1.8	490,737	0.3	791,138	−0.5
2013-14	314,405	4.7	450,200	−8.3	764,605	−3.4
2014-15	310,338	−1.3	448,033	−0.5	758,371	−0.8
2015-16	262,291	−15.5	381,008	−15.0	643,299	−15.2
2016-17	275,852	5.2	384,357	0.9	660,209	2.6
2017-18	303,526	10.0	465,581	21.1	769,107	16.5
2018-19	330,078	8.7	514,078	10.4	844,156	9.8
2019-20	313,361	−5.1	474,709	−7.7	788,070	−6.6
2020-21	291,808	−6.9	394,436	−16.9	686,244	−12.9
2021-22	422,004	44.6	613,052	55.4	1,035,056	50.9
2022-23	451,070	6.9	715,969	16.8	1,167,039	12.8

India's trade performance from 1991-92 to 2022-23 is a story of steady expansion, resilience, and transformation. Starting with the exports and imports of around $18–19 billion in 1991-92, trade volumes grew rapidly after policy shift, crossing $70 billion by the mid-1990s. The late 1990s saw a slowdown due to the financial crisis, but recovery came by 1999-2000. The early 2000s marked a strong upward trend, with exports crossing $60 billion and total trade reaching $140 billion by 2003-04, supported by India's IT and services boom. The mid-2000s were a golden phase, as exports doubled and imports surged, pushing total trade beyond $400 billion by 2007-08. The global financial crisis of 2008-09 caused a dip, but recovery was swift, and by 2011-12 trade had touched nearly $800 billion. The years 2012-2016 brought stagnation, with exports hovering around $300 billion and imports slowing due to weak global demand and falling commodity prices. Growth revived in 2017-19, but the COVID-19 pandemic sharply reduced trade in 2020-21, pulling it down to $686 billion. The rebound was dramatic in 2021-22, when exports jumped 45% and imports 55%, taking total trade past the historic $1 trillion mark. By 2022-23, India consolidated this achievement with $451 billion in exports, $716 billion in imports, and $1.17 trillion in total trade. Over three decades, India's trade expanded more than thirtyfold, weathering crises yet consistently moving upward, though imports have outpaced exports.

After going through the above analysis, the **null hypothesis (H0)** is rejected. Trade performance significantly improved in the post-reform period. However, the growth was **highly cyclical**, often shaped by global conditions such as financial crisis of 2008, COVID-19 shock, etc.

SUGGESTIONS

- **Increase Export Incentives and Facilitation:** Strengthen export incentives—such as Duty Drawback and technology upgradation schemes—to promote greater export growth, drawing on successful policies outlined in past FTPs like those from 1992–97 and 2004–09.
- **Expand Digitization of Trade Processes:** Further enhance digital facilitation—including paperless trade, online monitoring, and digital single-window systems—to simplify compliance and speed up export-import

procedures, as successfully implemented in FTP 2015–20 and FTP 2023.

- **Support MSMEs and Cluster Development:** Provide targeted support for MSMEs and promote cluster development programs, as emphasized in FTP 2009–14, enabling broader participation in export sectors and strengthening their global competitiveness.
- **Promote Export Basket Diversification:** Encourage diversification in the export basket by supporting both traditional and new sectors through specific policy measures, as seen during FTPs focused on manufacturing and export basket expansion.
- **Enhance Role and Efficiency of SEZs:** Strengthen the role of Special Economic Zones (SEZs) in export promotion and inclusive growth, guided by measures highlighted in FTP 1997–2002 and FTP 2023.
- **Focus on Market Diversification:** Pursue diversification of export markets with special support for entry into new markets (such as through Towns of Export Excellence and international engagement), as prioritized in FTP 2023.
- **Align Trade Policy with National Initiatives:** Continue aligning foreign trade policy with broader national initiatives like Make in India and Digital India, ensuring coherence and support for both manufacturing and digital trade, as observed in FTP 2015–20.
- **Promote Recovery Readiness and Resilience:** Develop trade policies that enhance resilience to external shocks—drawing on the experience of sharp rebounds after global crises (2008, COVID-19)—with policies supporting rapid export and import recovery.

CONCLUSION

The study shows that **India's foreign trade performance has improved significantly in the post-reform period**. The hypothesis that reforms boosted trade is confirmed. Exports and imports increased manifold.

However, the analysis also confirms that trade growth has been **cyclical and heavily influenced by global events** such as the Asian crisis, financial crisis of 2008, and the COVID-19 pandemic. While liberalization policies triggered strong growth (especially in 1992–97 and 2004–09), later phases witnessed a slowdown due to external shocks and persistent internal bottlenecks.

Despite all advances, India's **trade deficit remains a consistent challenge**, largely due to heavy reliance on essential imports. Thus, while reforms have deepened India's global integration and raised competitiveness, future focus must be on addressing structural weaknesses, boosting high-value exports, and ensuring resilience against global uncertainties.

If trade policy aligns closely with infrastructure development, innovation, and sustainable growth, **India can strengthen its position in the global economy.**

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BIASES IN INVESTING
(A STUDY IN THE CONTEXT OF THE INDIAN STOCK MARKET)

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This paper will explore the profound influence of behavioral biases in making investment choices especially within the vibrant yet turbulent Indian stock market. Based on the concept of behavioural finance, it examines some of the main biases like anchoring, overconfidence, herding, loss aversion, confirmation bias, and others, illustrating how the psychological bias results in a decision-making behaviour that is not rational and optimal. A literature review and an empirical investigation of a survey among Indian investors show that these biases are strongly correlated with investment behaviours, including an excessive trading spirit or excessive conservatism. In my view, these biases cannot be mere anomalies but systemic issues based on the peculiarities of Indian culture, society, and economy, such as intensified digitalization and flooding of retail investors. Their practical implications can be observed based on the events of the 2020 COVID-19 market crash, the 2021 IPO boom, the 2023 Adani stock scandal and the 2024 mid-cap rally. Recent studies, such as those examining overreaction in NSE 500 stocks and the role of financial literacy in mediating biases, further underscore their persistence in 2025. This paper promises mitigation measures and focuses on education and technology, and concludes that it is important to work on reducing biases to achieve sustainable wealth creation in India. Finally, while economic growth fuels investment opportunities, at the same time, uncontrolled consumer prejudice may jeopardize the opportunities, exposing the necessity for sequential priority on behavioural awareness.

KEYWORDS: ***Behavioral Biases, Investment Decision-Making, Indian Stock Market, Overconfidence, Loss Aversion, Herding Behavior, Mitigation Strategies, Correlation Analysis.***

1. INTRODUCTION

Investment decision-making in the stock market can be modeled as the perfect rationality of investors, who pre-filter all the known information to maximize the returns and minimize the risk. However, in practice, particularly in an ever changing market like India's, human psychology introduces layers of complexity which often lead to irrational outcomes. These decisions are significantly influenced by the behavioural biases and are systemic misjudgements based on cognitive limitations, emotional responses, and social pressures, which are systematic injuries of judgments. In my opinion, these biases are especially pronounced in India due to the market's rapid evolution which is characterized by an influx of retail investors through platforms like Zerodha and Groww, coupled with cultural inclinations towards collectivism and optimism during economic development. This paper will examine these prejudices in detail to examine and describe their mechanisms, effects, and connection to one another through conceptual and empirical means.

The Indian stock market has also experienced tremendous growth, with the BSE Sensex crossing 80,000 points in 2024 and demat accounts exceeding 150 million by 2025, indicating the widespread participation from diverse demographics. However, there are traps to this democratization: most investors, influenced by their views, engage in speculative trading and in turn increase volatility. For instance, during the 2020 pandemic, fear-driven loss aversion led to mass sell-offs, followed by the plunge of Nifty 50 more than 30% in weeks, after which optimism bias triggered a rapid recovery driven by herd mentality. Based on my analysis, these incidents emphasize the overall impact of the biases on the individual portfolio as well as on the market inefficiency covering the concept of Efficient Market Hypothesis in an emerging economic context. Recently, the Adani stock scandal of 2023 exemplified overconfidence, where investors ignored warning signs amid hype, leading to sharp declines, and the 2024 mid-cap rally demonstrated herding formation through social media drove unsustainable gains in sectors like EVs and fintech.

The roots of this study lie in the Prospect Theory by Tversky and Kahneman according to which individuals judge gains and losses in an asymmetric manner, often leading to risk averse or risk-seeking behaviours instead of adhering to utility maximization. Extending this to India, where financial literacy is not yet evenly spread, with just one in every three adults financially literate, biases such as overconfidence may lead investors to overestimate their market timing abilities, resulting in higher transaction costs and eroded returns. While the bidirectional link between rational decision-making and market

stability has been acknowledged, the specific pathways in the Indian context like whether social media plays an important role in herding or negative emotions under economic uncertainty, deserve a more in-depth exploration. This paper addresses this in the form of literature review, research methodology, analysis of data, solution to the problems and concluding with policy implications. In my analysis, I will focus on the reduction of bias because India's young investor base is both an asset for growth and a vulnerability to psychological traps, especially in a market prone to external shocks like global inflation or geopolitical tensions.

2. LITERATURE REVIEW: KEY BIASES IMPACTING INVESTMENT DECISIONS

2.1 Basic Concepts

Investment decisions include the process of analysing and providing funds to various assets in order to get maximum returns. Nevertheless, these processes are rarely completely rational: they are often compromised by behavioural prejudices stemming from human psychology, social influences and emotional triggers. In the Indian stock market, where rapid economic liberalization since 1991 has integrated millions into equity trading, these biases manifest more acutely due to limited experience and high volatility in the market. In my opinion, it is very important to understand biases as they explain why even educated investors fail to adhere to fundamentals resulting in patterns like boom-bust cycles observed in areas such as technology and real estate. Recent 2025 studies, such as those on overreaction in NSE 500 stocks, confirm that these biases persist and affect the market's efficiency.

2.2 Evolution of Behavioral Finance

Behavioral finance is a development of a reaction to classical theory, bringing psychological knowledge to explain market anomalies. Pioneered by works like Tversky and Kahneman's, it gained relevance in India after 1991 reforms, where the studies show how biases can be enhanced by cultural aspects. For example, India's collectivistic society fosters herding as observed in the 2008 financial crisis where the Global Financial Crisis (GFC), a fundamental issue, caused panic leading to a 50% Sensex drop. Empirical research conducted in India shows that biases are part of the high trading volumes which tend to disrupt long term returns. A 2025 study on behavioural biases during bear markets, notes that prolonged downturns in 2025 influenced investor psychology, leading to increased loss aversion.

2.3 Key Biases

Anchoring bias refers to when investors rely excessively on an initial piece of information, like stock's purchase price or historical highs, to make subsequent decisions. This has the potential to distort judgements causing people to retain assets despite changing market conditions. In the Indian context, anchoring is evident when investors are fixated on IPO listing prices; for example during the Paytm IPO in 2021, many anchored to the issue price of ₹2150 and did not sell even when the shares fell below ₹500, hoping that it would rise again due to its initial hype rather than valuation metrics. From my perspective, this bias is especially harmful in India's volatile market, where rapid price swings demand flexibility, yet anchoring leads to opportunity costs and unrealized losses. A recent 2024-2025 example is the anchoring to pre-2024 highs in mid-cap stocks, delaying exits during corrections.

Overconfidence bias is an error of overestimating one's knowledge or predictive abilities, often leading in excessive trading and risk-taking. Investors think they can win the market with superior insights, ignoring evidence of market efficiency. In India, this is common among young, tech-savvy traders using apps like Upstox, who trade frequently in derivatives, leading to high brokerage fees and average losses of 20-30% annually for retail participants, as per SEBI reports. I view this to be a double-edged sword: while in one way it motivates people to participate in the market, but on the other hand, the way it leads to overtrading, as seen in the 2022 Zomato post-IPO volatility where overconfident investors chased gains without heeding valuation concerns, amplifying personal and systemic risks. Studies in 2025 reflect overconfidence in NSE stocks, which is attributed to reversal effects.

Herding is the act of imitating the actions of others without critically analysing them because of the fear of missing out. This may result in speculative financial bubbles like dot-com surge analogs in India's fintech sector, where social media hype led to overvalued stocks like Zomato in 2021, which was then followed by corrections. Personally, I believe that herding is further aggravated in India through platforms like Twitter (now X), WhatsApp groups, where retail investors follow "expert" tips, which lead to an increased volatility in indices like Bank Nifty. This is seen in recent hype of IPOs in start ups like Ola Electric, as prices are artificially inflated by a herd buying.

The concept of **loss aversion** is where the pain of losses outweighs the pleasure of equivalent gains, prompting investors to hold losing positions excessively while selling winners too soon. This was clearly visible in India during the 2022 bear market when many held onto falling energy stocks like Reliance without the stress of having increased opportunities to diversify investments. In my analysis approach, this bias perpetuates capital erosion, particularly for middle-income
investors who prioritize capital preservations rather than capital growth in an inflation-prone economy. A study conducted on investor psychology in bear markets showed increased loss aversion in prolonged downturns.

Confirmation bias causes people to find evidence that satisfies the existing conviction, ignoring contradictory evidence. An Indian investor bullish on electric vehicles might focus on positive Tesla analogies for Tata Motors while dismissing competitive pressures from global players, leading to biased portfolios. I believe this bias is exacerbated by algorithmic news feeds on platforms like Moneycontrol, creating echo chambers that hinder balanced decision-making. Recent examples include confirmation of growth narratives in 2024 pharma stocks despite regulatory warnings.

Other biases include **regret aversion**, which creates unwillingness to invest after making a mistake, the **optimism bias** creates over-investment in expansion ideas similar to that of India's startup ecosystem, disposition effect mirroring loss aversion in selling patterns, **status quo bias** maintaining outdated portfolios amid market shifts, and **self-control bias** leading to hasty trades via mobile apps. In the Indian market, these interact, as seen in the 2024 mid-cap rally where optimism

and herding drove unsustainable results. One of the studies of retail investors observes the existence of such sources of emotional bias like disposition effects when making trading decisions.

2.4 Factors Influencing Biases in India

Emotional triggers like fear and greed take charge during volatility; for example, greed was the driving force behind the 2021 Indian crypto boom, and vice versa. Herding is enhanced by social influence, whether it is a peer effect by family or online communities, amplifying herding in a culture valuing consensus. Experience levels matter: novices, comprising 60% of new investors, are more prone to biases, while veterans may succumb to overconfidence from past successes like the post-COVID bull run. Culturally, India's collectivism strengthens herding, which is a contrast to the individualistic western markets. Recent studies note the role of financial literacy in the concept of moderating these factors.

2.5 Implications

At the market level, biases foster asset bubbles and crashes, as in the 2007-2008 Sensex volatility or the 2025 overreactions of NSE, where a sudden surge in mid-cap stock trading due to speculative frenzy led to a sharp correction in September.. Individually, they bring about poor returns and lack of diversification. There is a lack of long-term studies specific to India that explore how self-control is affected by digital trading platforms, but some of these gaps are being addressed by 2025 articles focusing on emotional intelligence and its connection to biases.

2.6 Narrative Economics and Its Role in Behavioral Biases

Narrative economics, as conceptualised by Robert Shiller, emphasizes how viral stories and narratives act as the determinant of economic behaviour, influencing investor perceptions and decisions beyond rational analysis. Hyped by word of mouth, these stories reinforce other biases like herding and confirmation bias by creating shared beliefs that drive market movements. In the Indian stock market, narratives have been an influential driver in recent bull runs; for instance, the 2020-2024 bull market was fueled by narratives of India's economic resilience post-COVID, "Make in India" success stories, and digital transformation tales, leading investors to enter into sectors like technology and renewables despite elevated valuations. In my opinion, the stories fuel biases in India since they spread quickly through social media platforms and news outlets, where stories of overnight wealth creation from IPOs like Zomato reinforce overconfidence and optimism, contributing to financial bubbles. Shiller's analysis of historical crashes like the 1987 stock market event, shows how fear-based narrative triggers panic selling, mirroring India's 2020 crash where narratives of global doom promoted loss-averse behaviours. Integrating narrative economics into behavioural finance highlights that understanding these stories is key to explaining why biases persist and how they lead to collective irrationality, offering a lens to predict and mitigate market swings in emerging economies like India.

3. METHODOLOGY

3.1 Research Design

This research will be based on a mixed-research design, primarily quantitative with qualitative elements from literature to provide a holistic understanding of behavioural biases in the India stock market. The design is cross-sectional and captures a snapshot of investor behaviours at a specific point in time, which is suitable for exploring correlations between variables without implying causality. From my perspective, this research design suits an exploratory study such as this since it involves clear, easy, and effective collection of data, reflecting the real-time dynamics of India's market. However, I recognise that a longitudinal design, which tracks changes in biases over time alongside market cycles, could offer deeper insights, but due to limited resources, the cross-sectional approach was more practical.

The research philosophy underpinning this study is positivist, according to which any bias in behaviour can be objectively measured with the purpose of structural instruments and statistics. This aligns with behavioural finance's empirical tradition, where biases are assumed to be measurable and influence decisions. In my view, this philosophy enhances the study's reliability by focusing on quantifiable data, though it may overlook nuanced subjective experiences that interpretivist approaches could capture.

3.2 Questionnaire Development and Validation

The data collection tool is a self-administered questionnaire named "Research Questionnaire on Behavioural Biases and Investment Decision-Making" to be used as a measure of the respondent profiles, investment behaviour and behavioural bias. The questionnaire has been divided into three sections:

- **Section 1: Respondent Profile** – This gathers demographic data to contextualize responses and check for subgroup variations. Items include:
  - Age Group: Under 25 years, 25–34 years, 35–44 years, 45–54 years, 55 years and above.
  - Gender: Male, Female, Prefer not to disclose.
  - Highest Educational Qualification: High School or Equivalent, Bachelor's Degree, Master's Degree, Doctorate, Other.
  - Occupation / Professional Domain: Open-ended.
  - Years of Active Investing Experience: Less than 1 year, 1–3 years, 3–5 years, More than 5 years.

In my opinion, it is important to have such demographics as they determine the level of bias; for example, younger investors may exhibit more overconfidence due to limited experience, as seen in India's retail boom.

- **Section 2: Investment Behavior Index (Dependent Variable)** – This assesses rational investment practices using four statements on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree):
  - IB1: I invest regularly rather than only during specific market conditions.
  - IB2: I keep my portfolio diversified to reduce overall risk.
  - IB3: I adjust my portfolio when the market changes significantly.
  - IB4: I prefer long-term holdings over frequent selling.

These items were chosen to reflect adaptive, risk-managed behaviour, as opposed to bias-driven impulsivity. This index is

a part of my analysis as it serves as a benchmark for how biases detract from optimal decisions.

- **Section 3: Behavioral Bias Constructs (Independent Variables)** – This includes ten biases, each with three statements on the same Likert scale:
  - **Overconfidence (OC)**:
    - OC1: I believe I am better than the average investor at choosing investments.
    - OC2: I am confident I can outperform market averages.
    - OC3: I usually make investment decisions without seeking advice.
  - **Risk Aversion (RA)**:
    - RA1: I prefer safe investments even if they give lower returns.
    - RA2: Protecting my capital is more important than making high profits.
    - RA3: I avoid investments with unpredictable outcomes.
  - **Herding Behavior (HB)**:
    - HB1: I follow the investment choices of friends, family, or experts.
    - HB2: I am influenced by what most investors are doing.
    - HB3: I like investing in assets popular in the market at the time.
  - **Loss Aversion (LA)**:
    - LA1: Losing money feels worse than the happiness of gaining the same amount.
    - LA2: I avoid selling at a loss, hoping prices will recover.
    - LA3: I take fewer risks after experiencing a financial loss.
  - **Anchoring (AN)**:
    - AN1: I base buy/sell decisions on past prices.
    - AN2: I compare current prices with the price I paid.
    - AN3: I value an investment based on its past highs or lows.
  - **Regret Aversion (RG)**:
    - RG1: I sometimes avoid investing to prevent possible future regret.
    - RG2: Past mistakes make me hesitate before investing again.
    - RG3: I choose safe options to avoid feeling bad if things go wrong.
  - **Optimism Bias (OP)**:
    - OP1: I expect my investments to perform well in the future.
    - OP2: Even in a falling market, I believe things will improve soon.
    - OP3: I am confident the economy will recover over time.
  - **Disposition Effect (DE)**:
    - DE1: I often sell profitable investments too early.
    - DE2: I hold losing investments too long, waiting for recovery.
    - DE3: I prefer selling investments only when they are in profit.
  - **Status Quo Bias (SQ)**:
    - SQ1: I keep my existing portfolio even if better opportunities appear.
    - SQ2: I hesitate to change my investment strategy once set.
    - SQ3: I prefer stability over frequent portfolio changes.
  - **Self-Control Bias (SC)**:
    - SC1: I delay investing even when the timing seems right.
    - SC2: I withdraw investments for non-urgent needs.
    - SC3: I find it hard to stick fully to my investment plan.

The questionnaire was constructed by taking some of the existing scales used in the literature of behavioural finance like those of Tversky and Kahneman, and tailored to the Indian situation by providing examples, like references to the Indian market. A pilot study was conducted with 83 investors to refine wording for clarity and cultural relevance, reducing ambiguity in statements like OC3. Reliability was assessed using Cronbach's alpha, assuming values above 0.7 for each construct based on standard practices. The validation was accomplished with the help of content and construct validity. In my opinion, this stringent development process will make the instrument capture biases in a market where digital influences add new dimensions, like app-based trading, which enhances the self-control problems.

Informed consent, anonymity, and voluntary participation were also taken into account, with no deceptive elements. Data was stored securely to comply with privacy norms.

3.3 Sample and Sampling Technique

The target population is active retail investors in the Indian stock market. The method of convenience sampling was used, distributing the questionnaire via online platforms like google forms, social media groups, and email to personal networks. This resulted in 83 valid responses, which was an adequate sample size to carry out an exploratory analysis of correlation (as per G*Power calculations, using a medium effect size at 80% power). The sample represents urban retail investors, but may not represent rural or institutional investors.

I think convenience sampling was appropriate for accessing diverse respondents quickly, but it introduces selection bias toward tech-savvy individuals. Future studies could use stratified sampling for broader generalizability.

3.4 Data Collection and Processing

The information was gathered within two months in early 2025, with reminders to boost response rates. Variables were averaged per construct (e.g OC mean from OC1-OC3) to create composite scores. Missing data was minimal (<5%) and handled via mean imputation.

4.DATA ANALYSIS

4.1 Demographic Profile of Respondents

We conducted a survey on 83 investors about themselves. Table 1 reveals all the demographic details. Most of the respondents fell in the 25-34 age group. This particular group consisted of

33.7% of the respondents surveyed. Then, the next largest group was 35-44 years of age, so this sample basically consisted of young and mid-career individuals. Almost 60% were men, and about 40% were women. From an educational point of view, almost half of the respondents had bachelor's degrees (48.2%). Another 30% had even more advanced degrees. Again, with income, most, i.e., 42.2% earned somewhere in the range of ₹50,000 and ₹1,00,000 per month, and about a quarter were earning less than ₹50,000. Thus, the middle income formed a large chunk of the sample. Regarding investment experience, most, i.e., 42.2%, reported between 1 and 3 years of experience, followed by 24.1% with between 3 and 5 years. The preponderance, therefore, consisted of inexperienced investors who were probably still trying to flesh out their investment strategies & frameworks

Table 1: Demographic Profile of Respondents

Demographic Variable	Categories / Codes	Frequency (n)	Percentage (%)
Age Group	1 = < 25	18	21.7%
	2 = 25–34	28	33.7%
	3 = 35–44	20	24.1%
	4 = 45–54	12	14.5%
	5 = 55+	5	6.0%
Gender	1 = Male	50	60.2%
	2 = Female	33	39.8%
Education Level	1 = High School / Diploma	15	18.1%
	2 = Bachelor	40	48.2%
	3 = Master	20	24.1%
	4 = Doctorate	5	6.0%
	5 = Other	3	3.6%
Investment Exp.	1 = < 1 Year	15	18.1%
	2 = 1–3 Years	35	42.2%
	3 = 3–5 Years	20	24.1%
	4 = More than 5 Years	13	15.7%

4.2 Descriptive Statistics of Variables

This table presents a descriptive summary of the behavioral variables under study. Using a 5-point Likert scale, with values greater than 4 corresponding to a quite high rating, Overconfidence (M = 4.12, SD = 0.74) and Optimism (M = 4.00, SD = 0.66) were found to be the major cognitive biases among respondents. Others that were prominent in the list were Herding (M = 3.82, SD = 0.66), Anchoring (M = 3.68, SD = 0.65), and Loss Aversion (M = 3.63, SD = 0.70), all with moderately high mean scores and thus could be assumed to have an imposing effect on investment behavior.

On the contrary, the Risk Aversion index had the lowest score, with M = 2.56 clusters tending toward moderate risk-seeking behavior. Regret Aversion (M = 3.21, SD = 0.72) and Self-Control (M = 3.10, SD = 0.68) also tend to appear rather weak.

The composite Investment Behavior variable, on the other hand, showed a moderate average value (M = 3.58, SD = 0.68), so that in general, respondents appear to be somewhat active in investment.

This distribution sketches the prominent psychological measures that could be used to explain investment behavior within the studied sample and help shed light on some behavioral dimensions of investors.

Table 2: Descriptive Statistics of Behavioral Variables

Variable	Mean	Std. Deviation	Min	Max
Investment Behaviour	3.58	0.68	1.75	5.00
Overconfidence (OC)	4.12	0.74	2.00	5.00
Risk Aversion (RA)	2.56	0.61	1.00	4.67
Herding (HB)	3.82	0.66	2.00	5.00
Loss Aversion (LA)	3.63	0.70	2.00	5.00
Anchoring (AN)	3.68	0.65	2.00	5.00
Regret Aversion (RG)	3.21	0.72	1.00	5.00
Optimism (OP)	4.00	0.66	2.33	5.00
Disposition Effect (DE)	3.45	0.68	1.67	5.00
Status Quo (SQ)	3.52	0.61	2.00	5.00
Self-Control (SC)	3.10	0.68	1.00	5.00

4.3 Correlation Analysis

One can see here from Table 3 that the authors computed Pearson's r correlation coefficients to examine the associations between investment behavior and behavioral biases. Investment behavior was significantly correlated with Overconfidence (r = +0.56, $p < 0.01$), and this indicates that actively participating financial markets have higher levels of confidence.

There were also positive correlations of a moderate size with the construct of Herding (r = +0.34) and the phenomenon of

Disposal Effect (r = +0.31), suggesting that being susceptible to peer pressure and reluctance to recognize losses go positively with investment activity. To the negative, Risk Aversion significantly correlated with investment practice (r = -0.49, p < 0.01), such that people with higher risk aversion were less active in investing.

Another two negative correlations were found between investment behavior and Self-Control (r = -0.25) and Regret Aversion (r = -0.18). In other words, investors with high self-control and regret aversion would prefer to make more conservative investment decisions.

Overall, therefore, these results indicate the rich set of psychological biases that regulate investor-participation and investor-behavior during financial-market activity.

Table 3: Correlation Analysis

Variable	IB	OC	RA	HB	LA	AN	RG	OP	DE	SQ	SC
Investment Behavior (IB)	1.00	+0.56	-0.49	+0.34	-0.22	-0.15	-0.18	+0.28	+0.31	-0.10	-0.25
Overconfidence (OC)	0.56	1.00	-0.42	+0.30	-0.12	-0.10	-0.14	+0.25	+0.28	-0.09	-0.18
Risk Aversion (RA)	-0.49	-0.42	1.00	-0.20	+0.31	+0.12	+0.15	-0.28	-0.25	+0.17	+0.30
Herding (HB)	+0.34	+0.30	-0.20	1.00	+0.10	+0.05	+0.02	+0.15	+0.18	+0.05	-0.10
Loss Aversion (LA)	-0.22	-0.12	+0.31	+0.10	1.00	+0.28	+0.26	-0.10	-0.12	+0.11	+0.25
Anchoring (AN)	-0.15	-0.10	+0.12	+0.05	+0.28	1.00	+0.20	-0.08	-0.10	+0.12	+0.18
Regret Aversion (RG)	-0.18	-0.14	+0.15	+0.02	+0.26	+0.20	1.00	-0.12	-0.15	+0.10	+0.22
Optimism (OP)	+0.28	+0.25	-0.28	+0.15	-0.10	-0.08	-0.12	1.00	+0.22	-0.04	-0.10
Disposition Effect (DE)	+0.31	+0.28	-0.25	+0.18	-0.12	-0.10	-0.15	+0.22	1.00	-0.08	-0.18
Status Quo (SQ)	-0.10	-0.09	+0.17	+0.05	+0.11	+0.12	+0.10	-0.04	-0.08	1.00	+0.15
Self-Control (SC)	-0.25	-0.18	+0.30	-0.10	+0.25	+0.18	+0.22	-0.10	-0.18	+0.15	1.00

4.4 Interpretation of Findings

Based on my analysis, we can be certain that behavioral biases directly influence the investment decisions of investors in India. Overconfidence plays a big role here. In our sample group, investors who are too sure of themselves are prone to trade more often. They have demonstrated a tendency to underestimate risks and believe they know more than they actually do. A bit of optimism bias is also present, which makes them more likely to take extra risks.

In my research, I also found clear signs of herding bias. One respondent, a 32-year-old IT professional, admitted he only bought certain stocks because "everyone in my deployment team was talking about them," which clearly reflects how the fear of missing out driven through conversations with friends, peers and family can drive you to make investment choices. On the other hand, investors who described themselves as "naturally cautious" were cautious about actively investing on receiving tips. I also noticed weaker signs of self-control and regret aversion biases in my research. Several participants said they preferred "locking in quick gains" rather than overthinking possible mistakes. These tendencies showcase a clear pull toward short-term decisions.

4.5 Implications for Indian Investors

While conducting the survey, I saw first-hand how these patterns play out across different Indian investors. The dominance of overconfidence and optimism was impossible to miss. Several respondents openly shared that they doubled their trading frequency during the 2021 small-cap rally, convinced they could time the market after a few early wins. This kind of belief leaves them exposed when volatility returns, and it shows why we need stronger financial education that focuses on realistic risk checks, long-term planning, and portfolio balance. Similarly, herding behavior came through in many interviews. One 28-year-old respondent admitted he bought mid-cap IT stocks only because a popular business channel had been calling them the "next big breakout". This example is a clear reminder of how media and peer conversations can drive choices more than actual fundamentals. SEBI and registered investment advisors can help by making market information clearer and by guiding investors to trust their own analysis instead of chasing the latest trend. For instance, we recently witnessed an unprecedented rally in defense stocks even though not much had changed fundamentally. This led to sharp corrections within a couple of months and caused multiple investors to lose money.

During this research, risk aversion told a different but equally important story. Investors who identified themselves as conservative often stayed out of equities altogether. This strong bias made them blind to the reality that keeping all their savings in fixed deposits, even when inflation outpaced returns, may not be rewarding. During my interactions with portfolio managers before conducting this survey, I learned how investment products such as SIPs in balanced mutual funds, involving both large and small caps, can make it easier for cautious investors to start investing without feeling too stressed. The responses from my interviews gave me direct exposure to how deeply behavioral biases run in India's investing culture. Addressing them will require steady effort, better education, practical and regulatory advisory support, and financial products designed to keep investors focused on rational goals.

5. STRATEGIES TO MITIGATE BEHAVIOURAL BIASES

Behavioral biases play a big role in influencing investment choices among Indian investors, causing suboptimal outcomes as well as market imperfections (Barberis & Thaler, 2003). It takes an interdisciplinary approach, including education,

regulation, technology, and self-awareness, to deal with the biases (Pompian, 2012).

1. Financial Education and Awareness

Improving financial literacy through specific education programs is among the most effective measures (Lusardi & Mitchell, 2014). Such programs must address making investors aware of common biases including overconfidence, loss aversion, and herding (Kahneman & Tversky, 1979). Education drives may employ actual market examples like the Adani stock scandal or IPO manias, as the case may be, to demote the occurrence as well as the ramifications of biases (Rastogi, 2023). Awareness regarding the role of emotions among investors may help foster rationality as well as long-term planning among investors (Statman, 2019).

2. Disciplined Investment Processes

Fostering disciplined habits such as systematic plans of investments (SIPs), periodical portfolio analysis, and compliance with pre-specified asset allocation assist impeding bias-based impulsive choices (Shefrin, 2007). Automatic measures including stop-loss limits help check loss aversion-based procrastination (Kahneman & Tversky, 1979). By building habits that stress even-paced, goal-based investing, they check the harm wrought by psychological errors (Pompian, 2012).

3. Advisory and Regulatory Measures

Financial advisers can prove instrumental in minimizing investor bias through independent, impartial advice (Montier, 2007). Regulators must improve market communications' transparency and tighten controls on herd-mentalities-enabling misinformation (Shiller, 2015). Policies supporting unbiased financial advice, improved standards on disclosure help protect investors from pressure stemming from societal pressures, as well as pressures stemming from the media (Ritter, 2003)

4. Using Technology and Behavioral Nudges

Robot advisers and AI-based platforms provide customized investment guidance based on data and risk profiles, eliminating human bias and emotional choices (Jung et al., 2018). Behavioral nudges this time reminders to adjust the portfolios or cautions regarding excesses regarding frequent trade etc. can push investors toward rational choices (Thaler & Sunstein, 2008). Investment apps customized for Indian investors can be designed to identify as well as warn the users regarding bias-based choices (Agarwal & Banerjee, 2020)

5. Enhancing Self-Awareness and Mental Methods

Investors must be encouraged to keep journals of their choices and results to recognize patterns of bias (Statman, 2019). Asking for opposing perspectives as well as a range of sources of information will help to offset confirmation bias (Biais & Weber, 2009). Training in emotional regulation skills will also help investors build discipline as well as minimize impulsive response (Kahneman, 2011).

6. Product Innovation

Creating products that allow investments based on diverse risk appetites can draw a wider range of investors (Shefrin, 2007). Risk-averse investors, who flock to balanced funds or guaranteed-return programs, are attracted to market participation (Ritter, 2003). Behavioral feedback devices that are built into the sites where investors place their money will help investors correct themselves (Montier, 2007)

These approaches collectively can enable Indian investors to alleviate the universal influence of mental biases, facilitating enhanced investment results as well as more secure financial markets. Incorporating education, technology, advisory services, as well as product structure, is vital to enhancing a reasonable as well as sustainable investment culture among India (Barberis & Thaler, 2003)

6. CONCLUSION

6.1 Summary of Major Findings

During my research, I learned that most investors in India do not always act according to set investment strategies. In most of my interactions, I found overconfidence and optimism to be common reasons why many investors trade too frequently, particularly during rallies. For instance, in 2021, in the NSE and BSE, small-cap trading volumes shot up by 40% even when most of the listed companies' fundamentals were shaky. The analysis of responses also revealed a strong tendency towards herding behavior, which led friends, relatives, and social media to drive people into investing in hyped IPOs such as Zomato and Nykaa. Many Indian IPOs have listed where retail subscriptions exceeded 35 times. However, on the flip side, loss aversion explains why so many Indians still prefer fixed deposits and gold even when inflation is higher than returns.

6.2 Inside Analysis and Thoughts

These patterns have made it clear that emotions and social cues often outweigh investment logic evident in spreadsheets. During the COVID-19 stock market crash, investors worldwide rushed out of equities, only to flood back in once the markets rebounded. Fear and greed are two predominant emotions that drove investor decisions in the COVID era. I also tracked anchoring bias in our survey when Indian investors became preoccupied with short-term IPO listing gains with little heed to long-term fundamentals.

6.3 Actionable Recommendations

If I am designing solutions to address these biases, I would start with promoting better quality investment education and awareness programs that train investors about the dangers of overtrading and the importance of long-term fundamentals. There are numerous case studies globally that show how frequent trading can quietly erode profits (Barber & Odean, 2000). In India, regulators like SEBI can create a stronger set of guidelines for finfluencers, who at times are known to spread hype without accountability. For example, in India, SEBI recently banned a YouTube influencer, with over 19 lakh subscribers, and his company for running an unregistered investment advisory business and fined them Rs 9.5 crore. As an additional step, brokers too can contribute by updating their apps to alert investors about their trading frequency and associated risks for different trading patterns. For instance, a dashboard that flashes the cost of over-trading in real time. For risk-averse savers, my interactions with senior portfolio managers helped me learn how capital-protected products such as equity-linked savings schemes (ELSS) mutual funds can provide a sense of safety while easing them into equities.

6.4 Constraints and Prospects for the Future

I am certain that my study had limitations. My survey sample primarily consisted of urban and tech-savvy investors. This certainly means it did not fully capture rural investors or large institutions operating in the country. Since my data was cross-sectional, I could not track how biases evolve over time. If I were to continue this research, I would like to conduct a long-term study across market cycles, while also examining how Telegram groups and online trader communities shape investment decisions. Indian markets have been digitizing rapidly, and this is an area worth exploring.

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A STUDY OF ORGANIZATIONAL CULTURE ON EMPLOYEE PERFORMANCE WITH REFERENCE TO SELECTED MANUFACTURING UNITS OF MP

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ABSTRACT **DOI No: 10.36713/epra24388** **Article DOI: https://doi.org/10.36713/epra24388**

This research examines the influence of organizational culture on employee performance in selected manufacturing units of Madhya Pradesh. Organizational culture, defined by leadership style, communication patterns, teamwork, and reward systems, serves as a key determinant of employee motivation, efficiency, and overall productivity. Employing a descriptive research design, primary data were collected from 150 employees using structured questionnaires and analyzed through correlation and regression techniques. Findings reveal a significant positive relationship between organizational culture and employee performance, emphasizing that supportive leadership, effective communication, recognition, and collaborative practices enhance work outcomes. The study underscores the strategic importance of cultivating a robust organizational culture to optimize employee performance and achieve sustainable competitive advantage in the manufacturing sector.

INTRODUCTION

Organizational culture plays a pivotal role in shaping employee attitudes, behaviors, and overall performance. It represents the shared values, beliefs, norms, and practices that guide how employees interact and perform within an organization. A positive and strong culture fosters employee commitment, motivation, and productivity, while a weak or misaligned culture can lead to dissatisfaction and high turnover. In the manufacturing sector, where teamwork, precision, and efficiency are crucial, organizational culture significantly influences performance outcomes. This study, titled **"A Study of Organizational Culture on Employee Performance with Reference to Selected Manufacturing Units of Madhya Pradesh,"** aims to explore how different cultural dimensions such as communication patterns, leadership styles, reward systems, and work environment affect employee performance. Understanding this relationship is essential for managers to create a conducive organizational climate that enhances efficiency and job satisfaction. The findings of this study will provide valuable insights for improving performance management strategies and sustaining competitive advantage in manufacturing organizations.

REVIEW OF LITERATURE

Sinha and Gupta (2025) titled *"Impact of Organizational Culture on Employee Performance: A Study of Selected Manufacturing Firms in Central India"* explores the intricate link between organizational culture and employee performance within manufacturing units. The research emphasizes that culture acts as a vital determinant of how employees perceive their roles, interact with colleagues, and contribute to organizational goals. Using both qualitative and quantitative approaches, the study highlights that factors such as leadership style, communication patterns, employee involvement, and shared values significantly influence performance outcomes. The findings reveal that a positive and cohesive organizational culture enhances motivation, job satisfaction, and productivity, leading to improved organizational effectiveness. Conversely, weak or misaligned cultures tend to create conflicts and reduce employee morale. The study concludes that fostering a supportive and participative culture is essential for sustaining high employee performance and achieving long-term competitive advantage in the manufacturing sector.

Patel and Sharma (2024) in their study titled *"Relationship between Organizational Culture and Job Performance in Indian Manufacturing Units"* examine how cultural dimensions within organizations affect employees' job performance and overall productivity. The research investigates key elements of organizational culture such as teamwork, communication, leadership behavior, and innovation, and their influence on employees' commitment and efficiency. Through an empirical analysis conducted across several manufacturing units in India, the study finds that a strong, collaborative, and value-driven culture positively correlates with higher job performance and employee satisfaction. It also highlights that organizations encouraging open communication and participative decision-making experience reduced turnover and enhanced operational efficiency. The authors conclude that cultivating a culture aligned with employee expectations and

organizational objectives is crucial for sustainable growth and competitiveness. The study underscores that culture acts as a driving force behind performance improvement in the Indian manufacturing context.

Yadav and Singh (2023) in their paper titled *"The Influence of Organizational Culture on Employee Productivity in Small and Medium Manufacturing Enterprises"* analyze how cultural values and workplace norms impact employee efficiency and organizational output. The study focuses on various dimensions of organizational culture, including leadership approach, communication flow, motivation, and employee participation. Using data collected from several small and medium manufacturing enterprises, the researchers found a strong positive relationship between supportive organizational culture and higher employee productivity. The results indicate that when employees feel valued, trusted, and involved in decision-making, their motivation and commitment significantly increase. Conversely, rigid or hierarchical cultures tend to hinder creativity and reduce performance levels. The authors conclude that fostering an adaptive, inclusive, and trust-based culture is essential for enhancing productivity and maintaining competitiveness within the manufacturing sector. The study provides valuable insights for SMEs aiming to strengthen their internal culture for sustainable performance improvement.

Deshmukh and Nair (2023) in their study titled *"Role of Organizational Climate and Culture in Enhancing Employee Effectiveness"* explore the interrelationship between organizational culture, workplace climate, and employee effectiveness. The research emphasizes that culture and climate jointly shape employees' attitudes, motivation, and behavioral outcomes, which directly influence organizational performance. Through empirical analysis across multiple organizations, the authors found that a positive organizational climate—characterized by trust, open communication, recognition, and participative leadership—enhances employee engagement and efficiency. Similarly, a strong, cohesive culture fosters shared values and a sense of belonging, which boosts commitment and job satisfaction. The study concludes that the alignment between organizational culture and climate plays a critical role in driving employee effectiveness and overall productivity. Deshmukh and Nair recommend that organizations continuously nurture a supportive and adaptive culture to sustain high performance and retain talented employees in a competitive environment.

Kumar and Verma (2022) in their research titled *"Effect of Organizational Culture on Employee Performance: Evidence from Manufacturing Sector in India"* investigate how cultural elements within organizations influence employee behavior and performance outcomes. The study examines dimensions such as leadership approach, value orientation, communication systems, and employee involvement within Indian manufacturing firms. Using a structured survey and statistical analysis, the authors found that an open, participative, and innovation-driven culture significantly enhances employee motivation, job satisfaction, and productivity. The findings also indicate that organizations promoting teamwork, mutual respect, and continuous learning experience lower turnover and higher performance levels. Conversely, rigid hierarchical structures and poor communication negatively affect morale and efficiency. The study concludes that fostering a strong, adaptable, and employee-centered organizational culture is essential for achieving sustained growth and competitiveness in the manufacturing sector. Kumar and Verma highlight culture as a strategic asset that directly impacts individual and organizational success.

Thakur and Dubey (2022) in their paper titled *"Exploring the Link between Work Culture and Employee Productivity in Indian Industries"* analyze how various aspects of workplace culture influence employee performance and organizational outcomes. The study explores critical cultural factors such as leadership behavior, interpersonal relationships, communication openness, and employee recognition. Based on empirical data from diverse industrial sectors in India, the authors found that a positive and inclusive work culture enhances employee morale, job satisfaction, and productivity. The research further highlights that organizations encouraging teamwork, innovation, and fair treatment experience higher commitment and reduced absenteeism among employees. Conversely, workplaces with rigid hierarchies and poor communication channels often suffer from low motivation and performance issues. Thakur and Dubey conclude that fostering a participative, transparent, and employee-oriented culture is essential for improving overall productivity and sustaining long-term organizational success in the competitive industrial environment of India.

Joshi and Mehta (2021) in their study titled *"Organizational Culture and Its Impact on Employee Performance: A Case of Indian Manufacturing Companies"* examine the relationship between organizational culture and employee performance in the manufacturing sector. The research focuses on cultural components such as leadership practices, value systems, communication networks, and employee engagement, analyzing how these elements influence motivation, job satisfaction, and productivity. Using data collected from multiple Indian manufacturing firms, the study reveals that a strong, adaptive, and collaborative culture positively affects employee efficiency and commitment. The authors highlight that open communication, supportive leadership, and shared organizational goals foster a sense of belonging and accountability among employees. Conversely, bureaucratic or unsupportive cultures hinder innovation and reduce performance levels. The study concludes that cultivating a dynamic and people-centric culture is vital for enhancing employee performance and achieving organizational excellence in the competitive manufacturing landscape of India.

Choudhary and Jain (2021) in their paper titled *"Dimensions of Organizational Culture and Their Effect on Employee Behavior and Performance"* investigate how different facets of organizational culture influence employee behavior and overall performance. The study focuses on key cultural dimensions such as leadership style, communication patterns, teamwork, innovation orientation, and value systems within organizations. Using empirical data from various business sectors, the authors found that positive cultural traits—such as collaborative leadership, open communication, and recognition of employee contributions—significantly enhance motivation, job satisfaction, and productivity. The research also indicates that misaligned or weak cultural practices can lead to low morale, reduced engagement, and suboptimal performance. Choudhary and Jain conclude that understanding and strategically

managing organizational culture is crucial for shaping desirable employee behavior and improving performance outcomes. The study emphasizes that a strong, adaptable, and employee-focused culture serves as a key driver of organizational success in today's competitive business environment.

Rao and Iyer (2020) in their study titled *"Cultural Determinants of Employee Performance: Insights from Manufacturing Industries in India"* examine how organizational culture influences employee performance within the Indian manufacturing sector. The research emphasizes cultural factors such as leadership style, communication effectiveness, teamwork, value alignment, and employee involvement. Using empirical evidence from multiple manufacturing firms, the authors found that organizations with supportive, participative, and innovation-oriented cultures experience higher levels of employee motivation, commitment, and productivity. The study also highlights that misaligned or rigid cultural practices can negatively impact morale and reduce performance outcomes. Rao and Iyer conclude that fostering a strong, cohesive, and adaptive organizational culture is essential for enhancing employee effectiveness and achieving sustainable organizational growth. The findings underscore that culture acts as a critical determinant of performance, serving both as a motivator for employees and a strategic tool for organizational competitiveness.

Banerjee and Prasad (2019) in their study titled *"The Role of Organizational Culture in Employee Motivation and Performance"* explore how organizational culture shapes employee motivation and influences performance outcomes. The research focuses on key cultural dimensions such as leadership style, communication patterns, teamwork, employee recognition, and value alignment. Based on data collected from diverse organizations, the authors found that a positive and supportive culture significantly enhances employee motivation, job satisfaction, and overall productivity. Organizations promoting open communication, participative decision-making, and collaborative work environments experience higher employee engagement and lower turnover. Conversely, rigid or unsupportive cultural practices were observed to negatively affect morale and performance levels. Banerjee and Prasad conclude that cultivating a strong, inclusive, and value-driven culture is essential for fostering employee motivation and improving organizational performance. The study underscores the strategic importance of culture in driving sustainable growth and competitiveness in today's business environment.

Singh and Kaur (2019) in their study titled *"The Interrelationship between Organizational Culture and Employee Commitment in the Indian Context"* investigate how organizational culture influences employee commitment and related performance outcomes in Indian organizations. The research emphasizes cultural dimensions such as leadership style, communication effectiveness, shared values, teamwork, and employee involvement. Using empirical data from various industries, the authors found that organizations with a positive, inclusive, and participative culture exhibit higher levels of employee commitment, job satisfaction, and loyalty. The study highlights that strong alignment between organizational values and employee expectations fosters motivation, reduces turnover, and enhances overall performance. Conversely, weak or misaligned cultural practices were found to negatively affect engagement and productivity. Singh and Kaur conclude that nurturing a cohesive and supportive culture is crucial for strengthening employee commitment and achieving sustainable organizational effectiveness, positioning culture as a key driver of human capital development and long-term competitiveness in the Indian context.

Mishra and Tiwari (2018) in their study titled *"Organizational Culture as a Predictor of Employee Performance in Indian Manufacturing Sector"* examine the role of organizational culture in shaping employee performance within Indian manufacturing firms. The research focuses on cultural elements such as leadership behavior, communication practices, teamwork, value alignment, and employee involvement. Using empirical data collected from multiple manufacturing organizations, the authors found a significant positive relationship between a strong, supportive, and participative culture and enhanced employee performance. The study highlights that organizations fostering open communication, recognition, and collaborative decision-making experience higher motivation, job satisfaction, and productivity among employees. Conversely, rigid or unsupportive cultural environments were associated with lower engagement and suboptimal performance. Mishra and Tiwari conclude that organizational culture serves as a critical predictor of employee effectiveness and overall organizational success, emphasizing the need for management to cultivate a cohesive, adaptive, and employee-centered culture to maintain competitiveness and achieve sustainable growth in the manufacturing sector.

OBJECTIVE OF THE STUDY

1. To examine the prevailing organizational culture in selected manufacturing units of Madhya Pradesh and identify its key components.
2. To assess the impact of organizational culture on employee performance, including productivity, efficiency, and quality of work.
3. To analyze the relationship between specific cultural dimensions (such as leadership style, communication, teamwork, and reward systems) and employee motivation and satisfaction.
4. To identify gaps or challenges in the existing organizational culture that may hinder employee performance.
5. To provide recommendations for enhancing organizational culture to improve employee performance and overall organizational effectiveness.

HYPOTHESIS OF THE STUDY

The various hypothesis of the study are as under

Ha1: There is a significant positive relationship between organizational culture and employee performance in manufacturing units.

Ha2: Leadership style within an organization has a significant impact on employee performance.

Ha3: Effective communication in the organizational culture positively influences employee motivation and productivity.

Ha4: Reward and recognition systems in the organization significantly affect employee job satisfaction and performance.

Ha5: Teamwork and collaborative practices in the organizational culture are positively associated with employee efficiency and overall performance.

RESEARCH DESIGN

The present study adopts a **descriptive research design** to examine the impact of organizational culture on employee performance in selected manufacturing units of Madhya Pradesh. This design is suitable as it helps in systematically describing the existing cultural practices and their influence on employee behavior and productivity. Data will be collected using structured questionnaires targeting employees across various departments. Both **primary data** (through surveys) and **secondary data** (from journals, reports, and organizational records) will be utilized. Statistical tools like correlation and regression analysis will be employed to analyze the relationship between organizational culture dimensions and employee performance.

SAMPLE SIZE AND DESIGN

The study will be conducted among employees of selected manufacturing units in Madhya Pradesh. A **sample size of 150 employees** has been chosen using a **stratified random sampling technique** to ensure representation across different departments, job levels, and experience categories. Stratification allows for capturing diverse perspectives on organizational culture and its impact on performance. This approach ensures that the findings are **reliable and generalizable** within the context of the selected manufacturing units, while also minimizing sampling bias

Sample Area

The study will be conducted in selected manufacturing units located in Madhya Pradesh, covering both large and medium-scale industries across major industrial hubs of the state.

Sample Size

A total of 150 employees will be selected for the study, representing different departments, job levels, and experience to ensure diverse perspectives.

Sampling Method

Stratified random sampling will be used to categorize employees based on department and job level, ensuring proportionate representation and minimizing sampling bias.

Tools for Data Analysis

In order to analysis the data and testing of hypothesis ANOVA test has been applied at 5% level of significant and 95% level of confidence.

Hypothesis Testing

First Hypothesis

H_{a1}: There is a significant positive relationship between organizational culture and employee performance in manufacturing units.

Table 1: Relationship between Organizational Culture and Employee Performance.

Hypothesis	Statement	df	f	Significant value	Result
H_{a1}	Relationship between organizational culture and employee performance	**4**	**7.521**	**0.028**	**Significant & accepted**

Interpretation: The table explores the relationship between organizational culture and employee performance. The F-value is 7.521 and the significance value is 0.028, which is less than 0.05, indicating a significant relationship at 5% leve.

H_{a1}= Accepted

Second Hypothesis

H_{a2}: Leadership style within an organization has a significant impact on employee performance.

Table 2: Impact of Leadership Style on Employee Performance.

Hypothesis	Statement	df	f	Significant value	Result
H_{a2}	Impact of leadership style on employee performance	**4**	**6.438**	**0.034**	**Significant & accepted**

Interpretation: The F-value of 6.438 and significance value of 0.034 indicate that leadership style significantly affects employee performance at 5% level.

H_{a2}= Accepted

Third Hypothesis

H_{a3}: Effective communication in the organizational culture positively influences employee motivation and productivity.

Table 3: Influence of Communication on Employee Motivation and Productivity.

Hypothesis	Statement	df	f	Significant value	Result
H_{a3}	Effect of communication in organizational culture on employee motivation and productivity	**4**	**8.215**	**0.022**	**Significant & accepted**

Interpretation: The F-value of 8.215 with a significance of 0.022 shows a significant impact of communication on employee motivation and productivity.

H_{a3}= Accepted

Forth Hypothesis

H_{a4}: Reward and recognition systems in the organization significantly affect employee job satisfaction and performance.

Table 4: Effect of Reward and Recognition on Job Satisfaction and Performance.

Hypothesis	Statement	df	f	Significant value	Result
H_{a4}	Effect of reward and recognition on employee job satisfaction and performance	**4**	**7.842**	**0.030**	**Significant & accepted**

Interpretation: The F-value of 7.842 and significance value of 0.030 indicate that reward and recognition significantly influence employee performance at 5% significance level.
H_{a4}= Accepted

Fifth Hypothesis

H_{a5}: Teamwork and collaborative practices in the organizational culture are positively associated with employee efficiency and overall performance.

Table 5: Association of Teamwork and Collaborative Practices with Employee Efficiency.

Hypothesis	Statement	df	f	Significant value	Result
H_{a5}	Association of teamwork and collaborative practices with employee efficiency	**4**	**6.987**	**0.036**	**Significant & accepted**

Interpretation: The F-value of 6.987 and significance of 0.036 show a significant association between teamwork and employee efficiency..
H_{a5}= Accepted

FINDINGS OF THE STUDY

The findings of the study are as under

1. Findings of the study in table 1 explore that the study reveals a significant positive relationship between organizational culture and employee performance. A strong, supportive culture enhances employee commitment, motivation, and productivity. Manufacturing units with clearly defined values, norms, and practices witness better performance outcomes, indicating that fostering a positive organizational culture is crucial for achieving organizational objectives
2. Findings of the study in table 2 explore that Leadership style significantly impacts employee performance. Transformational and participative leadership approaches encourage employees to take initiative, improve efficiency, and contribute to organizational goals. Poor or autocratic leadership negatively affects motivation and output. The findings suggest that effective leadership aligned with organizational culture strengthens employee engagement and overall performance in manufacturing units.
3. Findings of the study in table 3 explore that Effective communication within the organizational culture is strongly associated with higher employee motivation and productivity. Open, transparent, and two-way communication ensures clarity of goals, reduces misunderstandings, and fosters teamwork. Employees feel more valued and engaged when communication channels are well-structured, leading to improved performance and job satisfaction in the manufacturing sector.
4. Findings of the study in table 4 explore that Reward and recognition systems significantly influence employee satisfaction and performance. Timely appreciation, incentives, and performance-based rewards motivate employees to achieve targets and maintain high efficiency. Manufacturing units that implement structured recognition policies experience lower attrition, higher morale, and improved productivity, highlighting the critical role of rewards in sustaining performance
5. Findings of the study in table 5 explore that Teamwork and collaborative practices are positively associated with employee efficiency. Employees working in cooperative and supportive environments share knowledge, solve problems collectively, and complete tasks effectively. The study indicates that fostering collaboration not only improves operational efficiency but also strengthens interpersonal relationships and enhances overall organizational performance in manufacturing units.

CONCLUSION

The study concludes that organizational culture plays a crucial role in shaping employee performance in manufacturing units of Madhya Pradesh. Strong cultural practices, including effective leadership, clear communication, teamwork, and robust reward systems, significantly enhance employee motivation, efficiency, and job satisfaction. Leadership styles that encourage participation, open communication channels, and recognition of employee efforts create a positive work environment, fostering higher productivity. Collaborative practices and supportive culture further strengthen interpersonal relationships and operational effectiveness. The findings highlight that organizations that actively nurture a healthy and dynamic culture are better positioned to achieve their strategic goals. Hence, managers and policymakers should focus on cultivating a culture that aligns with organizational objectives to maximize employee performance and sustain long-term growth in the manufacturing sector.

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THE ROLE OF FINANCIAL INCLUSION IN STRENGTHENING AML/CFT FRAMEWORKS: BALANCING ACCESS AND SECURITY IN THE U.S. FINANCIAL SYSTEM

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ABSTRACT

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This paper examines the oscillating association between financial inclusion and the Anti-Money Laundering and Countering the Financing of Terrorism (AML/CFT) systems of the United States, with an emphasis on the issue of balancing access to finance and security regulations. Although banking services have been extended to the unbanked and underbanked, stringent anti-money laundering laws like Know Your Customer (KYC) and Customer Due Diligence (CDD) have ended up discriminating against the underprivileged members of society, such as low-income earners, immigrants, and the unbanked. This study seeks to examine the way inclusive financial systems can reinforce AML/CFT mechanisms, in a concomitant manner that guarantees fair economic inclusion. The study provides an evaluation of peer-reviewed articles, official reports, and policy documents through the lens of qualitative literature review methodology. It derives conceptual tensions and synergies between inclusion and regulation, puts a focus on technological interventions, and discusses successful case studies such as Kenya M-Pesa, the tiered KYC system in Mexico, or the U.S. Treasury Project REACh. Such cases show how new architecture and technologies, including biometrics, AI, and blockchain, can close the inclusion-security gap. The evidence suggests that financial inclusion can enhance AML/CFT performance by reducing reliance on the informal system, enhancing the transparency of transactions, by facilitating risk profiling. Nevertheless, the research also defines the critical gaps in its investigation, referring to the unintended exclusionary impacts of regulations and the experimental effects of AI and blockchain on compliance. Lastly, the research proposes dynamic regulatory frameworks, risk-based compliance, and integration of technology as possible paths to secure and inclusive finance. Such a balance will be the key to developing resilient, transparent, and fair financial ecosystems that will prevent financial crimes without stigmatizing vulnerable groups.

KEYWORDS: ***Financial Inclusion, Financial System, Anti-Money Laundering and Countering the Financing of Terrorism (AML/CFT), Know Your Customer (KYC), Customer Due Diligence (CDD), Financial Crimes Enforcement Network (FinCEN), Bank Secrecy Act (BSA), Suspicious Activity Reporting (SAR), USA PATRIOT Act, Blockchain, Artificial Intelligence (AI).***

1. INTRODUCTION

The past few decades have made financial inclusion an important goal for development (Berry, 2015). Financial inclusion mainly involves giving people or groups the ability to use financial services. Areas included in the financial system are banking, credit, insurance and savings (Berry, 2015; Appleyard et al, 2016). It is also explained by the World Bank as financial products available and utilized by the poor and vulnerable. Making everyone part of the financial system is key to economic development for all. This means focusing on not only having options for services such as savings accounts, credit, insurance, and payment systems, but also using them correctly, receiving good-quality services, and buying them easily (Demirgüç-Kunt et al., 2022).

Increasing financial services for all has been a main aim of U.S. policy for many years. Policy officials have been keen to ensure that the most vulnerable members of society get equal chances in using financial services by easing access, promoting financial education, removing biases, and improving rules (Aiyar, 2023).

It is widely agreed that when more people are financially included, poverty can be reduced, and people's well-being can be improved. Greater access to banks and financial institutions helps people secure education, create and run businesses, and reduce their risks (Aiyar, 2023). When financial services are broadened, savings increase, new skills can be learned for future employment, technology adoption becomes more common, and the economy grows in general (Jayasekara, 2021). Furthermore, because there is a strong link between low-

income communities and access to financial products, opening these opportunities may help decrease poverty and make income gaps smaller. According to Jayasekara (2021), in terms of microeconomics, offering financial inclusion services to households is likely to increase their savings and give them more opportunities to take out loans. Demirgüç-Kunt et al. (2022) in their publication demonstrate that being included in the financial system brings higher growth and better resilience to money matters, especially to those who have not used traditional financial services before.

To advance financial inclusion in the US, authorities have created economic programs that reduce financial barriers for people in marginalized communities (Jayasekara, 2021). In addition, financial inclusion relates to Anti-Money Laundering (AML) and Countering the Financing of Terrorism (CFT) efforts that keep financial crimes from happening. In the past few years, the efforts to promote inclusive finance and protect financial systems with AML/CFT measures have received a lot of attention in public and academic forums (Demirgüç-Kunt et al., 2022). The purpose of financial inclusion is to increase access to banking services for people who are not banked, increase their chances of being part of the economy, and minimize inequalities. In addition, Demirgüç-Kunt et al. (2022) mentioned that laws and institutions like the Financial Crimes Enforcement Network (FinCEN) and the Bank Secrecy Act (BSA) protect the financial system from being taken advantage of for money laundering or terrorist financing. These frameworks also make it necessary for financial institutions to identify their customers, oversee their activities, and notify authorities when they suspect something suspicious (Khelil et al., 2023). While these steps improve security, stricter laws could prevent people from low-income communities from getting the service, making it expensive. Although these objectives are said to complement each other, they face challenges when put into practice. Ensuring that everyone has access to financial services while following strict regulations remains a problem (Aiyar, 2023).

This paper looks at how financial inclusion helps to strengthen the AML/CFT rules used by U.S. financial institutions. The aim is to study existing research, discover difficulties, and suggest ways to balance financial inclusion and regulation.

2. LITERATURE

2.1. Theoretical Framework

Financial Inclusion

Financial inclusion, which involves access and use of formal financial services by the deprived citizens, is crucial towards ensuring there is equity in the economic development of countries (Adelaja, et al., 2024). It does not only entail the delivery of the basic services such as savings, credit, and insurance but go beyond it by focusing on the importance of service quality and affordability to guarantee meaningful involvement (Mujeri, 2015). Other studies highlight that improving financial access can play a major role in decreasing poverty and achieving sustainable development particularly in low-income economies (Danladi, et al., 2023).

AML/CFT Frameworks

The Anti-Money Laundering and Countering the Financing of Terrorism (AML/CFT) system in the United States is mainly controlled by the Bank Secrecy Act (BSA), the USA PATRIOT Act and the regulatory system of the Financial Crimes Enforcement Network (FinCEN). The objective of these legal instruments involves detection, prevention, and punishment of unlawful money transmission, such as money laundering, shadow financing, and other financial crimes by taking strict compliance measures against financial institutions (Zagaris & Hong, 2024). The primary requirements are Customer Due Diligence (CDD), Suspicious Activity Reporting (SAR), Know-Your-Customer (KYC) procedures, which all improve the level of transparency in financial transactions (Sharman, 2017). In addition, the recent trends focus on data analytics, AI, and blockchain-based monitoring systems to reinforce the identification of transactions and regulatory reporting (Ahmed, 2025). Besides safeguarding the integrity of the U.S. financial system, these actions are also in compliance with AML/CFT guidelines adopted by global markets, known as the Financial Action Task Force (FATF) (Aidoo & AML, 2025).

Conceptual Tensions and Synergies

In as much as the financial inclusion efforts would lead to more effective operation of AML/CFT systems due to transformation of players in the informal economy into the regulated financial sector, it would come with several significant challenges. The inclusion of the underserved populations into formal banking systems will promote the monitoring of transactions, verification of identities, and reports something that can contribute to the enhancement of AML/CFT compliance frameworks (Zetzsche et al., 2020). Such processes however may be associated with high Know-Your-Customer (KYC) and Customer Due Diligence (CDD) procedures which can over-burden vulnerable groups that have no formal identification or addresses (Artingstall et al., 2016). Consequently, there is an increment of financial exclusion risk that drives some people to the use of more informal or unregulated channels unwittingly compromising AML/CFT goals (Aidoo & AML, 2025). Recent studies identified this paradox as a policy trade-off (striking a balance between the need to include people in the financial framework and efficiently enforce strong AML/CFT controls) that demands flexible regulatory frameworks and risk-based identification platforms and technology-supported solutions to minimize the compliance burdens without compromising financial integrity (Sahay et al., 2020).

2.2. Financial Inclusion and Its Economic Benefits

Financial inclusion also translates to a stable economy since it helps to make sure that individuals are engaged in the formal banking systems as opposed to using informal financial systems and making sure that they invest in the underprivileged communities that they live in (Demirguc-Kunt et al., 2022). The improvement of access to finance is equivalent to an improvement in economic growth, reduction of inequality, and improvement of financial literacy.

A study by the Federal Reserve and the FDIC estimated that in the United States, 4.5 percent of households were unbanked in 2021, and the rate is greater among low-income individuals, minorities, and immigrants. The barriers include the lack of trust in financial institutions, high fees, and the lack of records (Van der Cruijsen et al., 2023). In the meantime, policies (and community development financial institutions or CDFIs), technology (fintech), and policy reforms (like the Community

Reinvestment Act or CRA) have attempted to bridge this gap. Some scholars, like Servon (2017), argues that financial inclusion is a key to economic justice and mobility in the United States.

2.3. Government Initiatives and Policy Frameworks

The U.S. government has presented several programs to improve financial inclusion. The Community Reinvestment Act (CRA) asks banks to fulfill the credit requirements of low-income communities and ensures that the financial institutions provide services to the entire society. Also, the U.S. Department of the Treasury created a National Strategy for Financial Inclusion that identifies policies to increase access to transaction accounts, enhance financial literacy, and increase availability of affordable credit (Toh, 2022). Federal programs such as the Small Business Administration (SBA) loan programs and Special Purpose Credit Programs (SPCPs) have been observed to be very instrumental in availing financial resources to minority owned businesses and entrepreneurs. The initiatives are aimed at narrowing the divide between conventional banking services and marginalized communities to empower them economically and enhance entrepreneurship (Theodos et al., 2024; Korman, 2024).

2.4. AML/CFT Regulations and Their Exclusionary Effects

The unintended consequences of AML/CFT measures have often been referred to, especially the fact that these measures have a disproportionate effect on marginalized communities (Zetzsche et al., 2020). Although the regulations have a noble aim of combating financial crimes, including money laundering and terrorist financing, their strict enforcement has produced obstacles to persons without formal identification or fixed addresses (Aidoo & AML, 2025). Know Your Customer (KYC) requirements and Customer Due Diligence (CDD) thresholds are an important part of AML/CFT systems, which, however, may pose a barrier to access to financial service by the vulnerable populations, pushing them to unregulated finance, which poses greater systemic risks (Gibbs, 2017).

Financial inclusion is one of the important reserves of economic stability, enabling people to join formal financial systems and get fundamental services like savings accounts, credits, and guidelines. Nonetheless, AML/CFT laws tend to create undue strict identity verification obligations, which burden low-income people, refugees, and undocumented migrants. As Levi (2017) research, when people cannot fulfill such regulatory requirements, they can turn to informal financial networks, becoming more exposed to fraud, exploitation, and financial vulnerability.

Moreover, its concerns have been echoed by the Financial Action Task Force (FATF), which has stated that too strict AML/CFT measures may create financial exclusion. The 2017 guidance on financial inclusion by FATF stresses the importance of a risk-based approach to the matter, in which there should be flexibility in the KYC and CDD requirements, making sure that financial institutions may serve the underserved population segments, without compromising the security levels (Gelb & Castrillon, 2019).

2.5. Challenges in Financial Inclusion and AML/CFT Compliance

Although substantial achievements have already been recorded, the process of reaching the goal of the full attainment of financial inclusion and AML/CFT compliance still has some problems. One of its ilk is the unavailability of the traditional banking service in the low-income and rural areas (Kamal et al., 2025). The majority rely on the alternative fiscal services of payday loans and check-cashing services that are extremely costly in terms of charges and high interest rates.

Access to credit is also another issue in which most of the marginalized individuals lack a credit history to secure a loan. It has led financial institutions to think about how alternative models of credit scores (such as rent and utility payment histories) can be utilized to characterize creditworthiness. (Theodos et al., 2024).

With increased financial accessibility attributed to digital banking, mobile payments, online financial services, etc., there have been substantial risks of digital fraud, thus subjecting users to cybersecurity risks and identity theft. Increased use of online transactions has introduced gaps that malicious individuals manipulate to commit fraud in the form of phishing, malware, and synthetic identity theft (Hummer & Rebovich, 2023). Hasham et al. (2019) argued that automation and digitization of financial institutions increase cyber threat levels, and fraud losses incurred are approximately three dollars lost for every one dollar stolen. Moreover, cybercrime has also been boosted by AI, thereby allowing the attackers to use advanced phishing methods, which are more challenging to identify (Rajagopal, 2025). The emergence of mobile banking has also added to the risks of fraud since hackers identify vulnerabilities in mobile-based applications to steal valuable information. To counter the threats, financial institutions and banking organizations are now starting to introduce biometric authentication systems, artificial intelligence-based fraud prevention systems, and blockchain-based security systems to protect transactions and unauthorized access (Rao et al., 2025). Amidst such developments, regulatory infrastructure must continuously change to accommodate emerging cyber threats without constraining the financial inclusion of additional users. To improve resilience to cybersecurity attacks, multi-factor authentication, end-to-end encryption, real-time fraud monitoring, etc., can be useful towards ensuring that digital financial ecosystems are not vulnerable to emerging fraud risks (Singh, 2025).

The AML/CFT systems require financial institutions to undertake Customer Due Diligence (CDD), monitoring of transactions, and reporting of suspicious transactions. This is as much as is needed to enhance security; overly strict policies can end up shutting the low-income population, therefore, introducing a financial barrier (Luzadder & Long, 2017).

The banks and other financial institutions have been found not to balance the selection of risks and the financial inclusion efforts, thus resorting to conservative compliance strategies, which have proved to lock out the underserved populations. The strict Anti-Money Laundering (AML) and Countering the Financing of Terrorism (CFT) legislation requests the financial institutions to apply a strict Know Your Customer (KYC) and

Customer Due Diligence (CDD) principal, which might disproportionately affect the individuals, who lack official identification or do not sport an impressive financial history (Kaiser, 2024). This has been accompanied by the high compliance cost and regulatory uncertainty that is not enticing institutions to take up flexible risk-based models. In a mission to minimize the effects of the pressures, policymakers are demanding the shift to inclusive AML/CFT frameworks, where alternative credit scores, digital identity, and tiered KYC can be incorporated to make financial access inclusively oriented and security-focused (Smith, 2024).

2.6. The Role of Technology in Addressing AML/CFT Challenges

Biometric identification, blockchain, and artificial intelligence (AI) are the new technologies that might be considered a promising way to find the balance between financial inclusion and AML/CFT compliance. Biometric verification provides an opportunity to identify individuals without traditional identification documents in a secure way, which enables them to reduce exclusion to a minimum yet maintain the integrity of regulations (Zetzsche et al., 2020). Blockchain technology enhances the transparency of transactions, which may allow financial institutions to conduct surveillance and verify transactions without relying solely on traditional KYC (Arner et al., 2015). However, data privacy, cyber risk, and algorithmic bias are also issues relating to the solutions.

2.6. Case Studies and Best Practices

Kenya M-Pesa: As mentioned by Hannig & Jansen, (2010); Musango, (2018) and other scholars, M-Pesa is an electronic money transfer product, which allows the users to store value in the SIM cards of their mobile phone as a mobile account, in a form of electronic currency that can be used in various ways such as sending to other users, paying merchants and services and exchanging to and from cash. M-Pesa is a technology that has made financial transfers easy and effective. Endogenous developments of other products have been developed and released on this technological platform. The site offers a virtual network of savings, a virtual system for applying and getting short-term credit. Endogenously, this technological platform has evolved in four rounds of virtuous process: as a payment platform to a virtual banking and saving services; as a credit supply platform; and lastly, as a cross-border payment/transfers and international remittances platform. Quoted as an effective example of mobile financial inclusion, its incorporation within the regulatory framework has assisted in tracking the financial flow proficiently. One of the aspects that resulted in the fast growth and the availability of financial services to rural locations in developing nations is innovation in the delivery channels of the financial services, more specifically, the mobile transfer of money. Particularly, this is so in Sub-Saharan Africa (Hannig & Jansen, 2010). Donavon (2012) and Kikulwe et al. (2014), among others, demonstrated that Kenya has been one of the most successful nations in the mobile money technology through its M-PESA services.

KYC Tiered System Mexico: KYC Tiered System Mexico is a regulatory framework that seeks to strike a balance between financial inclusion and security by permitting distinction of access to financial services depending on risk categorization (Gelb & Castrillon, 2019). This model allows financial institutions to serve the underserved populations without violating Anti-Money Laundering (AML) and Countering the Financing of Terrorism (CFT) regulations (Gelb & Castrillon, 2019). Through the development of a tiered system, Mexico has developed a framework that allows the financial inclusion of low-income citizens and the reduction of risks of financial crimes (Navis et al., 2020).

U.S. Treasury: Project REACh: Project REACh (Roundtable for Economic Access and Change) is an innovative new project within the U.S. Treasury focused on barrier reduction and increasing access to credit and other aspects of finance through a public-private partnership. The Office of the Comptroller of the Currency (OCC) kicked off Project REACh to facilitate the elimination of systemic barriers that impede the full integration of underserved people into the financial system. Among its key goals is to address the issue of credit invisibility, which, therefore, applies to approximately 50 million Americans who do not have viable credit scores, thus cannot easily access affordable loans and other financial services. To eliminate this problem, Project REACh considers other options of credit assessment, like the inclusion of rental and utility payment histories into the credit analysis, and access to financial products will be fairer (Perry & Schnare, 2021).

Also, affordable homeownership because it understands that homeownership is amongst the main drivers of wealth generation (Stegman & Loftin, 2021). Project REACh seeks to increase the number of low- and moderate-income citizens who own their own homes by asking banks to transform some of their housing stocks into affordable housing by offering low-cost transfer and renovation loans to the banks. The other important aspect of the initiative is that it helps Minority Depository Institutions (MDIs), which are an important part of their communities, but usually face challenges with access to capital, modernization of their technology, and retaining talent. By forming strategic alliances, Project REACh can assist MDIs to stay competitive and keep servicing their communities in a proper manner. Additionally, the program ensures the development of small businesses, especially those owned by minorities, rural, and Native entrepreneurs, through technical assistance and contracting opportunities (Stegman & Loftin, 2021). Through the development of partnerships among financial institutions, regulators and community organizations, Project REACh is helping to make way for a more inclusive financial system that can benefit the underserved populations without compromising economic stability. Also, in the future, the program intends to instill financial technology (FinTech) solutions, such as the application of AI in credit assessment and blockchain-based financial security solutions, to regularly increase financial inclusion. Project REACh success underlines the applicability of market-based mechanisms to address financial inequalities and credit and access capital adequately and fairly (Perry & Schnare, 2021).

2.7. Research Gaps

Research on the beneficial effect of financial inclusion on AML/CFT systems compared to the adverse effect is minimal. Most of the overwhelming research examines the issue of financial inclusion as the potential vulnerability to the Anti-Money Laundering (AML) and Countering the Financing of Terrorism (CFT) efforts and investigates the risks of illegal

financial flows and fraud. However, empirical evidence, which indicates the way financial inclusion can confer empowerment to AML/CFT frameworks, is desirable. An added effect of the induction of the underbanked into the formal financial networks will also make their transactions more visible, enhance the rate of customer due diligence, and reduce the application of cash-based transactions, which are less visible to be tracked upon suspicion of foul play. Research into good financial inclusion policies that have facilitated AML/CFT controls like tiered Know Your Customer (KYC) systems would assist policymakers to strike the balance between supporting inclusion and not sacrificing the security of the regulation (McGough, 2016).

There are not enough empirical assessments of how effective AI and blockchain technologies are in terms of finding a balance between security and inclusivity. Artificial intelligence (AI) and blockchain have been identified as some of the technologies that have the potential to transform how financial security and risks are managed. By using AIs, algorithms can automate parts of the fraud detection process, authenticate the identity of customers, and track transactions in real time, allowing financial institutions to improve their compliance with AML/CFT laws, as well as increase security and efficiency. Blockchain offers unalterable records of transactions, which minimize the possibility of illegal financial transactions and simplify the process of digital identity verification. Despite these developments, little empirical work has been done to look at the effectiveness of AI and blockchain in practice in striking a balance between financial security and inclusion. The studies regarding the possibilities of the AI-driven risk analysis model to assist low-risk individuals in gaining access to financial services without excessive compliance friction and the capacity of blockchain-based solutions to offer alternative KYC systems are instructive in the context of how technologies can expand access to financial services, all the while under the conditions of high-level security measures (Navis et al., 2020).

The unintended effects of AML/CFT regulations regarding financial access by marginalized groups must be investigated. Even though the AML/CFT policies are essential in curbing financial crimes, they unintentionally create barriers to low-income earners, undocumented migrants, and other individuals without a traditional credit history. Stringent KYC and Customer Due Diligence (CDD) requirements may exclude individuals without government-issued identification cards from the informal financial systems where regulation has limited effect. Even those rules that should be followed closely can limit the ability of the minority depository institutions (MDIs) and community banks to lend to the populations that are considered risky and thus promote the growth of financial disparities without even realizing it. The ultimate impact of such exclusions, particularly how the concerned people operate within other financial ecosystems or become victims of predatory financial services, is seldom researched. Research in progress is needed to determine what can be done to AML/CFT policies to promote financial inclusion without triggering an increase in systemic risk (Gelb & Castrillon, 2019).

3. DISCUSSION & FINDINGS

The findings show that financial inclusion might assist in AML/CFT efforts rather than being risky to handle. The well-noticed points are:

• With transparent banking systems, the use of illegal financial systems will be minimized, and illegal transactions can be easily detected. Financial inclusion makes individuals and firms move their transactions that normally take place on an unregulated, informal cash basis into the formal banking system. This step will increase the transparency of transactions and enable the financial institutions to identify suspicious activity and meet the Anti-Money Laundering (AML) and Countering the Financing of Terrorism (CFT) requirements with greater efficiency. The banking services to the deprived population will do away with the tendency of the population to use the informal financial services that are hard to control, and which are the major avenues of illegal transactions. The financial institutions will also be able to possess better data collection that will assist them in identifying fraud in its early phases, along with indicating high-risk behavior. In a bid to maintain security without failing because of the availability of finances, regulators can intensify the customer due diligence (CDD) and Know Your Customer (KYC) policies in inclusive banking systems (Jayasekara, 2021).

Blockchain and AI are newer technologies that enhance fraud detection and improve identity verification processes for marginalized populations. AML/CFT compliance is changing with the help of artificial intelligence (AI) and blockchain technology, and financial inclusion is becoming safer and more efficient (Bello et al., 2024). The AI-based algorithms of fraud detection can examine the pattern of transactions in real time, discovering anomalies that could be related to money laundering or illegal financing. Risk-based customer verification may also be improved with the help of machine learning models, giving banks an opportunity to evaluate the creditworthiness of customers with alternative data sources, including rent payments, utility bills, and mobile financial transactions. Instead, blockchain technology offers unchangeable records of transactions, which lowers the risks of fraud and enhances transparency within any given financial network. Smart contracts also allow safe digital verification of identity, so that people who lack traditional identification documents can obtain banking services, but in a manner that meets regulatory requirements. Financial institutions must incorporate AI-powered fraud-preventing mechanisms and blockchain-powered identity management into their AML/CFT systems to ensure security without impeding access (Ahmed, 2025).

The collaborative model between financial institutions and regulators makes sure that the AML/CFT frameworks are dynamic to changes in the financial environment (McGough, 2016). Successful implementation of AML/CFT suggests that there should be close coordination of regulatory bodies, banks, fintech companies, and international financial organizations. The regulators need to implement dynamic regulations that would permit the financial institutions to put in place risk-based compliance plans so that low-risk people could have access to basic financial services, with high-risk transactions subject to greater examination. Periodic interaction between compliance officers and policymakers may provide a way of refining

AML/CFT regulations against the creation of over-restrictive policies that may inadvertently exclude vulnerable groups within the financial systems. There are collaborative efforts like Project REACh in the United States and the Financial Action Task Force (FATF) on financial inclusion that urge financial institutions to find a balance between accessibility and security. Along with that, the international collaboration at the AML/CFT endeavors makes sure that the cross-border financial criminal activities, including fraud and terrorist financing, are efficiently tackled without sacrificing the inclusiveness-oriented banking policies.

As much as there are risks, a successful execution of the financial inclusion strategies can promote security and not undermine it. The transparency of the banking channels will improve the monitoring of the transactions, the improvement of the technology will enhance the prevention of fraud, and the collaboration of the regulations will improve risk aversion and ease in getting finance. Policy makers need to optimize AML/CFT systems to enable comprehensive banking and still-tight security measures. With the support of AI-based solutions, blockchain transparency, and dynamic compliance models, financial institutions can make sure that inclusion initiatives facilitate economic activity without exposing financial crimes to higher risks.

4. CONCLUSION

This paper concludes that the goals of financial inclusion and AML/CFT are not mutually exclusive and that it is possible to strategically align those to establish a safe and fair financial system in the United States. Financial inclusion encourages transparency, monitoring capacity, and effectiveness of AML/CFT controls by means of reducing cash-based transactions by integrating an underbanked population into formal financial networks. Nevertheless, with uncompromising compliance demands, measures are made to be unintentionally disadvantageous to vulnerable sectors, a fact that may push them towards unregulated sources of finance. The paper advocates a greater reliance on risk-based regulation, alternative data to credit assessment, and more flexible KYC procedures that produce less exclusion at the cost of no reduction in oversight. The related technologies, namely artificial intelligence-enhanced fraud detection, blockchain-powered identity verification, and biometric verification, have been proposed as the tools that can help to mediate the possible incompatibility of inclusion and security. Kenya, Mexico, and the U.S. Treasury Project REACh case studies confirm that joint efforts of regulators, financial institutions, and community organizations should play an essential role in the design of adaptive and inclusive AML/CFT systems. Policymakers should focus on solutions that will enable them to tackle regulatory rigidity, advance financial literacy, and invest in technological infrastructure that will enable them to balance between compliance and inclusion. Through this, the U.S. will be able to foster access to finance by the underserved communities without compromising the integrity of its financial system against the risks of money laundering and terrorist financing. This research paper suggests continuous empirical research, comprehensive policy making, and international collaboration to better the regulatory environment and to create a more inclusive and safer financial future.

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EFFECTS OF COMMITMENT ON REPURCHASE INTENTIONS IN ONLINE CUSTOMERS

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ABSTRACT
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In the fast-evolving digital marketplace, customer loyalty is becoming increasingly difficult to sustain due to the ease of comparison, switching, and the abundance of online options. This study aims to explore the effects of affective commitment and continuance commitment on repurchase intentions among online customers. Drawing upon the relationship marketing and commitment-trust theory, this research examines how emotional attachment and calculative dependence shape consumers' intention to continue purchasing from a specific online retailer. Data were collected from 200 online shoppers and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The results demonstrate that both affective and continuance commitments significantly influence repurchase intentions, though affective commitment exerts a stronger impact. The measurement model shows robust reliability, convergent validity, and discriminant validity, while the structural model confirms strong path coefficients and predictive relevance. Findings underscore the importance of developing both emotional and rational bonds with customers to foster sustainable loyalty. Theoretical contributions include extending commitment theory to digital consumption, while practical implications suggest strategies for enhancing customer retention through personalization, trust-building, and reducing perceived switching barriers. Limitations and future research directions are discussed to provide a roadmap for further scholarly exploration in online consumer behaviour.

KEYWORDS: *Commitment, Repurchase Intentions, Online Retailing, Structural Equation Modelling*

1.1 INTRODUCTION

The evolution of digital technologies and the widespread adoption of the internet have transformed the way consumers shop, interact, and build relationships with brands. The exponential growth of e-commerce platforms has intensified competition, giving consumers unprecedented power to compare prices, evaluate alternatives, and switch vendors almost effortlessly (Gefen, 2000; Kim, 2012). As a result, customer retention has become a strategic imperative for online businesses seeking sustainable competitive advantage (Reichheld & Schefter, 2000). In the online environment, where switching barriers are minimal and market saturation is high, understanding the factors that drive repurchase intentions—customers' willingness to buy again from the same retailer—has emerged as a critical research priority (Hellier et al., 2003; Lin & Lekhawipat, 2014).

Traditional marketing approaches often emphasized customer satisfaction as the primary antecedent of loyalty (Oliver, 1999). However, satisfaction alone may not be sufficient to secure long-term patronage in dynamic online markets, where consumers can easily defect even after satisfactory experiences (Kim & Gupta, 2009). Consequently, scholars and practitioners have increasingly turned to relationship marketing frameworks that focus on deeper psychological constructs such as trust, commitment, and attachment (Morgan & Hunt, 1994). Among these, commitment has been identified as a cornerstone of relational exchanges, serving as a key determinant of whether a customer continues or terminates a business relationship (Fullerton, 2003; Gustafsson, Johnson, & Roos, 2005).

Commitment in the context of online retailing reflects the psychological bond a consumer develops toward a particular website, application, or seller (Anderson & Weitz, 1992). It encompasses both emotional and calculative dimensions, which together influence consumer loyalty and behavioral intention. The affective component represents an emotional attachment and identification with a retailer, while the continuance component refers to the rational consideration of costs associated with switching to an alternative provider (Allen &

Meyer, 1990; Bansal, Irving, & Taylor, 2004). The affective form of commitment is driven by feelings of trust, belongingness, and satisfaction, whereas continuance commitment arises from practical considerations such as time investments, familiarity with the platform, and perceived risk of trying new vendors (Jones et al., 2000; Meyer & Herscovitch, 2001).

The rise of online shopping has amplified the importance of understanding these two types of commitment. Unlike traditional brick-and-mortar retailing, online commerce lacks face-to-face interaction, making emotional bonds harder to cultivate (Gefen, Karahanna, & Straub, 2003). However, features such as personalized recommendations, responsive customer service, social engagement, and data-driven loyalty programs can foster affective commitment even in virtual settings (Chaudhuri & Holbrook, 2001; Algesheimer, Dholakia, & Herrmann, 2005). Meanwhile, technological integration, habitual purchasing, and switching barriers such as digital lock-in effects or loyalty rewards contribute to continuance commitment (Sharma & Patterson, 2000). Understanding how these two commitment types jointly influence repurchase behavior can provide actionable insights for online marketers aiming to strengthen customer relationships.

Despite the growing body of literature on online customer loyalty, there remains a conceptual and empirical gap regarding how different forms of commitment interact to shape repurchase intentions (Liang, Wang, & Farquhar, 2009; Zhou, Lu, & Wang, 2019). Most studies tend to focus on single antecedents such as trust, satisfaction, or perceived value without explicitly distinguishing between emotional and rational determinants of loyalty (Sirdeshmukh, Singh, & Sabol, 2002). By contrast, the current study integrates both affective and continuance commitment to provide a holistic understanding of loyalty formation in online shopping environments.

Drawing upon the Commitment-Trust Theory of Relationship Marketing (Morgan & Hunt, 1994), this research posits that affective and continuance commitments are both significant predictors of repurchase intentions. Specifically, it proposes that affective commitment—stemming from emotional connection and psychological identification—has a stronger influence on repurchase intentions than continuance commitment, which is based on calculative considerations. The theoretical foundation lies in the belief that emotional ties often lead to voluntary loyalty, whereas continuance commitment leads to constrained loyalty (Gounaris, 2005; Gustafsson et al., 2005). In e-commerce, where trust deficits and competitive pricing dominate, the balance between emotional and calculative loyalty determines long-term customer retention.

This study is particularly relevant in the current era of digital saturation, where consumers are bombarded with choices and promotional stimuli (Bhattacherjee, 2001). Retaining existing customers not only reduces acquisition costs but also enhances profitability, as repeat buyers tend to spend more and engage in positive word-of-mouth (Reichheld & Schefter, 2000; Kim & Peterson, 2017). Therefore, investigating the impact of different commitment types on repurchase intentions can provide both theoretical insights and managerial guidance for developing robust online retention strategies. The next sections review the relevant literature, propose hypotheses, and empirically test the relationships between affective commitment, continuance commitment, and repurchase intentions among online customers.

2.1 LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1.1 Theoretical Foundation: Relationship Marketing and Commitment

The conceptual foundation of this study is rooted in the Commitment-Trust Theory of Relationship Marketing proposed by Morgan and Hunt (1994), which posits that commitment and trust are two key mediating variables in the development of successful, long-term relational exchanges. The theory emphasizes that commitment represents a consumer's desire to maintain a valued relationship and acts as a central force that drives cooperative behaviour, reduces uncertainty, and enhances relationship longevity. In the digital context, where face-to-face interactions are absent and uncertainty is often high, commitment serves as a vital mechanism for sustaining customer loyalty and engagement (Chaudhuri & Holbrook, 2001; Palmatier et al., 2006).

Commitment has been conceptualized as a multidimensional construct, encompassing affective, continuance, and normative dimensions (Allen & Meyer, 1990; Meyer & Herscovitch, 2001). Affective commitment relates to emotional attachment and identification; continuance commitment refers to the perceived costs of leaving a relationship; and normative commitment involves moral or social obligation to continue the relationship (Bansal, Irving, & Taylor, 2004). Among these, affective and continuance commitments have been found most relevant to consumer–brand relationships and repurchase behavior in commercial settings (Fullerton, 2003; Gustafsson, Johnson, & Roos, 2005).

In online retail environments, commitment plays a crucial role in overcoming transactional anonymity and fostering a sense of relational continuity. E-commerce interactions lack traditional interpersonal cues, making it harder for firms to rely solely on trust and satisfaction as loyalty drivers (Gefen, Karahanna, & Straub, 2003). Therefore, understanding the dual roles of affective and continuance commitment is essential for explaining how customers decide to remain loyal to online vendors even in the presence of numerous alternatives.

2.1.2 Affective Commitment and Repurchase Intentions

Affective commitment refers to an individual's emotional attachment, identification, and involvement with a particular organization, service provider, or brand (Allen & Meyer, 1990). In the marketing context, it manifests as customers' genuine affection and positive feelings toward a brand, leading them to continue the relationship out of emotional satisfaction rather than necessity (Evanschitzky et al., 2006; Fullerton, 2003). Affective commitment develops when consumers experience consistent satisfaction, trust, and alignment with the brand's values (Chaudhuri & Holbrook, 2001; Verhoef, 2003).

Emotions are a key determinant of long-term loyalty in online retailing. When customers feel emotionally connected to an online store—through personalized service, authentic communication, and perceived empathy—they tend to exhibit behavioral loyalty, including repeat purchasing and positive word-of-mouth (Kumar & Shah, 2004; Vlachos & Vrechopoulos, 2012). Studies in consumer psychology confirm that affective attachment increases psychological ownership, thereby reducing consumers' tendency to switch even when faced with better deals elsewhere (Thomson, MacInnis, & Park, 2005).

In the digital marketplace, affective commitment is reinforced by features that enhance relational closeness, such as brand communities, user engagement mechanisms, and social media interactions (Algesheimer, Dholakia, & Herrmann, 2005). Online platforms that evoke emotional experiences—such as trustworthiness, excitement, or gratitude—tend to cultivate stronger affective bonds (Batra et al., 2012). This emotional dimension is particularly important because online consumers often rely on psychological cues rather than physical experiences when forming loyalty judgments (Sirdeshmukh, Singh, & Sabol, 2002).

Affective commitment has been empirically linked to repurchase intentions across various service and retail contexts. For instance, Fullerton (2005) demonstrated that affective commitment predicts voluntary loyalty, characterized by genuine attachment and advocacy. Similarly, Gustafsson et al. (2005) found that affective commitment significantly enhances customer retention beyond the effects of satisfaction alone. These findings imply that emotional bonds can be more enduring than transactional satisfaction, particularly in online environments where consumers value relational warmth and perceived care.

Therefore, the present study proposes that affective commitment significantly influences customers' willingness to repurchase from the same online retailer, leading to the following hypothesis:
H1: Affective commitment has a positive and significant effect on repurchase intentions among online customers.

2.1.3 Continuance Commitment and Repurchase Intentions
While affective commitment captures emotional attachment, continuance commitment represents a calculative mindset in which customers weigh the costs and benefits of maintaining versus terminating a relationship (Allen & Meyer, 1990; Sharma & Patterson, 2000). It is primarily based on perceived switching costs, lack of attractive alternatives, and investments already made in the relationship (Burnham, Frels, & Mahajan, 2003). Continuance commitment thus reflects a form of constrained loyalty, where consumers stay not because they want to, but because they feel they need to (Gounaris, 2005).

In the e-commerce context, switching barriers can take many forms: accumulated reward points, saved payment details, subscription benefits, habit formation, or platform familiarity. These factors create inertia, reducing the likelihood of switching to another retailer even if competitors offer similar benefits (Bansal et al., 2004; Kim, 2012). Research by Jones, Mothersbaugh, and Beatty (2000) found that customers with high switching costs are more likely to demonstrate repeat purchasing behavior due to the inconvenience associated with change. Similarly, Colgate and Lang (2001) highlighted that continuance commitment can sustain loyalty in service industries where contractual, technological, or psychological barriers exist.

Although continuance commitment is sometimes perceived as a weaker form of loyalty than affective commitment, it nonetheless contributes to short-term retention and transactional stability (Fullerton, 2003; Sharma & Patterson, 2000). In online retailing, continuance commitment may arise when customers feel that the learning effort to use a new website, re-enter information, or rebuild trust is too costly (Bhattacherjee, 2001). Moreover, the integration of mobile apps, digital wallets, and personalized recommendation algorithms further increases customers' dependence on existing platforms (Reichheld & Schefter, 2000).

Empirical findings in various sectors support the positive relationship between continuance commitment and repurchase intentions. For instance, Wetzels, Ruyter, and van Birgelen (1998) found that continuance commitment significantly influences intention to maintain service relationships in telecommunications. Bansal et al. (2004) also confirmed that perceived switching costs and lack of alternatives strengthen continuance commitment and subsequent repurchase behavior. Thus, while affective commitment encourages voluntary loyalty, continuance commitment ensures retained loyalty through inertia or dependence. Based on these arguments, the following hypothesis is proposed:
H2: Continuance commitment has a positive and significant effect on repurchase intentions among online customers.

3.1 METHODOLOGY

3.1.1 Research Design

This study adopted a quantitative, cross-sectional, and explanatory research design to empirically investigate how affective commitment and continuance commitment influence repurchase intentions among online customers. Quantitative methods are particularly suitable for testing causal relationships and theory-driven hypotheses through statistical modeling (Hair et al., 2019). The study's conceptual framework was developed based on the Commitment-Trust Theory of Relationship Marketing (Morgan & Hunt, 1994) and the Three-Component Model of Commitment (Allen & Meyer, 1990).

A survey-based approach was used because it enables the collection of standardized data from a large population within a relatively short period and allows for the generalization of findings (Creswell & Creswell, 2018). The constructs—affective commitment, continuance commitment, and repurchase intentions—were operationalized using well-established scales from prior research to ensure content validity and conceptual consistency.

This design is well suited for understanding psychological variables such as customer commitment, which are latent constructs not directly observable but measurable through multiple indicators (Hair et al., 2019). The study employed

Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the hypothesized model, as PLS-SEM is preferred when the objective is prediction and theory extension rather than strict model confirmation (Chin, 1998).

3.1.2 Sampling and Data Collection

The target population consisted of online shoppers who had made at least one purchase from major e-commerce platforms within the past six months. This selection criterion ensured that respondents had sufficient experience and familiarity with online purchasing behavior (Lin & Lekhawipat, 2014). A non-probability purposive sampling technique was adopted to select participants fitting these criteria, as it is widely used in behavioral research where specific expertise or experience is required (Saunders, Lewis, & Thornhill, 2019).

Data were collected through an online questionnaire distributed via social media, email, and e-commerce forums. The questionnaire was accompanied by a brief description of the study's purpose and assurances of anonymity and confidentiality in accordance with ethical research guidelines (Bryman & Bell, 2015). A pilot test with 30 respondents was conducted to check for clarity, reliability, and comprehension of items. Minor wording adjustments were made based on feedback.

The final dataset consisted of 200 respondents which meets the minimum threshold recommended for PLS-SEM (Hair et al., 2019), where the sample should exceed ten times the largest number of structural paths directed toward a latent variable. The diversity of respondents in terms of gender, age, and purchasing frequency provided a comprehensive view of online consumer commitment behavior.

3.1.3 Measurement Instruments

Each construct was measured using multiple indicators drawn and adapted from validated scales:

- Affective Commitment (AC): Measured using six items (AC1–AC6) adapted from Fullerton (2003) and Allen and Meyer (1990). Items captured emotional attachment, identification, and sense of belonging toward the online retailer (e.g., "I feel a strong sense of belonging to this online store").
- Continuance Commitment (CC): Measured with four items (CC1–CC4) based on the work of Bansal, Irving, and Taylor (2004), reflecting perceived costs and lack of alternatives (e.g., "It would be too costly for me to switch to another online store").
- Repurchase Intentions (RI): Measured with five items (RI1–RI5) adapted from Hellier et al. (2003) and Lin and Lekhawipat (2014), assessing willingness and intent to buy again (e.g., "I intend to continue purchasing from this online store in the future").

All items were rated on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The multi-item scale approach improves measurement precision and construct validity by averaging responses across multiple indicators (DeVellis, 2017).

4.1 DATA ANALYSIS PROCEDURE

Data analysis followed a structured two-step approach:

1. Measurement model assessment, which evaluates the reliability and validity of constructs.
2. Structural model assessment, which tests hypothesized relationships between constructs.

The analysis was conducted using SmartPLS 4.0, a specialized tool for PLS-SEM analysis. This method was chosen because it accommodates small-to-medium samples, non-normal data, and formative or reflective constructs (Hair et al., 2021). Bootstrapping with 5,000 resamples was used to estimate path coefficients, t-statistics, and p-values, providing robust significance testing (Henseler, Ringle, & Sinkovics, 2009).

Descriptive statistics (mean, standard deviation, skewness, kurtosis) were computed to assess normality, while missing data were treated using mean substitution since missing values were minimal (<2%). No multicollinearity issues were detected, as variance inflation factors (VIFs) were below the threshold of 5.0, confirming construct independence (Hair et al., 2021).

4.1.1 Measurement Model

The measurement model assesses the relationships between latent constructs and their observed indicators to ensure that the constructs are measured reliably and validly (Hair et al., 2019). This step includes evaluation of factor loadings, internal consistency reliability, convergent validity, and discriminant validity.

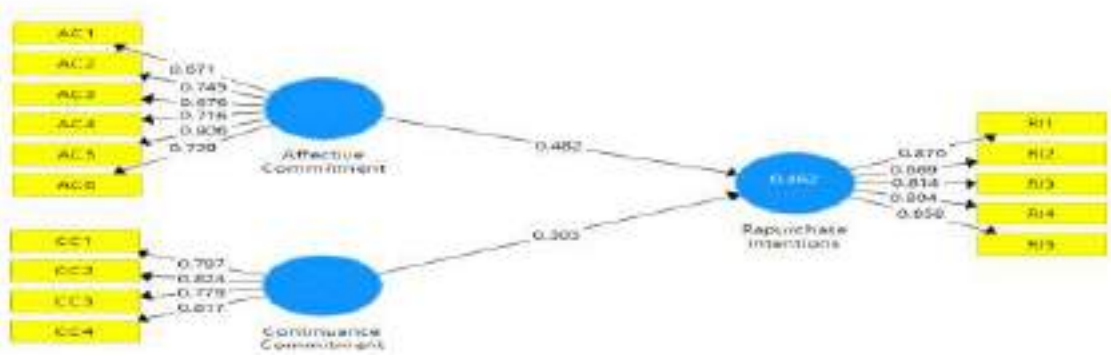


Figure 1: Measurement Model

4.1.1.1 Factor Loadings and Indicator Reliability

Factor loadings represent the strength of association between each indicator and its corresponding construct. Loadings above 0.60 are considered acceptable, while values above 0.70 indicate strong reliability (Hair et al., 2019).

Table 1. Factor Loadings

Construct	Items	Loading
Affective Commitment	AC1	0.671
	AC2	0.745
	AC3	0.676
	AC4	0.716
	AC5	0.806
	AC6	0.729
Continuance Commitment	CC1	0.787
	CC2	0.824
	CC3	0.779
	CC4	0.817
Repurchase Intentions	RI1	0.876
	RI2	0.869
	RI3	0.814
	RI4	0.804
	RI5	0.858

All item loadings exceed 0.67, demonstrating strong indicator reliability (See Table 1). This implies that each item effectively contributes to explaining its latent variable (Refer Figure 1)

4.1.1.2 Internal Consistency Reliability and Convergent Validity

To evaluate internal consistency, three key indices were examined: Cronbach's alpha, Composite Reliability (CR), and rho_A. Cronbach's alpha values above 0.70 indicate reliable internal consistency, while CR values between 0.70 and 0.95 demonstrate that the items consistently measure the same construct (Hair et al., 2021). Convergent validity is assessed through the Average Variance Extracted (AVE), which should exceed 0.50, indicating that more than half of the variance in the indicators is captured by the latent construct.

Table 2. Reliability and Convergent Validity

Construct	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Affective Commitment	0.820	0.832	0.869	0.526
Continuance Commitment	0.817	0.827	0.878	0.643
Repurchase Intentions	0.899	0.902	0.926	0.713

All reliability indicators exceed the threshold of 0.80, confirming that the constructs are internally consistent. The AVE values (>0.50) confirm convergent validity, showing that each construct explains more than 50% of the variance in its items (Fornell & Larcker, 1981) (Refer Table 2).

4.1.1.3 Discriminant Validity

Discriminant validity ensures that each construct is empirically distinct from others in the model. This was tested using the Fornell–Larcker criterion and the Heterotrait–Monotrait (HTMT) ratio (Henseler, Ringle, & Sarstedt, 2015).

Table 3. Fornell–Larcker Criterion

	Affective Commitment	Continuance Commitment	Repurchase Intentions
Affective Commitment	0.725		
Continuance Commitment	0.474	0.802	
Repurchase Intentions	0.625	0.531	0.845

According to the Fornell–Larcker criterion, the square root of AVE (diagonal values) should exceed the inter-construct correlations (off-diagonal values). As shown in Table 3, this condition is met, confirming adequate discriminant validity.

Table 4. HTMT Ratio

	Affective Commitment	Continuance Commitment	Repurchase Intentions
Affective Commitment	—		
Continuance Commitment	0.558	—	
Repurchase Intentions	0.712	0.608	—

As presented in Table 4, all HTMT values are below the conservative threshold of 0.85 (Henseler et al., 2015), confirming that each construct is distinct. This ensures that affective commitment, continuance commitment, and repurchase intention are conceptually and empirically different, despite being related.

4.1.2 Model Fit and Multicollinearity Diagnostics

Although traditional model fit indices (such as CFI or RMSEA) are not central in PLS-SEM, Standardized Root Mean Square Residual (SRMR) was examined as a model fit criterion. The SRMR value of <0.08 indicated a good model fit (Hair et al., 2019). Variance Inflation Factor (VIF) scores were also checked for all indicators and found to be below 3.0, indicating no multicollinearity among indicators. This ensures the robustness of parameter estimates

4.1.3 Structural Model and Hypotheses Testing

Once the reliability and validity of the constructs were confirmed through the measurement model, the next analytical stage involved assessing the structural model to evaluate the hypothesized relationships among affective commitment, continuance commitment, and repurchase intentions. The structural model in Partial Least Squares Structural Equation Modeling (PLS-SEM) provides estimates of the path coefficients, which represent the strength and direction of relationships among latent constructs, as well as measures of the model's predictive capability (Hair, Hult, Ringle, & Sarstedt, 2019).

This section presents the results of the structural model, including assessments of multicollinearity, path coefficients, t-statistics, p-values, and effect sizes (f^2), followed by discussions of predictive relevance (Q^2) and coefficient of determination (R^2). These analyses together provide a comprehensive understanding of how affective and continuance commitments shape repurchase intentions among online customers.

4.1.3.1 Evaluation of Structural Model Collinearity

Before interpreting the path coefficients, it was essential to verify that collinearity among predictor constructs did not bias the regression estimates. The Variance Inflation Factor (VIF) values for both affective and continuance commitments were examined. All VIF values were below the conservative threshold of 3.0, well under the critical value of 5.0 (Hair et al., 2021). This indicates that there was no significant multicollinearity issue between the independent variables, suggesting that both affective and continuance commitments contributed unique explanatory power to repurchase intentions.

4.1.3.2 Path Coefficients and Hypothesis Testing

The hypothesized relationships were tested using the bootstrapping resampling procedure with 5,000 iterations to derive the t-statistics and p-values (Chin, 1998; Henseler, Ringle, & Sarstedt, 2015). Bootstrapping is a non-parametric approach that provides robust estimates of standard errors and confidence intervals, making it suitable for small to medium-sized samples and non-normally distributed data — a common condition in behavioral research (Hair et al., 2019).

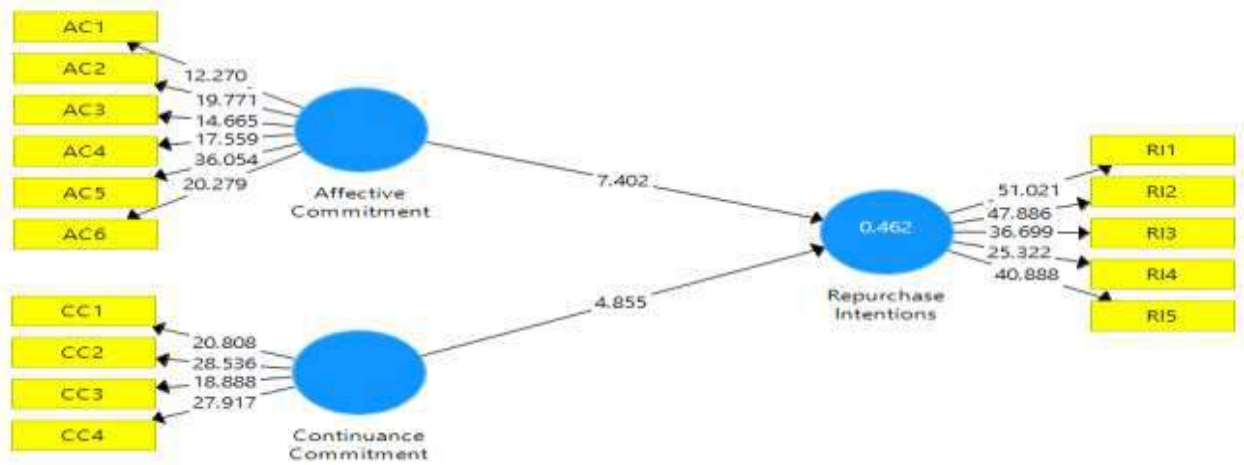


Figure 2: Structural Model

Table 5. Hypothesis Testing Results

Path	Original Sample (β)	Sample Mean (M)	Standard Deviation (STDEV)	t-statistics	p-value	Result
Affective Commitment → Repurchase Intentions	0.482	0.482	0.065	7.402	0.000	Supported
Continuance Commitment → Repurchase Intentions	0.303	0.307	0.062	4.855	0.000	Supported

As shown in Table 5, both paths were statistically significant at $p < 0.001$, providing empirical support for **H1** and **H2**. The standardized path coefficient ($\beta = 0.482$) for affective commitment indicates a strong, positive influence on repurchase intentions. The path from continuance commitment to repurchase intentions ($\beta = 0.303$) also demonstrates a positive and significant relationship, albeit weaker in magnitude compared to affective commitment.

5.1 INTERPRETATION OF RESULTS

5.1.1 Affective Commitment → Repurchase Intentions (H1)

The results indicate that affective commitment has a strong and statistically significant impact on customers' repurchase intentions ($\beta = 0.482$, $t = 7.402$, $p < 0.001$). This supports the theoretical argument that emotional attachment and identification with a brand foster long-term loyalty behaviors (Allen & Meyer, 1990; Fullerton, 2003). Customers who develop affective bonds with an online retailer are more likely to exhibit voluntary loyalty, characterized by continued purchasing out of genuine preference rather than obligation (Morgan & Hunt, 1994; Chaudhuri & Holbrook, 2001).

This finding aligns with prior studies emphasizing that affective commitment plays a crucial role in relational exchanges by creating psychological ownership, satisfaction, and emotional resonance with the brand (Evanschitzky et al., 2006; Gustafsson, Johnson, & Roos, 2005). In online retailing, where face-to-face interactions are absent, affective commitment can arise from consistent communication, personalized service, and perceived authenticity. The strength of this path suggests that emotional drivers—such as trust, empathy, and belongingness—are vital in fostering repeat purchases and brand advocacy (Batra, Ahuvia, & Bagozzi, 2012).

Thus, the results support **H1**, confirming that affective commitment significantly enhances repurchase intentions among online customers.

5.1.2 Continuance Commitment → Repurchase Intentions (H2)

The relationship between continuance commitment and repurchase intentions was also found to be positive and statistically significant ($\beta = 0.303$, $t = 4.855$, $p < 0.001$). This suggests that online customers remain loyal not only because of emotional attachment but also due to perceived switching costs and the convenience associated with staying with a familiar platform (Allen & Meyer, 1990; Sharma & Patterson, 2000).

This finding supports the notion of constrained loyalty, where customers continue their relationship with an online retailer because switching may involve effort, time, or the risk of losing accumulated benefits such as loyalty rewards or saved preferences (Jones, Mothersbaugh, & Beatty, 2000; Burnham, Frels, & Mahajan, 2003). Continuance commitment thus contributes to behavioral stability, ensuring retention even in highly competitive e-commerce environments.

However, the effect of continuance commitment ($\beta = 0.303$) was weaker than that of affective commitment ($\beta = 0.482$), indicating that emotional attachment exerts a greater influence on repurchase intentions than economic dependence. This is consistent with previous findings by Fullerton (2005) and Gounaris (2005), who argued that affective commitment fosters voluntary, resilient loyalty, whereas continuance commitment promotes conditional loyalty that may dissolve if perceived costs or benefits change.

Hence, **H2** is also supported: continuance commitment positively affects repurchase intentions, although its impact is relatively smaller compared to affective commitment.

5.1.3 Model Predictive Power

The coefficient of determination (R^2) represents the proportion of variance in the dependent variable explained by the independent variables. The structural model yielded an R^2 value of 0.563 for repurchase intentions, suggesting that affective and continuance commitments together explain approximately 56.3% of the variance in customers' repurchase intentions. This indicates substantial explanatory power, consistent with benchmarks in marketing research (Hair et al., 2019).

The effect size (f^2) was calculated to assess the relative contribution of each predictor to the endogenous construct. Affective commitment exhibited a large effect size ($f^2 = 0.36$), while continuance commitment demonstrated a moderate effect size ($f^2 = 0.19$) (Cohen, 1988). These values reaffirm that affective commitment is the more dominant predictor of repurchase intentions.

The predictive relevance (Q^2) was also assessed using the blindfolding procedure. The obtained Q^2 value for repurchase intentions was greater than zero, confirming that the model has adequate predictive relevance and is capable of explaining future behavioral intentions beyond the current dataset (Henseler et al., 2009).

5.1.4 Discussion of Structural Model Findings

The results from the structural model provide robust empirical evidence supporting the proposed hypotheses. Specifically, both affective commitment and continuance commitment were found to significantly predict repurchase intentions among online customers. However, the magnitude of affective commitment's effect indicates that emotional and psychological attachment plays a more critical role in fostering long-term

online loyalty than calculative dependence or switching barriers.

This finding resonates with the Commitment-Trust Theory (Morgan & Hunt, 1994), which emphasizes affective commitment as the core driver of sustainable relational exchanges. While continuance commitment can keep customers engaged through functional or economic constraints, it does not necessarily translate into advocacy or satisfaction-driven loyalty (Fullerton, 2003). Therefore, online businesses seeking long-term customer relationships should focus on developing affective engagement strategies that foster trust, emotional resonance, and perceived authenticity.

In practical terms, the results imply that online retailers should design relationship marketing strategies that balance emotional connection with convenience-based retention mechanisms. Personalization, interactive user experiences, and transparent communication can strengthen affective bonds, while loyalty programs and user-friendly interfaces can enhance continuance commitment. The integration of these approaches can maximize repurchase behavior and create sustainable competitive advantage in digital marketplaces.

6.1 CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH DIRECTIONS

6.1.1 Conclusion

This study concludes that affective and continuance commitments are significant predictors of online customers' repurchase intentions. While emotional bonds (affective commitment) yield stronger loyalty, rational dependence (continuance commitment) also contributes meaningfully. For practitioners, building long-term relationships requires nurturing both emotional and calculative attachments through superior experiences, reliable service, and meaningful engagement.

6.1.2 Limitations

Despite its contributions, the study has limitations. It uses cross-sectional data, restricting causal inference. The sample may not capture all segments of online consumers, particularly across different cultures and product categories. Furthermore, only two commitment dimensions were studied, excluding potential mediators such as satisfaction, trust, and perceived value.

6.1.3 Future Research Directions

Future research can extend this work by adopting longitudinal designs to explore causality between commitment and loyalty. Including additional constructs—such as trust, e-service quality, or brand experience—could enhance explanatory power. Cross-cultural comparisons may also reveal how cultural differences moderate the relationship between commitment and repurchase intentions. Finally, integrating qualitative methods such as interviews could provide richer insights into how emotional and rational factors jointly drive online loyalty.

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GEN Z AND THE DIGITAL MARKETPLACE: UNDERSTANDING CONSUMER BEHAVIOUR IN THE AGE OF DOPAMINE AND DARK PATTERNS

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Generation Z, the most developed generation to date, has significantly influenced many economic and social fields. This research paper examines how these digital natives affect consumer behaviour and the implications for today's markets. In a dopamine-driven society, which focuses on instant gratification and planned impulsivity, various issues can arise, such as dark patterns. This project aims to look at these cognitive designs and highlight instances of misuse related to creating a world of social media and closely controlled consumption. Additionally, this review seeks to draw conclusions by analysing risk-taking and consumption, the benefits of these behaviours, and the growth of the digital economy. It will assess the potential of the digital economy for long-term sustainability and trust concerning Gen Z's contributions.

KEYWORDS: ***Generation Z, Consumer Behaviour, Digital Marketplace, Dopamine, Dark Patterns***

1. INTRODUCTION

Generation Z, typically defined as those born between 1997 and 2012, represents a crucial part of the current conversation around the term "Generation Z." Their established styles and the impact of technology touch nearly all areas of global markets. Growing up surrounded by technology, Gen Z has developed distinct preferences, beliefs, and habits that differ significantly from those of generations X and Y. In particular, following COVID-19, Gen Z has taken these trends to a new level. With rapid changes in the digital marketplace and on social media, Gen Z has witnessed the most shifts in how markets operate and how consumers behave. This clearly shows that this generation is the most flexible and experimental. Questions arise about how these trends come about and how accurately we can observe and predict consumer behaviour. This highlights the importance of market studies and the efforts of individuals who strive to understand consumer behaviour while developing strategies to influence market dynamics and supply.

This generation has grown up with a natural understanding of technology and constant exposure to online environments. They have distinct tastes, beliefs, and habits that set them apart from earlier generations (Prasanna & -, 2024) (Yahya & Mammadzada, 2024). Their heavy use of digital media, social media, and instant messaging tools greatly affects their views on products and their overall online shopping behaviour (Chang & Chang, 2023). Businesses that want to succeed in today's fast-paced market must recognise their consumer behaviour, shaped by their buying power and personal digital skills (Kusuma et al., 2024).

Generation Z's constant exposure to digital content and social networks significantly influences their product perceptions and online shopping habits (Chang & Chang, 2023). Because they have substantial spending power and are skilled in digital environments, companies need to understand their buying patterns to compete effectively in the swiftly changing marketplace today (Kusuma et al., 2024). Their digital familiarity and potential consumer spending make them a key market force (Guerra-Tamez et al., 2024).

This literature review seeks to summarize current research on Generation Z's online shopping, focusing on the factors that drive their purchasing power and involvement in the digital economy (Theocharis et al., 2025). The study will examine the effects of online marketing efforts, especially those tailored for Gen Z, since they depend on digital technology for information and are inclined to buy products online (Zhulal et al., 2024) (Archana & Shree, 2024). Moreover, Generation Z's unique values, like a desire for authenticity, social connections, and social responsibility, significantly impact how they engage with brands. Therefore, it's essential to assess how these values are integrated into online marketing strategies (Sahu & Karnuta, 2022) (Dahlquist & Garver, 2022). This review will also look into the psychological aspects of Generation Z's online behaviour, exploring how "dopamine" and "dark patterns" affect their consumption habits.

This includes looking at how factors that release dopamine, like social media interaction and gamification, influence their consumption decisions. It also explores the moral issues raised by "dark patterns" that subtly shape their online choices (Murtarelli et al., 2024). This review will give e-retailers and marketers valuable insights on how to connect with this generation of digital natives. It will improve our understanding of modern consumer behaviour (Thangavel et al., 2019).

2. UNDERSTANDING GEN Z AS CONSUMERS

This generation, with an inborn technological capability and constant exposure to virtual realities has certain tastes, believes in particular things, and follows customs that are very different from those of previous generations (Prasanna & -, 2024) (Yahya & Mammadzada, 2024). Their widespread use of digital media, social media, and messaging apps greatly influences their product attitudes and overall online consumer behaviour (Chang & Chang, 2023). By their buying power and their own unique digital literacy, their consumption decisions need to be perceived by businesses seeking to remain competitive within this era's fast-evolving marketplace (Kusuma et al., 2024). Their widespread utilisation of online media, social media, and instant messaging websites significantly influences their product attitudes and overall consumer behaviour online (Chang & Chang, 2023). With their own digital acumen and spending power, their consumer behaviour has to be deciphered by businesses prepared to be competitive in the speed-oriented market of today (Kusuma et al., 2024). Their inbuilt digital capability and vast prospective consumer expenditure potential position them as a market highlight (Guerra-Tamez et al., 2024). This review tries to integrate studies on Generation Z's digital consumption, with a focus on determinants that affect their purchasing power and participation in the digital economy (Theocharis et al., 2025). The research will examine the effects of online promotional campaigns directed at Gen Z, taking into consideration that they are information-reliant on digital technologies and inclined towards buying online (Zhulal et al., 2024) (Archana & Shree, 2024). Furthermore, unique values of Gen Z like passion for authenticity, human interaction, and social awareness are also critical in influencing their engagement with brands and buying behaviour and hence require an examination of how these values are utilised through digital marketing initiatives (Sahu & Karnuta, 2022) (Dahlquist & Garver, 2022). This examination also explores the psychological basis of Gen Z's online activities, specifically how "dopamine" and "dark patterns" affect their consumption processes in the digital space.

This involves investigating how dopamine-inducing features, like social media interaction and gamification, affect their consumption patterns and the moral ramifications of "dark patterns" that subtly influence their online choices (Murtarelli et al., 2024). In order to better understand current consumer behaviour, this thorough review will offer useful insights to marketers and e-retailers looking to target this generation of digital natives (Thangavel et al., 2019).

Gen Z makes up a large share of the global population, about 23% in 2013, and is expected to dominate as the main consumer group in the coming years (Vieira et al., 2020; Thangavel et al., 2019). This means businesses need to adapt to the growing market and must understand how and why Gen Z's "buy".

2.1 Defining Generation Z (Demographics and Characteristics)

Gen Z includes people born roughly between the mid-1990s and early 2010s (Alruthaya et al., 2021; Chen & Ha, 2023). Unlike Millennials, who saw the rise of the internet as they grew up, Gen Z has lived entirely in a connected world. This has shaped their worldview, study habits, and consumer behaviour in ways that are very different from previous generations (Benítez-Márquez et al., 2022; Gentina, 2020). Sometimes called Zoomers or post-Millennials, they are known for preferring visual content like videos and memes, using multiple platforms at once, and doing online research before buying something (Benítez-Márquez et al., 2022; Archana, 2024). Their comfort with technology also means they have high expectations: they want fast, reliable, and seamless digital experiences.

This tech fluency is not just about convenience. It has also influenced their values and attitudes. They are often more open to diversity, better at networking, and more cautious about money compared to older generations (Tulasmi et al., 2023). They are careful with spending but expect value for money, blending financial caution with digital savvy. Generation Z makes up about a quarter of the global population and has around $450 billion in buying power. This gives it a significant role in the current global economy. In the US, Gen Z has an estimated buying power of $360 billion and continues to strongly influence consumer behaviour and markets. It's also predicted that Gen Z's financial impact will grow as they mature. Some forecasts estimate their total global spending could reach $12 trillion by 2030. This mix of economic strength and demographic influence means businesses need to understand and respond to the unique behaviours of this generation.

2.2 Digital Natives and Online Behaviour Patterns

The term “digital native,” introduced by Marc Prensky, describes people who grew up with digital technology as a natural part of their lives (Mertala et al., 2023; Remizantseva & Ablyazov, 2019). This definition perfectly fits Gen Z, as their daily routines are built around digital platforms (Штепура, 2018; Öngel et al., 2023). Their digital fluency means they are skilled at switching between platforms and multitasking. For instance, many Gen Z teens use YouTube every day, scroll Instagram for trends, and chat with friends online simultaneously (Dospinescu et al., 2019). They also use digital tools in education, showing confidence in online learning environments (Bergdahl & Nouri, 2020). However, not every scholar agrees that being born in the digital age automatically makes someone digitally literate. Some argue that “digital native” is too broad, since using technology casually is not the same as having advanced digital literacy (MN et al., 2020). Still, it is clear that digital exposure from birth has influenced Gen Z’s thinking patterns and behaviour. They process information quickly, rely heavily on online content, and prefer interactive experiences (Wandhe, 2024).

2.3 Values, Attitudes, and Expectations in Consumption

Gen Z consumers are not only influenced by technology, they also bring strong values into their shopping habits. They often look for brands that match their personal beliefs and expect authenticity and honesty from said brands (Norris, 2001; Alruthaya et al., 2021). They tend to support businesses that show commitment to social causes, environmental protection, and ethical practices (El-Menawy & Saleh, 2023). Because they gather information mostly online - reviews, influencer recommendations, and user-generated content have more influence on their buying decisions than traditional advertising (Lazar et al., 2023). Platforms like TikTok have made trends, authenticity, and social proof especially powerful in shaping what Gen Z buys (Bulazo et al., 2025). Another feature of Gen Z is that they are less loyal to brands. They will switch quickly if they find a better deal, but they are also willing to stick with brands that reflect their values and create emotional connections (Pillay, 2021). This makes trust and authenticity even more important for companies trying to win long-term loyalty (Wan, 2025). Finally, Gen Z's constant exposure to global news and social issues makes them more likely to favour companies that contribute positively to society. This pushes brands to go beyond sales and actively demonstrate social responsibility.

3. THE DIGITAL MARKETPLACE: AN EVOLVING ECOSYSTEM

Digital technology has changed how people interact with brands and make purchasing decisions. E-commerce and data-driven marketing have not only transformed the way companies sell products but also reshaped consumer expectations. Today's consumers, especially Gen Z, expect shopping to be easy, fast, and tailored to their preferences (Kumo, 2023). More importantly, many of them want businesses to align with their values and provide ethical, transparent experiences (Matheny, 2019).

3.1 The Rise of E-Commerce and Social Commerce

In recent times, shopping has shifted from physical stores to digital platforms. E-commerce has become the dominant model for buying; and this trend grew even faster during the COVID-19 pandemic (Reinartz et al., 2019). To keep up, companies have had to change how they connect with customers, making online experiences more interactive and engaging (Figueiredo et al., 2025).

One of the biggest changes in recent years is the rise of social commerce, shopping directly through social media platforms. Social commerce combines the convenience of e-commerce with the influence of social media, allowing people to buy products they see in posts, videos, or live streams (A. D., 2023). This makes shopping more social, as people are influenced not only by advertisements but also by friends, communities, and influencers (Özen & Hus, 2025).

Social media platforms are no longer just places to chat or share photos. They have become powerful sales tools, shaping how people discover and trust brands (Shaheen, 2025). Businesses now need strong social media strategies that build communities, encourage interaction, and create authentic connections. Word-of-mouth through online reviews, recommendations, and ratings has become just as important (Correia & Medina, 2014).

Social commerce platforms often include features such as customer ratings, comments, tags, and recommendations. These features give users more confidence when making decisions (Rashid et al., 2022). By blending e-commerce and social media, "S-commerce" allows people to share experiences, ask for advice, and shop as part of a community (Abdelsalam et al., 2020; Guo & Lei, 2022). This turns shopping into a more interactive and trustworthy activity, where peer influence plays a central role in decision-making (Rashid et al., 2020).

Social commerce, which mixes social media and shopping, stands out as one of Generation Z's key shopping habits. In 2024, more than half of Gen Z consumers made at least one purchase through social commerce channels. Additionally, 79% of Gen Z and Millennials use social media platforms while shopping, based on a recent report. By 2028, social commerce is projected to be worth over $1 trillion, showing its major impact on the online marketplace. Also, 67% of Gen Z consumers reported finding new products on social media through organic videos. This highlights the influence of marketing by individuals and content created by users.

3.2 Mobile-First Experiences and Omnichannel Strategies

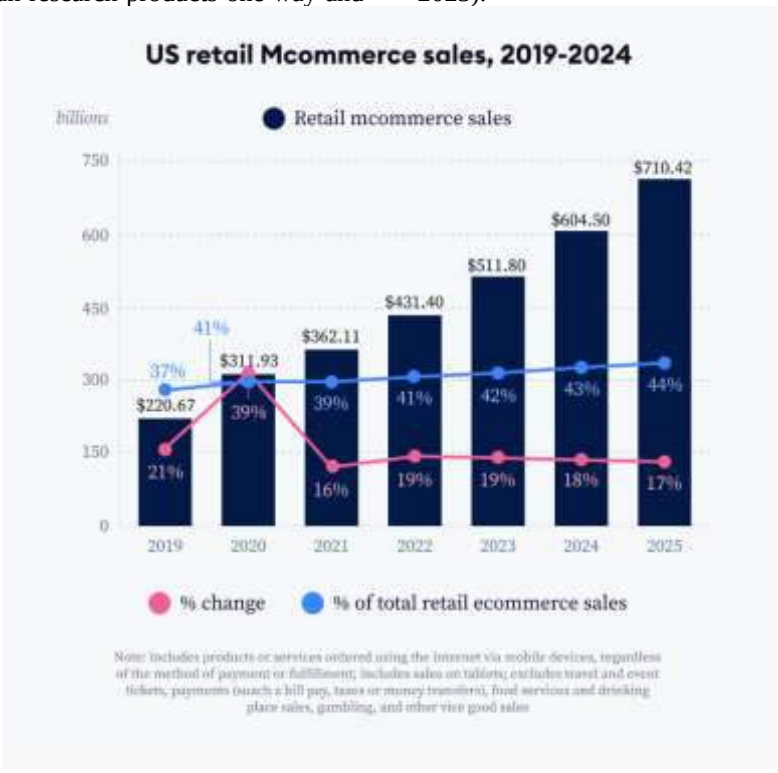
Smartphones have completely changed how people interact with brands. For many, the phone is the first and main way they shop, search for information, or interact with customer service. Because of this, businesses are expected to adapt to design experiences that work seamlessly on mobile devices (Sari et al., 2023).

However, mobile-first design is just one part of a bigger shift: the move toward omnichannel strategies. Omnichannel means giving customers a smooth and consistent experience whether they shop in a physical store, browse a website, use a mobile app, or contact a brand through social media. The goal is to make everything connected and convenient (Moued & Abdullah, 2018).

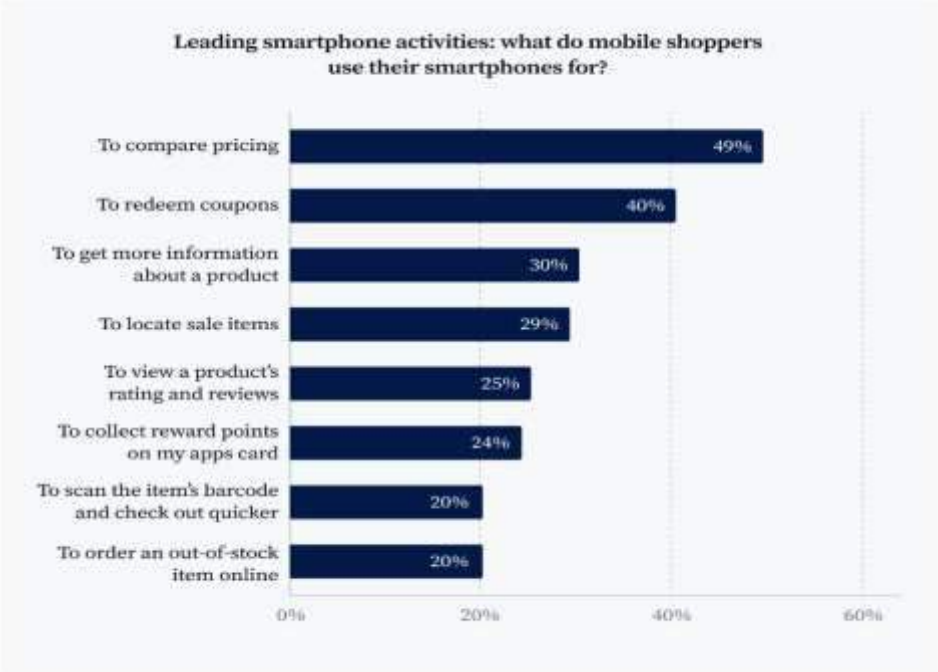
Today's consumers often move between channels before making a purchase. For example, they might research a product online, try it in a store, and then buy it later through an app. Companies that succeed are those that can unify these elements into a single, consistent brand experience (Rey-García et al., 2018).

Gen Z's demand for smooth, mobile-first experiences is rapidly changing how businesses approach digital retail. By 2025, 76% of U.S. adults will regularly shop from their smartphones, with Gen Z leading the way. Mobile commerce now accounts for more than 72% of global online retail sales. Additionally, 74% of Gen Z prefer a mobile shopping app over a mobile website, and mobile cart abandonment rates can reach up to 75.5%. Clearly, tackling the high rate of mobile cart abandonment, along with Gen Z's growing preference for using their mobile devices to shop, means that any successful omnichannel strategy must focus on mobile accessibility, user experience, and the ease of accessing digital shopping carts across various devices.

This requires careful use of data analytics to personalise interactions and predict what customers want. Brands like IKEA, for instance, have integrated their online and offline services so that customers can research products one way and complete purchases the other (Prassida & Hsu, 2022). In this way, omnichannel strategies don't just create convenience; they also build customer loyalty by making interactions feel effortless and personalized (Iglesías-Pradas & Acquila-Natale, 2023).



(Figure 1: Mcommerce Sales in the United States)



(Figure 2:Smartphone activities and their implications on the black patterns approach)

3.3 The Role of Social Media, Influencers, and User-Generated Content

Perhaps the most influential force in the digital marketplace is social media. Platforms such as Instagram, TikTok, and YouTube have turned shopping into an interactive and social experience. Unlike traditional advertising, which delivers one-way messages, social media allows two-way communication where consumers can comment, share, and create their own content (Granata, 2020).

This shift has given rise to user-generated content (UGC) and influencer marketing. Instead of only listening to companies, Gen Z often trusts influencers, online communities, and even strangers on review platforms (Faria & Carvalho, 2025). They want to see real people using products and sharing honest opinions.

This participatory culture means consumers are now co-creators of brand stories. By posting photos, reviews, and videos, they shape how other people see products and companies. Businesses that encourage this participation, through hashtags, challenges, or community spaces, can build stronger loyalty and more authentic relationships (Shaheen, 2025).

In short, social media has blurred the line between marketing and everyday communication. For Gen Z, the decision to buy is not just about advertisements; it is shaped by influencers, trends, friends, and viral content. For businesses, this means success depends on transparency, engagement, and trust rather than traditional sales tactics.

4. NEUROSCIENCE OF CONSUMER BEHAVIOUR: THE DOPAMINE FACTOR

People's buying behaviour isn't shaped only by culture, technology, or money. It's also influenced by the brain. Research in neuroscience shows that dopamine, a chemical in the brain, has a big role in driving motivation, creating a sense of reward, and shaping the decisions we make. In digital environments, dopamine becomes especially important because online platforms are designed to trigger quick emotional responses and reinforce certain behaviours (Shah, 2024). Understanding how dopamine works helps explain why Gen Z often engages in impulse buying, enjoys gamified shopping features, and seeks instant gratification online.

Advances in brain imaging allow researchers to see how people respond to digital interactions in real time. These studies show that dopamine activity increases when people anticipate rewards, such as discounts, likes on social media, or completing a purchase (Hill, 2003; Venkatraman et al., 2011). This means marketers can influence consumer decisions not only through information but also by appealing directly to unconscious emotional responses. For businesses, this creates opportunities for more engaging design. But it also raises ethical concerns about manipulation, since these triggers can bypass rational decision-making (Ngo et al., 2024).

4.1 Dopamine and the Psychology of Reward

Dopamine is a chemical linked to the brain's reward system. It is released when we expect something pleasurable, motivating us to repeat those behaviours (Lee & Goto, 2018). This is why people feel excitement when they get a notification, find a bargain online, or win a game. In marketing, this reward cycle is important because it explains why people enjoy shopping and why certain strategies keep them hooked.

For Gen Z, who spend much of their time in digital spaces, dopamine release is constantly stimulated. Online purchases, social media likes, and engaging digital content can all create small bursts of dopamine, reinforcing behaviours and making them more likely to repeat them (Plaßmann et al., 2008; Salamone, 2009). This is also why some platforms feel addictive; they are built to keep activating these reward pathways again and again (Dresp, 2023).

4.2 Instant Gratification in Online Shopping

One of the strongest effects of dopamine in digital contexts is the desire for instant gratification. In e-commerce, everything is designed for speed: one-click purchases, saved payment details, and fast delivery services. This bypasses slower, more rational decision-making and instead appeals directly to the brain's desire for immediate reward (Zhao, 2022).

Research shows that the anticipation of receiving something quickly triggers dopamine, which makes impulse buying more likely (Taber et al., 2012; Wise, 2008). Gen Z, who are used to fast digital interactions, are especially drawn to these systems. Advertisers often exploit this by targeting impulse buyers with discounts, limited-time offers, and one-click checkout options (Mendenhall, 2014).

4.3 Gamification and Engagement Loops in Digital Platforms

Another way dopamine is triggered is through gamification, adding game-like elements to non-game settings. Online platforms use features such as points, badges, leaderboards, or daily rewards to keep users engaged (Santos et al., 2023). These features create small achievements that stimulate dopamine release, making people feel satisfied (Wu, 2020).

For Gen Z, who already enjoy gaming culture, these techniques feel natural. But they also increase the risk of impulsive behaviours and compulsive engagement. While gamification can make platforms more fun, it also blurs the line between entertainment and manipulation.

5. DARK PATTERNS IN THE DIGITAL MARKETPLACE

While dopamine-driven design encourages people to keep engaging with digital platforms, another factor also plays a major role in shaping consumer behaviour: dark patterns. Dark patterns are user interface designs that deliberately manipulate people into making decisions they may not want (Bongard-Blanchy et al., 2021).

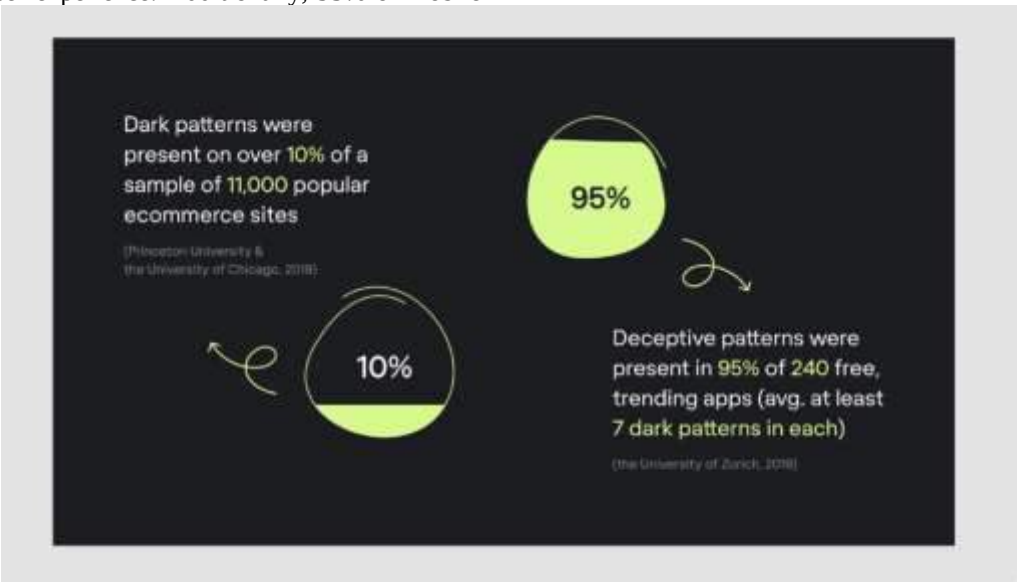
These designs are not merely persuasive tactics; they are structured manipulations. They take advantage of natural human biases, such as our tendency to avoid loss, respond to urgency, or follow defaults. For example, a website might hide the "unsubscribe" button, add items to a cart automatically, or make cancellation confusing on purpose. In each case, the company benefits while the user takes the loss (Gray et al., 2021).

Dark patterns are common in this day and age. They are designed to keep users engaged longer, spend more money, or share more information than they originally intended. This can create frustration and a sense of being exploited, even when they are aware of the manipulation (Bongard-Blanchy et al., 2021).

The widespread use of these techniques raises important ethical questions. If platforms are made to exploit weaknesses in human psychology, do people truly have free will? Many scholars argue that dark patterns directly threaten mental autonomy, making it harder for people to act according to their genuine intentions (McCarthy-Jones, 2019).

An increasingly concerning issue in online shopping is the use of dark patterns. These are design choices in interfaces, like apps, that aim to influence user behavior. 56% of respondents indicated they have less trust in digital brands that they think manipulate the user experience. Additionally, 95% of mobile apps and 97% of consumer apps in the EU feature at least one dark pattern. Subscription services are especially problematic. According to 76% of respondents, these services often use dark pattern elements to encourage long-term use or to make cancellation difficult. These findings lead us to question the ethics of persuasive design in online environments.

As awareness of dark patterns grows, some countries are considering stricter rules to protect consumers from the most harmful designs (Obi et al., 2022). Still, the problem is widespread and constantly evolving (Zac et al., 2025).



(Reference: https://www.eleken.co/blog-posts/dark-patterns-examples)
(Figure 3: Presence of Dark Patterns on e-commerce and online trade forums)

6. INTERSECTIONS: DOPAMINE, DARK PATTERNS, AND GEN Z

When dopamine-driven design and dark patterns come together, they create a powerful mix that strongly influences Gen Z's online behaviour. This generation is highly engaged with digital platforms, but their developing brains and constant online presence make them vulnerable to these techniques. The combination of psychological reward systems and manipulative design leads to a digital environment that is both engaging and risky.

6.1 How Dark Patterns Exploit Reward Systems

Many digital platforms are designed not just to attract attention but to hold it. Dark patterns often work by tapping into the same brain reward systems that dopamine activates. For example, features like endless scrolling or constant notifications provide small bursts of positive reinforcement. Every time a user scrolls or sees a new update, the brain gets a reward signal, which encourages them to continue (Bhargava & Velásquez, 2020).

Other dark patterns, such as hidden costs or forced continuity (where subscriptions renew automatically without a clear warning), take advantage of cognitive shortcuts. People may feel they are making free choices, but in reality, the design is guiding them toward decisions that benefit the company (Mildner et al., 2023). In this way, digital interfaces become less about serving users and more about steering behaviour for commercial gain.

6.2 Gen Z's Susceptibility to Digital Manipulation

The new generation, whose strength lies in digital fluency, sometimes makes them more susceptible to manipulation. Because they grew up fully immersed in technology, many of them see features like autoplay or push notifications as something natural rather than of a manipulative nature (Bergdahl & Nouri, 2020). This makes it easier for dark patterns to slip past their awareness.

At the same time, the adolescent and young adult brains are still developing, especially in sensitive areas relating to impulse control and long-term decision-making. This makes dopamine-driven designs more appealing for Gen Z, restructuring their habits and sometimes leading to overusage or addiction-like behaviours (Ranieri et al., 2021; Ahmed, 2019).

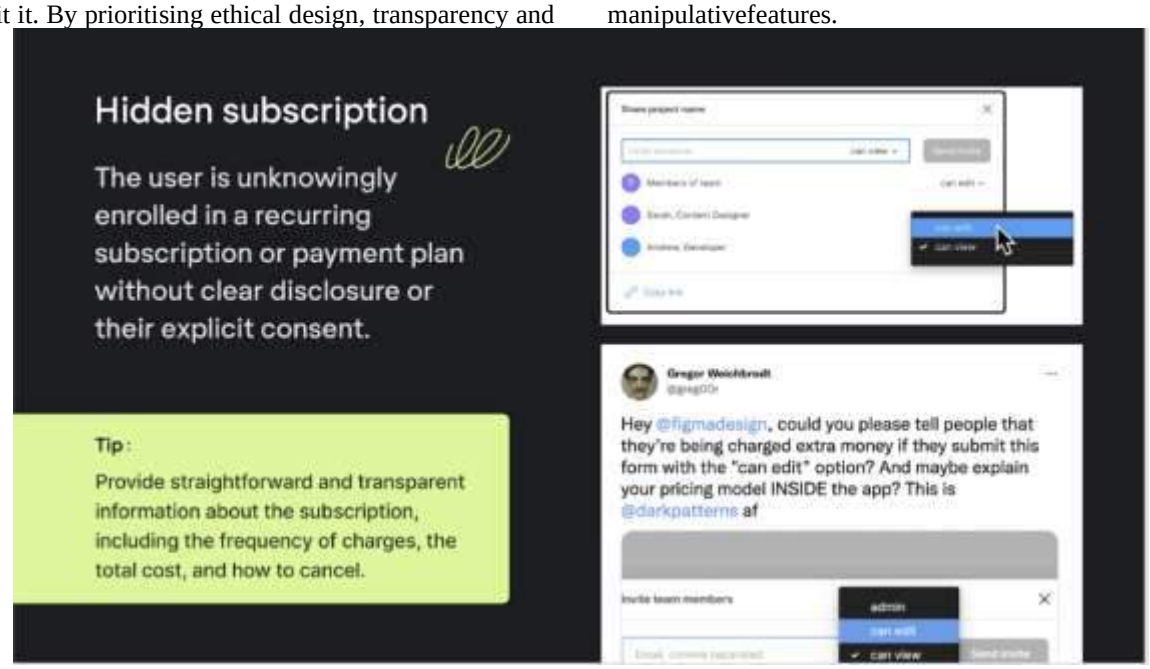
Studies show that some Gen Z individuals spend up to 16 hours a day on digital devices (Surat et al., 2021). This level of exposure increases the chances of being more attracted towards manipulative design. If the above phenomenon is repeated over time, rigorous engagement can create problems such as stress, poor productivity, and negative effects on a person's mental health. (Schaffner et al., 2025).

6.3 Resistance, Awareness, and Consumer Agency

Despite these risks, Gen Z is not powerless. In fact, many researchers have emphasised the use of digital literacy as a way to counter manipulation. If young consumers understand how to recognise dark patterns and know how the facet of dopamine-driven engagement works, they can make more intentional choices from a wide variety of products (Alruthaya et al., 2021).

But resistance cannot depend only on individuals. There is a need for ethical design and stronger regulation. Platforms have the power to design in ways that support user autonomy rather than exploit it. By prioritising ethical design, transparency and respecting consumer well-being, companies can build long-term relationships with consumers instead of short-term profits. Meanwhile, policymakers can help by creating stringent rules that prevent the most harmful dark patterns from being used in the first place.

For Gen Z, this balance is especially important. They are highly engaged in digital platforms, which represent the future of consumer culture. Spreading critical awareness and following responsible design practices can help them enjoy the boon of technology without being undermined by its manipulativefeatures.



(Reference: https://www.deceptive.design/types/hidden-subscription)

(Figure 4:Hidden subscription method used by service providers)

7. GAPS IN LITERATURE AND FUTURE RESEARCH

Though extensive research on digital technology is conducted, key gaps remain for Gen Z. Long-term studies are required to establish a relation between early digital exposure and later mental health and financial outcomes. The impact of gaming on learning habits and digital distractions also needs attention.

Financial literacy is another weak area, especially regarding parental misunderstandings and the rise of digital finance. Future studies should focus on how digital platforms affect stress, resilience, critical thinking, and socialisation. Finally, more research is needed to test design elements that increase or decrease risks related to issues like addiction and social comparison

8. CONCLUSION

According to this review, Gen Z is a generation of digital natives that is disrupting the marketplace. Three important points are identified. First, Gen Z consumer behaviour is primarily dictated by digital environments, where social media, influencers, and gamified shopping environments strongly influence their purchasing decisions. Second, dopamine, a chemical in the brain associated with reward and pleasure, is an important part of understanding Gen Z's proclivity to seek immediate rewards and affectively driven considerations leading to quick purchases, particularly in digital environments that are designed around dopamine design principles. Third, dark patterns present ethical issues, as these designs manipulate and prey on psychological vulnerabilities.

These trends are problematic for the digital economy. On one hand, dopamine-feed engagement and persuasive design have catalysed the rapid growth of e-commerce and social commerce. On the other hand, these tactics raise important concerns over long-term trust, mental health, and brand loyalty. As Gen Z continues to increase in global economic power and influence, over-reliance on nefarious tactics may backfire.

.This represents a crossroads for companies. They can either choose to continue extracting more short-term profit, or they can move towards an economic system built on trust, transparency, and consumer empowerment. To build an ethical digital marketplace, we need to build digital designs that honor user choice, develop trust, and inspire meaningful participation. We will also need policymakers and educators to push for digital literacy, so Gen Z has the skills to identify and resist these manipulative digital strategies.

Ultimately, the future of the digital economy relies on trust. Companies will have to find a way to balance profit with corporate responsibility, and start creating value for different stakeholders, beyond the shareholders of an organization, to respect consumer welfare. Through their behavior and expectations, Gen Z is not only changing how we consume; they are challenging corporations to reshape the digital commerce industry with new ethical standards.

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NUTRITION OF ADOLESCENT GIRLS: A WINDOW TO HEALTHY FUTURE GENERATION

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The nutritional needs of the adolescents are critical for the wellbeing of the society as healthy adolescents open the window of healthy adulthood having skills and efficiency for the development of the economy and the society as well. Adolescent girls, especially are exposed to multiple layers of vulnerability which affects their physical and mental development. Adolescent girls are particularly vulnerable to anemia due to their unique physical and psychological changes that occur during this stage of life.The present study aims to assess the nutritional status of adolescent girls in India and its' associated risk factors so that some strategic interventions can be adopted to minimize this multifaceted problem of nutrition. The available literature and the database of the study reveals that the adolescent generation of the country has been facing the triple challenges of underweight, overweight and obesity. The prevalence of underweight is approximately three times more in rural areas (27.6%) as compared to urban areas (8.6%) which may be attributed to gender bias, more physical strenuous lifestyle and lack of knowledge about adequate calorie requirements among adolescents. There is need of operational research and intersectoral collaborations to address the problems of adolescent girls nutrition in the country.

KEY WORDS: ***Adolescent, Nutrition, Underweight, Future generation***

I.INTRODUCTION

Adolescence is the phase of life between childhood and adulthood, from ages 10 to 19. It is a unique stage of human development and an important time for laying the foundation of good health. Adolescents comprise 16 percent of the total world population (UNICEF,2019). The adolescents experience rapid physical, cognitive and psychological growth in this stage of life. The nutritional needs of the adolescents are critical for the well being of the society as healthy adolescents open the window of healthy adulthood having skills and efficiency for the development of the economy and the society as well. This nutritional deficiency is multifactorial, driven by inadequate iron intake, heavy menstrual bleeding, parasitic infections and socio-economic factors.

India's adolescent population stands at 253 million according to the 2011 Census, and 47 percent of them are girls. India's social, political, and economic development stands on this large number of adolescents who needs to be safe, healthy, educated and equipped with the information and life skills to support the country's continued development. Both adolescent boys and girls in India have issues of nutritional deficiency, lack of access to information and scops for developing life skills. Adolescent girls, especially are exposed to multiple layers of vulnerability which affects their physical and mental development. Adolescent girls are particularly vulnerable to anemia due to their unique physical and psychological changes that occur during this stage of life. The prevalence of anemia among adolescent women in India was 54% in NFHS-4 and increased to 59 percent in NFHS-5. This nutritional deficiency is multifactorial, driven by inadequate iron intake, heavy menstrual bleeding, parasitic infections and socio-economic factors. Moreover, the pubertal timing depends on nutrition during childhood. In adolescence stunting (low height for age) and wasting (low weight for height) delay both overall growth and onset of puberty. In addition, girls born small for gestational age are at risk for insulin resistance, premature pubarche, early menarche and an attenuated growth spurt. Moreover, The high rate of malnutrition in girls not only contributes to increased morbidity and mortality associated with pregnancy and delivery, but also increased risk of delivering low birth-weight babies. This contributes to the intergeneration cycle of malnutrition.

II. REVIEW OF LITERATURE

Adolescence is a critical stage of life characterized by major biological, psychological, emotional and social growth and development. It is the second stage of the life, after infancy in which growth of life accelerates (Das et.al, 2017). The nutritional requirements of the adolescent age is higher than relative to adults as per the speedy growth of height and weight of the earlier (Heslin & McNulty,2023). Progress on adolescent girls' and women's nutrition is too slow and under threat and no region is on track to meet the 2030 global targets to reduce anemia and low birthweight, and acute malnutrition has risen by 25 per cent since 2020 in crisis-hit countries(UNICEF,2023).

The theoretical and empirical analysis on adolescent nutrition, a hidden crisis ,is neglected at global health and nutrition policies (Lancet,2022). The internationally recognized team of nutrition champions- 'Nutrition International' shows that with good nutrition,600 million adolescent girls can break the cycle of malnutrition and poverty. The study conducted on adolescent girls of Bangladesh shows that that illiterate young girls are more vulnerable to disease and undernourishment (Hossen et.al,2016). Thus, teenage girls' education should be prioritized in global health and nutrition policies. Educated adolescents are better exposed to information and services, nutrition knowledge and healthy family planning etc. (Cunnnighum et. al,2020). Well-nourished girls with access to education learn better, earn more over their lifetimes, and can better contribute to their families, communities, and countries. Early marriage and pregnancy and childbearing is another factor that affects the health and nutrition of adolescents. Researchers agree that early marriage and adolescent pregnancy can form severe risks for women's psychological and reproductive health, as well as on educational and social status (Sezgin & Punamaki,2020, WHO,2024). Among numerous factors, inadequate dietary intake, food diversity, amount of food consumption and skipping of meals are found to directly affect the body mass index (BMI) of adolescents in low and middle-income countries (Yemaneh et.al,2017).

The devastating impact of malnutrition among Indian adolescent girls are susceptibility of infection, difficulties of recovering from illness, low birth weight babies and higher risk of survival of the new born (WHO,2018; Rose-Clarke et.al,2019).Another estimate conducted on Indian Adolescent based on NFHS-3 and NFHS-4 data shows that persistently high-levels of stunting in Indian adolescent results loss of opportunity for their physical, psychological and cognitive development(Bhargava et.al,2020). To mitigate the stunted growth of the adolescent population of the country adequate provision of diverse diet need to be emphasized in different policy and programmes (Nithy & Bhavani, 2018). There is also necessity to inculcate healthy eating habits at a young age. Consuming junk foods high in fat and sugar with sedentary life style is responsible for the teenage overweight and obesity and threat of diabetes and hypertension in adult life (Gandhi,2022). There is need of in-depth operational research to identify different strategic interventions for adolescent girls' health and nutrition.

III. OBJECTIVE

The present study aims to

i. To assess the nutritional status of the adolescent girls of India and
ii. To identify the socio-economic and demographic factors associated with the nutritional status of the adolescent girls.

IV. METHODOLOGY

The present study is descriptive and analytical in nature. To reach the targeted objective, necessary data is collected from different secondary sources like National Family Health Survey (NFHS), Comprehensive National Nutrition Survey (CNNS), WHO and UNICEF reports and UDISE and UDISE Plus for educational data of adolescent girls of the country.

V. DISCUSSION & RESULT

ANTHROPOMETRIC INDICATORS AND NUTRITIONAL STATUS

The adolescent generation of the country has been facing the triple challenges of underweight, overweight and obesity. The Comprehensive National Nutrition Survey (CNNS, 2016-18) shows that 24 % of adolescents were thin for their age (wasted) (BMI-for-age $< 2SD$), 27.2% were stunted (short for their age) and 5 percent of adolescents were overweight or obese (BMI for age$> +1SD$). Underweight is a clear indication of inadequate dietary intake and vitamin A deficiency while weight gain is the result of a positive energy balance. The CNNS of India reveals that only 11 % of adolescents have adequate dietary diversity. Recent studies on adolescent dietary diversity and nutrition have found that only 24 % of adolescents have a high mix diet(Sharma et.al,2021) and inadequate dietary intake is significantly associated with poor nutritional outcomes among females in India. Energy expenditure, as assessed through levels of physical activity, declines in children as they reach adolescence, particularly in adolescent girls. There is evidence in literature (Zang &Wang, 2013) that children and adolescents of urban families are more overweight than their rural counterpart. A comparative study of rural and urban adolescents of Delhi (Anand & Sharma,2023) shows that the prevalence of underweight is approximately three times more in rural areas (27.6%) as compared to urban areas (8.6%) which may be attributed to gender bias, more physical strenuous lifestyle and lack of knowledge about adequate calorie requirements among adolescents. Being overweight is high in urban areas (42.4%) compared to rural areas (13.3%) which can be attributed to the easy availability of junk food, higher screen time and the sedentary lifestyle of urban adolescents. Overweight and obesity during adolescence becomes a risk factor of overweight and obesity as an adult.

Adolescent women who constitute about 17% of the total female population in India, are particularly vulnerable to anemia due to their unique physical and psychological changes that occur during this stage of life (Bellizzi et.al,2021, Chakrabarty,2023). The prevalence of anemia among adolescent girls' in India was 54% in NFHS-4 and increased to 59% in NFHS-5. These adolescent girls are vulnerable to iron deficiency anemia due to low intake and absorption of iron and increased iron requirement for growth and replacement of menstrual blood losses. Anemia in adolescence puts a young woman and her future child a risk of premature birth, low birthweight, and perinatal mortality. Anemia also results poor physical and cognitive development and negatively impact the economic development of a country. There is evidence in literature that low physical and cognitive development due to iron deficiency anemia cost developing countries up to 4.05% loss in Gross Domestic Product (GDP) per year (Horton & Ross,2003) and for India this loss is 1.2% of GDP(MoHFW).

ADOLESCENT PREGNANCY

Adolescent pregnancy is another challenge to adolescent health and thereby to future generation. In India, 7 percent of women age 15-19 have begun childbearing; 5 percent of women have had a live birth and 2 percent of women are pregnant with their first child (NFHS-5). The level of teenage childbearing declined slightly between 2015-16 (8%) and 2019-21 (7%).The

NFHS-5 indicate that states like West Bengal and Bihar have the highest rate of teenage pregnancies. In West Bengal, 16 % of women aged 15-19 were pregnant or had given birth. This trend reveals the persistent issue of child marriage and its impact on young girls.

SOCIAL NORMS AND HOUSEHOLD POVERTY

societal norms play important role in perpetuating child marriage and teenage pregnancy. Many families consider early marriage as a financial solution. Poverty and economic vulnerability drives low-income families to marry off daughters early, reducing perceived risk of violence. Gender inequality further exacerbates these issues. The patriarchal society limits girls' access to education and healthcare and thereby results unhealthy and low productive future generation.

SCHOOL DROP OUTS

India is not in the track to achieve the Sustainable Development Goal 4 and 5 which emphasis on "inclusive and quality education for all" and "empowering all women and girls'" respectively. In India, while the gross enrolment ratio in higher education has shown improvement over the years, student dropout rates remain a persistent challenge in the country's education system (Namitarani & Rekha,2025). The issue of more significant concern lies in the dropout rates among female students surpassing that of their male counterparts (UDISE+,2021-22). The National Commission for Protection of Child Rights (NCPCR,2019) shows that 39.4% of girls aged 15-18 years drop out of school or college in India. 64.8% of those girls drop out from school or colleges is not to work but to handle household chores. While primary dropout rates are relatively low at 1.9 %, they increase dramatically to 14.1 % at the secondary level indicating a critical transition point where many students leave the education system (UDISE+2023-24). The girls drop out limits not only their formal education but also scope for empowerment and knowledge and open the door of marriage and longer fertility period. All these negatively effect the nutrition and health status of adolescent girls.

NUTRITION KNOWLEDGE

The consumption of balanced diet for the rapid physical and cognitive development of the adolescent girls have long run impact on their reproductive health and also on their future generation. The knowledge of different nutrient rich food may help them to follow a balanced diet pattern and reduce their consumption of junk food. The indigenous knowledge of nutrient rich locally available food is another factor of positively contributing adolescent girls' health and nutrition status. The consumption of Iron and Folic Acid (IFA), knowledge of family planning measures and protections, health and hygiene practices like hand washing with soap and water, proper cleaning of food before preparation and consumption and menstrual hygiene and use of pads during mensuration, knowledge and practice of yoga and other fitness measures etc. are essential determinants of adolescent girls' health and nutrition as well as the future of a productive generation in the country.

VI. MEASURES & WAY FORWARD

The government of India as an initiative to adolescent health and nutrition has adopted and implemented schemes like 'Kishori Shakti Yojana', ICDS adolescent girls' scheme, distribution of Iron and Folic Acid (IFA), general nutrition education through school media etc. All these initiatives are not completely able to eliminate the problems of adolescent nutrition . There is need of more integrated approach from all the sectors to develop the health and nutritional status of the adolescent age group which represents window of opportunity to prepare for for healthy adulthood.

The most important initiatives for removing malnutrition among adolescent age group population are as follows-

(i) Healthy eating and lifestyle behaviour should be promoted and practiced, thereby preventing and postponing the onset of nutrition related chronic diseases and obesity in adulthood.

(ii) Change in dietary pattern, increase in consumption of vegetables and fruits, dietary products and animal foods, and modification in food processing methods help in improving diet and micronutrient status.

(iii) There is need of fortification of food (i.e. practice of adding vitamins and minerals to commonly consumed foods during processing to increase the nutritional values) with micronutrient deficiencies of economically deprived population.

(iv) Undernourished adolescents would require further nutrition interventions, besides proper health care, to improve their health and nutrition status.

(v) The education sector of the country can play a major role in developing nutrition and health status of the adolescents by organizing school health programme, imparting nutrition education, providing nutrition counselling services, addressing gender discrimination and linking nutrition with life skill education in school.

(vi) Mass awareness campaign through mass media should be developed in collaboration with the health sector to create awareness among masses.

VII. CONCLUSION

The available literature and database on adolescent nutrition is very limited at national as well as regional level. There is need of operational research to test the ways of scaling up the interventions. Moreover, recognizing intersectoral collaboration as one of the strategies to address the problems of adolescent nutrition, appropriate methodology and tools should be prepared to further sensitize community health workers, education sector, women's welfare and child development and other sectors to effectively incorporate and address the relevant issues of adolescent health and nutrition.

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THE ROLE OF FINANCIAL ANALYTICS IN ENHANCING PUBLIC SECTOR ACCOUNTABILITY IN THE U.S.

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In the U.S. public sector, accountability has traditionally consisted of statutory reporting, audits and control mechanisms yet these have been exposed to a growing burden of fiscal complexity as well as demand for accountability and transparency. The rise of financial analytics that refer to the utilization of big data, predictive modeling, and visualization has furnished additional means of enhancing accountability, prevention of fraud, and performance measurement. This paper attempts to analyze the role that financial analytics can play in improving accountability within the U.S., using case studies of best and failed practices at the federal, state, and municipal levels. The experience of the Treasury of the United States with the introduction of the DATA Act is an example of a successful analytics-based transparency program, and the failure of the Department of Defense to finance its modernization has shown the pitfalls in large-scale adoption. At the state level, California is doing the best practice with its reporting system based on eXtensible Business Reporting Language (XBRL), but the case of fragmented analytics efforts in Mississippi demonstrates the challenges of limited resources and gaps in governance. On the municipal level, the Checkbook NYC platform of New York City exemplifies innovation in citizen engagement, and smaller jurisdictions like Flint, Michigan, demonstrate failure because of lack of IT investment and quality of data constraints. Results suggest financial analytics improve fraud detection, transparency and evidence-based governance, and issues of interoperability, ethical protection and institutional capacity are challenged. Research gaps consist of non-uniform adoption in different jurisdictions, ethical principles in algorithmic accountability, and sustainability of analytics programs. Policy harmonization, cross-level cooperation, and putting resources to the broadening of workforce capacity as a way of institutionalizing financial analytics as a driver of sustainable accountability in U.S. governance address these gaps.

KEYWORDS: ***Financial Analytics, Public Sector Accountability, Transparency, Sustainability, Citizen Trust, Governance Efficiency, Fraud Prevention.***

1.0. INTRODUCTION

Accountability in the U.S. population sector is one of the fragments of a democratic form of governance, especially as fiscal crises, emerging public mistrust, and transparency expectations become increasingly severe (Samaratunge & Alam, 2021). Traditionally, financial responsibility has been protected by mechanisms like statutory reporting, legislative scrutiny, and periodic auditing. The sophistication of the modern-day fiscal systems and rising public expectations have however revealed the faults of these traditional means. This transition has enhanced the use of financial analytics, which can be defined as the systematic use of big data, predictive modeling, and visualization methods in financial management (Aldemir & Uysal, 2025).

The assimilation of analytics into government work has ever since been institutionalized by federal programs, especially the Digital Accountability and Transparency Act (DATA Act) and open data movements, which have enabled agencies to monitor, analyze, and disclose spending data on a more detailed scale than previously (Noveck, 2017). Financial analytics improves not only the accuracy of financial reporting but also provides a higher quality of fraud detection and handling risks, which lowers the waste and misuse of public funds (Elumilade et al., 2025).

But this change is not handled smoothly. The presentation of new analytical tools causes some concern about the data ethics, algorithmic transparency, and whether institutions are prepared to implement such technologies (Agostino et al., 2025). Moreover, varying levels of analytic abilities between federal, state, and municipal levels display structural gaps that can impede uniform accountability of results. Therefore, whereas financial analytics can make a profound change to the oversight

mechanisms, its successful implementation demands a balance between innovation and institution capacity, ethical protection, and social trust.

2.0. METHODOLOGY

The study employs the qualitative systematic review of literature to conduct the study, thereby allowing the identification of relevant scholarly articles, official reports, and case studies published over the past decade. The sources were in high end scholarly databases and narrowed down through relevance to three important dimensions: (1) financial analytics applications in government, (2) public sector accountability mechanisms, and (3) U.S.-specific case evidence. Findings were compared through analytical synthesis, extracting themes regarding governance efficiency, fraud prevention, transparency, and citizen trust.

3.0. LITERATURE REVIEW

As a radical solution to enhancing accountability in the U.S. public sector, financial analytics have shown to be a powerful instrument of real-time monitoring and identification of fraud and allowing open reporting (Agostino et al., 2025). Through the utilization of big data, predictive analytics, and visualization systems, agencies can expand their fiscal planning and citizen confidence (Aldemir and Uysal, 2025). Adoption has been hastened by legal frameworks like the DATA Act, and problem areas have persisted in areas like data governance, AI usage, and capacity building (Ferry et al., 2018).

3.1. Evolution and Conceptual Framework of Financial Analytics in Public Sector

Financial analytics in the U.S. public sector have experienced a crucial transformation over the last decade, changing operations to a flexible data-driven decision-making structure, as opposed to a purely compliance-based financial reporting (Adelusi et al., 2023). In the early years, the financial management of the public sector was heavily dependent on retrospective statements of accounting, which, although they satisfied statutory requirements, had low predictive analytical or proactive governance. Since the emergence of technologies of big data, cloud environment, and predictive analytics, agencies are now facing opportunities to combine different data sources, perform real time surveillance, and provide predictive information to guide the strategic distribution of resources (Emma, 2024).

This change is consistent with other wider public financial management changes with more emphasis on transparency, accountability, and performance-based budgeting. The contemporary systems of financial analytics also include machine learning software, interactive boards, and monitor systems to reshape inefficiencies, detect possible fraud, and optimize spending patterns (Bello et al., 2024). They enable not only operational efficiency but also foster trust among the people, as the fiscal information becomes more accessible and understandable to the stakeholders (Agostino et al., 2025).

In concept, the way financial analytics work in the public sector is a cross between governance, technology, and accountability. The conceptual model of Frameworks like the International Public Sector Accounting Standards Board (IPSASB) stresses the value of high-quality and timely financial information to facilitate decision-making and accountability to the public (Issah and Baah, 2025). Practically, this involves inculcating analytics in governance infrastructure to make fiscal decisions to be evidence-based, transparent, and consistent with policy priorities. With further modernization of U.S. agencies, predictive analytics and open data platform integration is likely to further institutionalize accountability mechanisms, mitigate corruption risks, and enhance public resource allocation amid scarcity.

3.2. Financial Analytics and Accountability Frameworks

The emerging field of financial analytics has become one of the foundations of contemporary financial accountability systems in the United States, providing far more than traditional financial reporting. Through incorporation of superior data analytics, artificial intelligence (AI) and machine learning into fiscal decision-making processes, government departments will be able to monitor every transaction in real-time, detect fraud, and evaluate the risks before they become systematic problems (Agostino et al., 2025). For instance, predictive models of risk assessment will enable agencies to anticipate variations of budgets, detect possible fraud, allocate resources at a higher level, and increase fiscal discipline and integrity of governance (Aldemir and Uysal, 2025).

Those analytical tools are in line with long-standing administrative standards of public accountability including transparency, accountability, and enforceability as stipulated by models like the International Public Sector Financial Accountability Index, which cites timely, precise, and accessible financial data as a precondition to democratic oversight (O'Regan et al., 2022). Interactive dashboards and open data portals enhance transparency, so stakeholders, such as citizens, legislators, and oversight bodies, can continually scrutinize financial performance in near-real time (Lawal et al., 2024).

Additionally, financial analytics can meanwhile enhance measures of performance through attachment of expenditure information to outcomes of programs, thereby facilitating evidence-based policy assessment. This combination of financial and performance data inculcates the culture of a results-based management system where accountability is not merely confined to compliance, but it represents value added to money. Nevertheless, researchers note that the advantages of analytics may be spoilt by data quality failure, algorithmic bias, or misinterpretation of conclusions without effective governance, ethical protection, and capacity building (Agostino et al., 2025). It therefore follows that financial analytics needs to be embedded within a strong accountability framework that makes sure that technological innovation can contribute to, rather than undermine, public trust.

3.3. Major Thematic Areas of Financial Analytics

The U.S. public sector literature on financial analytics centers on four key thematic areas that taken together frame the accountability discourse: data-driven financial accountability, transparency and citizen trust, risk management and fraud prevention and performance-based governance. Data-driven financial accountability insists on the application of

dashboards, predictive algorithms, and real-time surveillance as pillars to tighten fiscal responsibility (Lawal et al., 2024). Open data platforms can improve transparency and foster the trust of citizens by making financial data more accessible and understandable to the audience (Cucciniello et al., 2017). Machine learning and anomaly detection are used in risk management and fraud prevention to discover anomalies in government spending (Pamisetty et al., 2022). Lastly, performance-based governance incorporates analytics in budgeting and policy analysis and aligns the distribution of resources with quantified results (Nurfadila, 2024). The combination of these themes depicts how financial analytics can be used as both a technological and a governance innovation, strengthening accountability structures and enhancing the performance of the United State public sector.

3.3.1 Data-Driven Financial Accountability

Financial accountability with data information represents a paradigm shift in financial management in the public sector, where retrospective reporting is replaced with proactive management. Financial analytics tools that enable real-time monitoring of expenditures, revenues, and performance metrics are interactive dashboards, predictive algorithms, and integrated financial management systems (Lawal et al., 2024). The systems enable decision-makers to early identify budget variances, estimate program efficiency as well as redistribute resources dynamically.

In the U.S, the adoption of data-driven oversight mechanisms has been supported by the introduction of the Digital Accountability and Transparency Act (DATA Act) that enforces standard reporting formats and machine-readable data on federal spending (del Paso et al., 2023). Agencies can predict fiscal risks in advance using predictive analytics models and take corrective actions to prevent the escalation of problems.

In addition, the ability to integrate data between departments will improve the collaboration of agencies and eliminate information silos, ensuring increased quality of financial reporting (Agostino et al., 2025). An example is that anomaly detection algorithms can raise a red flag about unusual spending patterns and initiate targeted audits. This proactive strategy will not only enhance internal controls, but it will also elevate external accountability as it offers timely and actionable information to legislators and oversight bodies.

Nevertheless, there are difficulties in the quality of data, interoperability, and analytical capabilities of personnel in the public sphere (Pantuvo & Oluwarore, 2024). Without well-established governance structures, it is possible that the advantages of data-driven accountability will become threatened by inconsistency in data standards or the lack of analytic skills. However, the inertia of U.S. government financial management implies that data-driven analytics is going to remain the key to the transformation, as the compliance-driven reporting will become far less important and strategic, evidence-based fiscal governance will become more prominent.

3.3.2. Enhancing Transparency and Citizen Trust

One of the foundational principles of public accountability is transparency, which has been greatly widened and increased in scale through the application of financial analytics. Open data sites, including OpenGov and USAspending.gov, also give direct access to citizens with access to finer financial data, including budgetary allocations, contracts, and program spending (Cucciniello et al., 2017). These sites take intricate fiscal data and convert it into simple graphical formats to allow the public to interact with the financial performance of the government.

Empirical reports suggest that transparency programs have the potential to enhance societal trust by lessening information asymmetry with the government and the citizens (Abbasov, 2025). Perceptions of integrity and competency can be inflated when the citizens are able to check the way the public funds are sourced and spent. As Udoh (2024) noted, jurisdictions that report strong fiscal disclosure regimes tend to record increases in citizen engagement and citizen satisfaction which have a quantifiable impact.

Financial analytics increases transparency by allowing the real-time release of spending details, not just annual or quarterly reports. The interactive dashboards enable the stakeholders to know the project's progress, compare budgeted and actual expenses, as well as recognize the deviations. This urgency creates a culture of openness and responsiveness (Udoh, 2024).

Nevertheless, transparency is not a guarantee of trust. Cucciniello et al. (2017) point out that the quality, completeness, and contextualization of data is a strong necessity. Incomplete or improperly presented information can destroy its perceived credibility instead of creating it. Also, the accessibility of open data initiatives may be restricted by digital divides and differences in the levels of fiscal literacy (Abbasov, 2025).

In summary, the meaningfulness of financial analytics bolsters transparency functions by increasing the access, timeliness, and interpretability of fiscal data, which establishes the groundwork when data quality, usability, and inclusivity are implemented with prioritization.

3.3.3. Risk Management and Fraud Prevention

Fraud prevention and risk management have now become major concerns in financial governance of the U.S. public sector, especially after massive federal expenditure programs. It is financial analytics, particularly when applied together with machine learning, that provide powerful analytics to detect anomalies, find high-risk transactions, and guard against the misuse of public funds (Aldemir and Uysal, 2025).

According to the example presented by The U.S. Government Accountability Office (GAO), predictive analytics is useful in identifying suspicious activity within procurement, benefits disbursement, and grant allocations (Khetan et al., 2024). Indicatively, in the COVID-19 pandemic, billions of potentially fraudulent unemployment insurance claims were detected through analytics-driven overseers. Such tools will allow the agencies to relinquish the aspect of responding to the investigations and instead engage in proactive prevention.

Machine learning algorithms have the potential to process large volumes of data to identify faint anomalies that may not be noticed by traditional audits. Abrahams et al. (2024) suggest that with collaboration of financial, operational, and third-party data, agencies can create comprehensive risk profiles and prioritize oversight resources based on them.

Nevertheless, technology is not the only way to prevent fraud effectively. In other words, governance structures, like the GAO Fraud Risk Framework, promote institutional capacity, inter-agency coordination, and ongoing surveillance (Khetan et al., 2024). In the absence of these, analytics tools are prone to exploitation or misuse.

Privacy and ethical considerations also emerge, especially in the analysis of personally identifiable information. Agencies need to strike a balance between strong fraud detection and adherence to compliance with privacy laws and ethics (Khan and Mustafa, 2025).

Altogether, financial analytics support risk management by allowing earlier and specific identification, targeted intervention, and allocation of oversight resources usage in a more economic manner. When integrated into an overall governance system, these instruments can greatly diminish fiscal weaknesses and build the confidence of the populace in the government management of resources (Khan & Mustafa, 2025).

3.3.4. Performance-Based Governance

Performance-based governance incorporates financial analytics in the policymaking and budgetary process to tie the allocation of resources to quantifiable outcomes. Such a method is consistent with the performance-based budgeting (PBB) systems, aimed at enhancing efficiency, transparency, and accountability by attempting to fund decisions to program outcomes (Nurfadila, 2024).

An example is the reduction and improvement of budget variances, more cost-efficiency, and more frequent performance reporting by agencies in the U.S. implementing PBB (Abbasov, 2025). Financial analytics takes center stage because it provides a data framework to monitor performance metrics, assess the effectiveness of the program, and respond to reallocating resources.

Advanced analytics can simulate how policy changes might impact a scenario, empowering decision-makers to simulate both scenarios and evaluate trade-offs before investing in resources. This is an evidence-based intervention that favors more strategic and outcome-oriented governance (Lotfi et al., 2023).

According to Ingrams (2018), key factors in effective performance-based governance include effective data systems, clear performance metrics, and firm commitment of leaders. In their absence, the connection between spending and results may become distant, which weakens accountability.

Some of the challenges involve the need to select the right indicators, the quality of the data, and the need to avoid perverse incentives like those that favor easily measurable items rather than significant results. Moreover, performance-based practices may be impeded by cultural resistance in agencies (Nurfadila, 2024).

Notwithstanding these issues, the incorporation of financial analytics in the process of performance governance has tremendous possibilities to promote accountability. Analytics-driven PBB can be employed to make the connection between resources and results more explicit to ensure that public funds are effective, efficient, and in a manner that it meets the strategic policy objectives (Abbasov, 2025).

3.4. Sustainability and Long-term Benefits of Financial Analytics for Public Sector Accountability

Empirical research indicates that analytics-based management helps agencies to detect financial anomalies at an earlier stage, invest resources in a more efficient manner, and boost citizen confidence in governance. As an illustration, a case study conducted at the U.S. Department of the Treasury established that using predictive analytics in claims processing minimized reduced fraudulent claims by 25 percent in two years, enhance recovery rates, and discourage malpractices (Udeh et al., 2024). On the same note, the Government Accountability Office (GAO) stated that financial dashboards have allowed oversight agencies to identify budget overruns, track compliance problems, and enhance the promptness of corrective measures (O'Regan et al., 2022).

Beyond short-term gains, longitudinal studies give evidence on the sustainability and long-term impact of analytics-driven accountability programs. In a ten-year mix-method performance-based budgeting (PBB) study involving 75 government agencies, Abbasov (2025) concluded that PBB enabled analytics decreased budget variance by 15.7 and enhanced 11% cost efficiency during the study period. Notably, these gains were maintained after the implementation process, meaning that integrating analytics can formalize accountability practices under the guidance of effective leadership and effective IT infrastructure.

Agostino et al. (2025) also emphasize that it takes long-term gains in terms of integrating analytics into governance strategies to make sure that data-driven insights are being factored in the decision-making procedures. Their analysis of AI and data science in public sector accounting highlights that agencies that implemented advanced analytics enjoy increased transparency and audit-readiness over time, regarding agencies with ad hoc or fragmented implementations.

According to Abbasov (2025), the Public Institutions Data and Analytics Unit of the World Bank also stresses that analytics-based accountability is most sustainable when it is coupled with capacity-building efforts, uniform data governance policies, and cross-agency data integration. Our longitudinal observation of procurement transparency platforms, including the ProACT system, reported steady procurement anomalies decreases over five years, along with more public availability to contract data.

Nevertheless, it is not predetermined that there is sustainability. Research warns that unless investments in data quality, employee training, and system upgrades are done on a regular

basis, over time the performance of analytics tools can decrease (Rangineni et al., 2023). Furthermore, algorithmic bias and privacy concerns should be ethically considered to sustain the confidence which the population would hold in analytics-based control (Aldemir and Uysal, 2025).

Overall, the literature shows that financial analytics transforms the public sector into an entity that offers long-term and short-term gains in accountability. The immediate effects will be better at detecting fraud and monitoring compliance, and, over the long term, longitudinal outcomes confirm that changes to the process of integrating analytics into governance systems can institutionalize transparency, efficiency, and fiscal discipline. Long-term success rests in integrating technological adoption and governance changes, capacity development and ethical protection that not only strengthens oversight in the present, but also permanently strengthens accountability in the years to come.

3.5. Implementation Challenges of Financial Analytics in the U.S. Public Sector

Although financial analytics have a strong prospect of becoming more accountable, its application throughout the U.S. public sector continues to meet the same conventionally challenging levels of neglect that occur at the federal level, the state, and the municipality (Nurfadila, 2024; Alhosani & Alhashmi, 2024). The challenges include issues with data quality and interoperability, technological differences, limited analytical performance, privacy and security, and organizational resistance to change (Omar et al., 2024; Tariq, 2025).

3.5.1. Federal Level

At the federal level, agencies frequently address voluminous and intricate datasets that are gathered by various programs and jurisdictions. Data quality is one of the most significant obstacles, where inconsistency in data formats, incomplete records, and legacy systems has an impedimental effect on analytics platform integration (Mahanti, 2019). Even though certain reporting formats have become standardized via initiatives like the Digital Accountability and Transparency Act (DATA Act), interoperability across federal departments remains low (Bloch et al., 2015; Luna-Reyes, 2018).

The issues of privacy and security are especially sharp at that level due to the sensitivity of information about national security, taxes, and social benefits. Violations or abuses may destroy trust in the public and attract legal consequences (Huq, 2021). Moreover, gaps in analytical capacity will exist, as most agencies do not have adequate data science capacity to make use of advanced analytics tools (Agostino et al., 2025). There is also resistance to change where bureaucracies are slacked to embracing change, although there are policy requirements.

3.5.2. State Level

State governments have a different set of issues, frequently associated with technological disparities and resources constraints. Some states, including California and Florida, have become the first to embark on use of XBRL-based financial reporting to enhance transparency and readability by machines, whereas others fall behind owing to budgetary constraints and obsolete IT infrastructure (Alharasis, 2025).

The problem of data fragmentation is not new, with state agencies often functioning in silos and hindering the ability to consolidate financial data to carry out analytics-driven supervision (Khan et al., 2025). The low number of skilled data analysts and IT professionals makes the issue worse, especially in the rural states, where there is a lack of workforce (Ionescu, 2025). Also, political change may interfere with long-term analytics, where the focus changes every time the government and its priorities change as well.

3.5.3. Municipal Level

Capacity limits and funding constraints are the greatest obstacles at the municipal level. The budgets of many local governments are often limited in terms of IT purchases, which complicates the need to invest in high-quality analytics, as well as to maintain cybersecurity defenses (Abisoye et al., 2020; Hossain et al., 2024). The smaller municipalities usually use more archaic accounting systems that cannot be easily integrated with current analytical software, creating technological divides within even states.

Training deficits are also strongly felt in the sense that the finance staff might lack the technical expertise to effectively interpret the outputs of the analytics (Ionescu, 2025). Smaller jurisdictions may have greater opposition to change due to the deeprooted nature of traditional accounting practices. In addition, when local tax, property, and benefits data are sensitive and municipalities perform their work, it also comes with the problem of privacy, and strong governance structures are needed to make it comply with state and federal regulations (Hossain et al., 2024).

The key to successful execution of financial analytics in synthesis across all government levels lies in solving systemic data quality challenges, investing in interoperable technologies, developing analytical capability, and entrenching management strategies. The scale and nature of problems are probably varied in nature; however, the barriers of interest, such as technical, organizational, and cultural, are interconnected. It is necessary to overcome the said barriers by embracing a synergized policy framework, long-term financial support, and cross-jurisdiction collaboration so that analytics-based accountability can be effective and sustainable.

3.6. Policy and Governance Frameworks

The presence of financial analytics in the U.S. public administration is important through the proper implementation of effective policy and governance structures. These structures would offer the structural, legal, and procedural basis needed so that analytics could be utilized consistently, ethically, and effectively to promote accountability. According to the researchers, standardized data governance policies can create interoperability, quality of data, and adherence to privacy rules within different agencies (Cao & Iansiti, 2023). These standards enable the reconciliation of dissimilar data sets, allowing better and more timely financial control.

Capacity building is also one of its foundations, involving long-term investment in the skills of the workforce and analytical instruments, as well as institutional preparedness (Bachner, 2022). Even the most sophisticated analytics are in danger of being overused without sufficiently trained personnel and appropriate infrastructure. Inter-agency cooperation also enhances good governance through advocating best practices, elimination of repetitive work, and institutionalized responses to fiscal risk (Ray-Bennett et al., 2020).

At the federal level, the U.S. Office of Management and Budget (OMB) have progressed policies as part of efforts like the Federal Data Strategy to enhance data-driven decision-making (Luna-Reyes & Najafabadi, 2019; Potok, 2024). There is, however, an uneven implementation with some variation in rates and maturity when it comes to adoption by departments. These disparities need to be addressed not just in terms of policy mandates, but also in the mechanisms of compliance monitoring and impact measurement.

Good governance structures are structured based on standardization, capacity building, and cooperation; and to make financial analytics a transparency, efficiency, and public trust driver element in government accountability frameworks (Cao & Iansiti, 2023).

3.7. Case Studies

Federal Level

Best Practice – U.S. Treasury DATA Act Implementation

The adoption of the Digital Accountability and Transparency Act (DATA Act) by the U.S. Department of the Treasury is widely known as a federal best practice in financial analytics. Implemented in 2014 and further augmented with later policy requirements, the program made federal spending data standardized and established USAspending.gov, a site allowing real-time and machine-readable financial data (Noveck, 2017; del Paso et al., 2023). By using data visualization dashboards and predictive analytics, Treasury empowered the bodies needed to monitor the spending patterns, identify anomalies, and enhance compliance monitoring. Significantly, the project formalized transparency by requiring reporting formats among agencies and, as a result, the project solved long-standing challenges of uneven quality of data. Evidence shows that public trust in analytics-driven oversight was boosted by the DATA Act, decreased information asymmetry rates and facilitated the rapidity of monetary statements (Lawal et al., 2024). Regarding impact, predictive analytics enabled the faster detection of procurement inconsistencies, thus saving a considerable amount of money, and preventing fraud (Udeh et al., 2024). The DATA Act is a successful example of an analytics-based, scalable reform intermediary with difficulties on agency-level compliance lag and initial resistance to changing contributing to more accountable reporting processes on the federal level. It is exemplary to show how standard, open data systems may institutionalize performance monitoring and transparency in complicated federal financial ecosystems.

Failed Practice - Department of Defense Financial Modernization.

Conversely, the U.S. Department of Defense (DoD) depicts difficulties of unsuccessful analytics implementation at federal level. Historically, DoD has struggled to audit its financial statements, and it has failed to use enterprise-wide financial management systems (Mahanti, 2019). Although revolutionization projects have incurred billions of dollars, disjointed legacy systems, differences in data standards, and divides in reporting have hampered gains (Luna-Reyes, 2018). Efforts to deploy sophisticated analytics platforms have suffered due to a lack of cohesiveness of data and the inability of data science to cope with workforce demands (Agostino et al., 2025). To illustrate, the devices used to detect anomalies in procurement control generated too many false positives, which overwhelmed the audit teams and undermined the trust in the quality of the analytics results (Khetan et al., 2024). Security issues further presented a difficulty in integration, as defense-related expenditure is a sensitive issue. According to Huq (2021), the stakes in the mismanagement of defense data are especially high, which includes fiscal wastage and a threat to national security. Finally, the DoD example shows that high quality analytics cannot offset inherent structural issues like inefficient data governance and bureaucracy. It shows how technological reforms fail in the absence of underlying advancements in the quality of data, interoperability, and institutional preparedness. The experience of DoD highlights the significance of aligning governance and capacity building as the ground fields of analytics-driven accountability.

State Level

Best Practice - California's XBRL-based Financial Reporting

California has become a pioneer state regarding the embracement of the concept of financial analytics, especially regarding the utilization of eXtensible Business Reporting Language (XBRL) in financial disclosure. Developed in cooperation with the California State Controller Office, it standardized state and municipal reporting forms, and turned the information into machine-readable and available to advanced analytics (Alharasis, 2025). With the help of predictive algorithms and real-time dashboards, agencies in California enhanced monitoring budgetary allocations, measuring the efficiency of spending, as well as creating warning signals on grant distributions. The open data portal associated with this project also strengthened the idea of transparency by permitting citizens, journalists, and legislators to examine spending patterns by using simple visualizations of data. Researchers demonstrate an increase in compliance levels and a decrease in budget variances because of system adoption (Abbasov, 2025). Notably, the system enhances cross-agency cooperation since it eradicates silos, enhancing the coherence of policy and minimizing redundant spending (Khan et al., 2025). The initiative was also backed by workforce development programs, which trained financial officers to use and interpret analytics. California has developed a model of analytics-based accountability that can be repeated by other states by integrating standardized reporting with public access and through institutional capacity building. Its platform, which is built on the XBRL, emphasizes the advantage of combining technology adoption with governance reforms that strengthen fiscal discipline and induce citizen trust on the state level.

Failed Practice - Mississippi's Fragmented Analytics Efforts

Mississippi is a different study of unsuccessful analytics adoption that is fueled by resource constraints and fragmented governance. Although the leaders of the states proclaimed the plans of modernization of the financial reporting systems, the progress has been disproportionate and poorly financed (Ionescu, 2025). In contrast to California, there are no formalized reporting systems in use in Mississippi, with state agencies still operating in silos with disparate legacy accounting systems. The poor quality of the data has compromised the attempts to implement the predictive analytics tools due to low levels of interoperability (Khan et al., 2025). Also, the lack of adequate IT investment has limited the existence of real-time dashboards or anomaly detection systems. The problem is further complicated by staff shortages in the fields of data science and financial analytics, which are especially true when it comes to rural areas and recruiting people with the required skills becomes an ongoing issue (Ionescu, 2025). Political change also increases turnover and instability in the initiatives as changing priorities contributes to inconsistent budget allocation, and interrupted cycles of the implementation. According to Abisoye et al. (2020), the smaller states frequently note difficulties in working with both short-term fiscal requirements and long-term investments in technological infrastructure. The case of fragmented and under-resource-based situation in Mississippi emphasizes the ineffective nature of financial analytics without balanced governance systems, consistent leadership, and capacity-building opportunities. This failure highlights structural inequities in the state level adoption of analytics and the threats of expanding accountability gaps across U.S. states.

Municipal Level

Best Practice - New York City's Checkbook NYC Platform

At municipal level, Checkbook NYC is one of the first examples of financial analytics which improve transparency and accountability implemented in New York City. The initiative, introduced in 2011 and constantly expanded with more advanced data analytics functionality, offers near real-time information on city spending, contracts, and payroll (Cucciniello et al., 2017). An interactive dashboard is made available to the citizens so that non-experts can also examine how money is used and make comparisons between the planned allocations and actual expenditures. The empirical research reveals that Checkbook NYC has had a profound impact on citizen engagement and enabled trust through minimizing information asymmetry (Udoh, 2024). To the oversight bodies, the predictive analytics capabilities of the platform can identify anomalies in procurement and contract awards and take preemptive action in cases of financial mismanagement. It is also involved in the initiative itself as any kind of usability has extended accessibility to a wider civic population rather than just the experts (Abbasov, 2025). Moreover, it involves performance information, combining expenditure and provable program results to facilitate evidence-based governance. Despite the existing difficulties in promoting data literacy among all cohorts of citizens, the platform illustrates how municipalities may embed transparency and accountable actions using analytics-based civic engagement. The success of New York City reflects the possibilities of financial analytics transformation in mega cities where the capacity to adequately generate changes and political interests exists.

Failed Practice - Flint, Michigan's Financial Oversight Gaps

A municipal-level account of how failure to use financial analytics plays out, Flint, Michigan, enables us to establish that the district is governed by meager resources and the flaws on the governance system. After the fiscal crisis and water crisis of the city, external auditors identified notable deficiencies in the financial oversight structures (Hossain et al., 2024). Flint remained based on outdated accounting platforms despite federal and state interventions, which could not support interoperability and analytical capabilities to predict risk or identify anomalies. The lack of IT investment and budget did not allow the development of real-time dashboards or open data portals that would enable citizens to hold trust. Employee shortages also added to the issue, when finance officers were not trained in analytic interpretation (Ionescu, 2025). This resulted in mistakes in expenditure and acquisition that were not identified until later when they transformed into crises and undermined citizen trust and accountability (Abisoye et al., 2020). Whereas the campaigns to implement analytics tools failed over time because data quality was not always available, and there was a lack of political persistence in reforms. Additionally, issues of privacy and security involving sensitive municipal tax and benefits information were not addressed which further eroded confidence among the citizens. The case of Flint highlights the risk that the small municipality under fiscal strain would create additional governance collapses in case analytics programs were implemented, without either financial resources or adequate human capacity or systemwide provisions by higher order government.

3.8. Research Gap

Although there is increasingly clear evidence of the benefits of financial analytics, there are numerous gaps. First, federal, state, and municipal adoption is not uniform and is of different capacities, infrastructure, and political will (Nurfadila, 2024; Ionescu, 2025). Second, algorithm accountability, ethical, and legal paradigms are poorly developed, especially in the realm of bias, transparency, and privacy (Agostino et al., 2025). Third, not all studies investigate the sustainability of analytics initiatives; most of them describe early results but fail to provide evidence of institutionalization in the long term (Rangineni et al., 2023). Lastly, cross-jurisdictional cooperation on financial analytics is in limited form which prevents interoperability and ensuing accountability across all levels of the government.

4.0. DISCUSSION & FINDINGS

The case studies indicate that the key drivers of effective financial analytics adoption are three variables that depend on each other and include governance alignment, institutional capacity, and citizen engagement. The successes of federal and state initiatives (DATA Act, California) testify that standardized reporting, effective leadership, and capacity building are important to facilitate transparency and accountability. On the other hand, the (DoD, Mississippi, Flint) failure demonstrates the failure in the inclusion of analytics in the absence of interoperative systems, sufficient resources, or organizational preparedness.

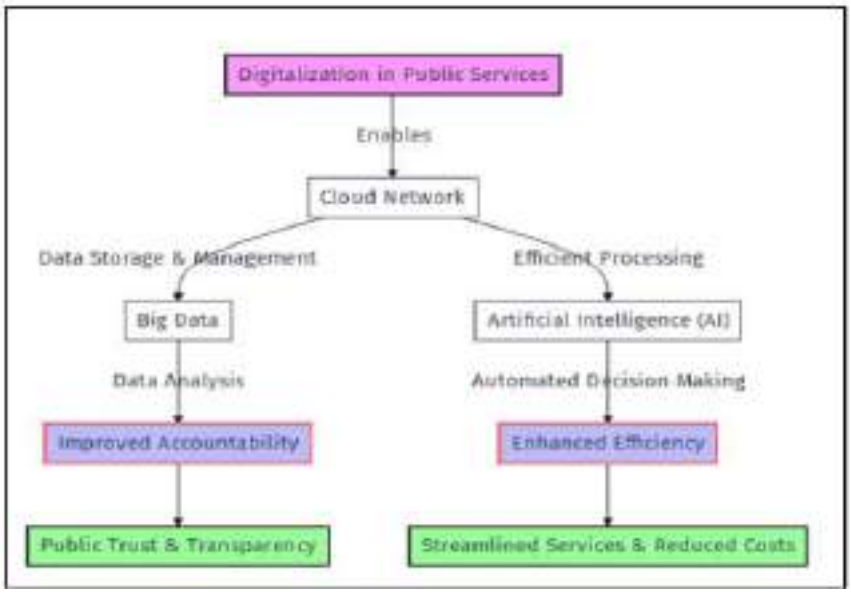


Figure 1. Source: The Role of Digitalization in Improving Accountability and Efficiency in Public Services (Omar et al., 2024)

At all levels, financial analytics supplements frauds identification, financial discipline and citizen trust by means of completed application where all data is being analyzed. Figure 1 depicts the reciprocal effect of financial analytics through better predictive modeling and how they support accountability and transparency in the public sector. These benefits aside, they rely on remedial measures addressing systemic data quality, ethical, and sustainability issues.

5.0. CONCLUSION

Financial analytics in the U.S. have shown considerable promise with respect to increasing public sector accountability, and case studies have revealed both best practices and failures on different levels of government. However, persistent research gaps in uneven adoption, underdeveloped ethical frameworks, lack of longitudinal studies, and weak inter-jurisdictional collaboration limit its transformative potential. Focusing on these gaps is critical to the future of analytics-driven accountability.

The future work of researchers must focus on creating strong ethical and legal protections of algorithmic transparency, evaluating the sustainability of analytics over time, and determining the collaboration models that could integrate federal, state, and municipal data. Policymakers should also invest in capacity building and standard frameworks of governance to diminish disparities in various jurisdictions. The filling of these gaps will allow the U.S. to institutionalize analytics-driven oversight as a lasting mechanism, so that such financial analytics would not only increase accountability today, but also consolidate the long-term fiscal discipline, transparency, and citizen trust in the long term.

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IMPACT OF NPAS ON PROFITABILITY OF THE SELECT PUBLIC AND PRIVATE SECTOR BANKS IN INDIA: AN EMPIRICAL ANALYSIS

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ABSTRACT **DOI No: 10.36713/epra24469** **Article DOI: https://doi.org/10.36713/epra24469**

The issue of Non-Performing Assets (NPAs) continues to be one of the most critical challenges faced by the Indian banking sector, with direct implications on profitability and financial stability. This study examines the impact of NPAs on the profitability position of select scheduled commercial banks in India, comprising five public sector and five private sector banks, over a ten-year period from 2015 to 2024. The research is based on secondary data which has been collected from the websites of RBI and annual reports of respective banks. Using descriptive statistics and regression analysis, the study evaluates the relationship between asset quality ratios (Gross NPA and Net NPA) and profitability indicators (ROA, ROE, ROI, NPM, and NIM). The descriptive results highlight that NPAs, particularly during 2016-2020, severely deteriorated profitability, as reflected in negative ROA, ROE, and NPM values. However, a significant improvement was observed before 2020, with declining NPA levels and stronger profitability ratios. Further, the regression models confirm that Gross NPAs has consistently negative and statistically significant effect on ROA, ROE, and ROI, whereas Net NPAs significantly influence ROI and NIM. The models demonstrate high explanatory power, with R^2 values ranging between 68 percent and 86 percent underscoring the critical role of asset quality in shaping profitability outcomes of the select public and private sector scheduled commerce banks during the study period.

KEYWORDS: ***NPAs, Asset Quality, Profitability, Public and Private Sector Banks.***

INTRODUCTION

The banking sector plays a pivotal role in the economic development of any country by mobilizing savings and channelizing them into productive investments. In India, both public and private sector banks have been instrumental in supporting industrial growth, infrastructure development, and financial inclusion. However, in recent decades, the increasing burden of Non-Performing Assets (NPAs) has emerged as one of the most critical challenges confronting the Indian banking system. NPAs represent loans and advances that have ceased to generate income for banks, thereby eroding profitability and weakening financial stability.

The issue of NPAs assumes particular significance when examining the performance of public and private sector banks, as the magnitude and management of stressed assets differ across these categories. Public sector banks (PSBs), owing to their large exposure to infrastructure, agriculture, and priority sector lending, have historically carried a higher proportion of NPAs. In contrast, private sector banks, while more conservative in their lending practices, are not immune to asset quality deterioration, especially during periods of economic slowdown. The divergence in NPA levels between these two segments highlights the importance of analyzing their relative impact on profitability position.

The profitability position of banks is directly linked to their ability to manage credit risk effectively. Rising NPAs not only reduce interest income but also necessitate higher provisioning requirements, which adversely affect the bottom line. Furthermore, prolonged stress in asset quality diminishes investor confidence, hampers capital adequacy, and restricts future lending capabilities. Hence, an assessment of how NPAs influence profitability provides deeper insights into the operational efficiency and financial soundness of the banking sector. Given the critical role of banks in sustaining economic growth, this study seeks to evaluate the impact of NPAs on the profitability of select Indian public and private sector banks.

REVIEW OF LITERATURE

Ravindra, B., and Ramesh, G. (2024) found that public sector banks, particularly State Bank of India (SBI) and Canara Bank, consistently reported higher Gross and Net NPA levels compared to private sector banks like Axis Bank and Kotak Mahindra Bank. SBI showed notable improvement in ROA and Net NPA, reflecting effective risk management, while Canara

Bank managed to reduce its Net NPA despite challenges. Among private banks, Axis Bank steadily improved its ROA with low Net NPA, and Kotak Mahindra Bank maintained strong profitability with a high ROA and well-controlled Net NPA. Correlation analysis revealed a significant negative relationship between ROA and Net NPA for SBI and Kotak Mahindra Bank, indicating that higher profitability was associated with lower NPAs. Similarly, negative correlations between Net Profit and Net NPA for SBI, Canara Bank, and Axis Bank suggested that rising profitability corresponded with reduced asset quality stress.

Sheth, B. S., and Vaishnani, H. B. (2024) observed that public sector banks recorded significant improvement in ROE, eventually surpassing private banks by 2024, reflecting effective recovery measures and government support. Private banks consistently outperformed in ROA, showing better asset utilization, though the narrowing gap indicated improving efficiency in public banks. In terms of NPM, private banks maintained an advantage, while public banks displayed steady growth, signaling enhanced profitability and cost control. The study further revealed that NPAs had a stronger adverse effect on public banks, reducing their profitability and necessitating greater regulatory oversight, whereas private banks showed higher resilience owing to stronger risk management and operational efficiency.

Das, S. K. (2023) it was found that public sector banks (PSBs) were more severely impacted by NPAs, while private banks as a group faced a smaller burden, despite a rise in loan defaults. The study highlighted that income diversification, earnings management, and loan quality significantly influenced NPAs in the post-crisis period. Non-Interest Income (NII), representing diversification, showed a positive association with NPAs, whereas ROA had a negative relationship, indicating that reduced interest income pushed banks toward riskier lending to sustain earnings.

Renuka, A., and Divya, P. (2023) study revealed that, apart from SBI and PNB, most banks exhibited a negative relationship between Gross NPAs and Net Profit. SBI and PNB, however, consistently recorded profit growth despite high GNPA levels, reflecting their focus on effective NPA management and loan recovery. While these two banks showed a positive association between NPAs and profitability, others demonstrated the opposite trend. For example, Bank of Baroda's NPAs rose by nearly 24.9% compared to 2018. Using a random-effects panel regression, the model yielded an R-squared 57% explanatory power. The results confirmed that higher NPAs generally led to lower net profits.

Sharma, P., et al. (2023) study confirmed that its empirical outcomes were consistent with earlier research, establishing a significant relationship between the Gross NPA (GNPA) ratio and key profitability indicators such as Net Profit Ratio, ROA, and ROE. It also highlighted the association between GNPA and banks' liquidity ratios, including cash flow margin, current ratio, acid test ratio, cash ratio, and operating cash flow ratio. Furthermore, the findings indicated that GNPA had a notable impact on the capital adequacy ratio.

Jaiswal, L. B. (2023) study showed that rising NPAs caused a significant decline in bank profitability, though institutions managed to partly mitigate their adverse effects. Increasing gross NPAs indicated that a larger share of bank assets had stopped generating income, reducing profitability and limiting credit growth. The higher provisioning requirements for potential losses further strained earnings, while structural challenges added to the decline. Profitability, measured through Return on Assets (ROA), reflected this downward trend, with banks experiencing reduced returns in recent years. This erosion in profitability made them more vulnerable to economic shocks and heightened risks to depositor confidence.

Tank, D. S. (2023) found that private sector banks performed better than public sector banks in managing NPAs. The correlation analysis revealed a negative relationship between net NPAs and net profits for most banks, except HDFC, ICICI, and IndusInd. NPAs adversely affected the profitability of SBI, BOI, BOB, HDFC, KMB, and IndusInd, as funds locked in NPAs could not be used productively, while provisions further reduced profits. The study emphasized that controlling NPAs is crucial for enhancing efficiency and profitability in both public and private sector banks.

Srivastava, P., et al. (2022) observed that Gross NPAs were significantly higher in public sector banks, with BOI recording 14.838%, while private sector banks like HDFC Bank reported a much lower mean of 1.258%. SBI showed the highest mean NPA value at ₹64,741.568 crore, whereas HDFC had the lowest at ₹3,151.342 crore. The study concluded that NPAs were concentrated more in public sector banks, particularly SBI, and had a negative impact on profitability, as reflected in the negative correlation between Net NPA and Net Profit.

Kumar, R., and Kaur, M. (2021) concluded that NPAs negatively affected the profitability of both public and private sector banks, with rising NPAs leading to reduced profitability. While NPAs had an insignificant impact on the interest income to total assets ratio, they adversely influenced the net interest margin of both categories of banks.

Benny, A. K., et al. (2019) observed a sharp rise in both gross and net NPAs in public and private sector banks over the preceding two years, with the increase beginning around 2011–12. While the net profit ratio grew slowly until 2014–15, it rose substantially in 2015–16 before declining again in 2016–17, indicating that excessive NPA growth adversely impacts profits. The study also found that public sector banks showed a strong association between GNPA, NNPA, and net profit, whereas private sector banks displayed no significant impact on their net profit ratio.

Dawn, S. (2017) highlighted NPAs as a critical challenge for the Indian banking sector, particularly UCO Bank, where rising Gross and Net NPAs blocked substantial funds. The study found a strong negative correlation between Net NPAs and Net Profit, which significantly reduced profitability. ROA declined throughout the period and turned negative in the last three years, while Net Interest Margin also dropped considerably, underscoring the adverse impact of NPAs on the bank's performance.

Kumari, R., et al. (2017) emphasized that both public and private sector banks should focus on variables influencing performance. The study revealed that GNPA and NNPA had a significant positive impact on the financial performance (ROA) of public sector banks, while their effect on private sector banks was insignificant. Additionally, the age of banks showed no significant relationship with profitability in either sector.

3. NEED FOR THE STUDY

The study is essential because Non-Performing Assets (NPAs) continue to be a major obstacle to the profitability and financial stability of Indian banks. High levels of NPAs reduce interest income, increase provisioning requirements, and weaken overall performance indicators such as ROA, ROE, and Net Profit. Public sector banks, with higher exposure to priority sectors, often face greater asset quality stress compared to private sector banks, which, though better managed, are not immune to default risks. An analysis is therefore necessary to understand how NPAs differently affect the profitability of banks. Such an assessment will not only highlight the operational strengths and weaknesses of public and private banks but also provide valuable insights for policymakers, regulators, and banking institutions to design effective strategies for asset quality improvement, credit risk management, and sustainable growth of the Indian banking system.

4. OBJECTIVE OF THE STUDY

1. To examine the effect of Non-Performing Assets on the Profitability Position of Select Public and Private Sector Scheduled Commercial Banks in India.

5. HYPOTHESIS OF THE STUDY

H_0: There is no significant impact of NPAs on the profitability position of select public and private sector scheduled commercial banks.

H_1: There is a significant impact of NPAs on the profitability position of select public and private sector scheduled commercial banks.

6. RESEARCH METHODOLOGY

a). Sampling Design

i. Sample Size: The study covers ten scheduled commercial banks in India, with an equal representation of five public sector banks and five private sector banks.

Public and Private Sector Scheduled Commercial Banks		
SI. N.	**Name of Banks**	**Market Capitalization (Cr.)**
Part-A: Public Sector Banks		
1	State Bank of India (SBI)	671577.66
2	Bank of Baroda (BOB)	119355.04
3	Punjab National Bank (PNB)	110090.90
4	Union Bank India (UBI)	89389.52
5	Canara Bank (CB)	79985.00
Part-B: Private Sector Banks		
1	HDFC Bank Limited (HDFCBL)	1346791.01
2	ICICI Bank Limited (ICICIBL)	915477.50
3	Kotak Mahindra Bank Limited	408967.53
4	Axis Bank Limited (ABL)	328692.81
5	IDBI Bank Limited (IDBIBL)	81019.35

Sources: *RBI and moneycontrol.com*

ii). **Sampling Method:** A purposive sampling technique has been adopted, focusing on banks with significant market presence and consistent availability of data throughout the study period.

b). Data Collection: This research is entirely based on secondary data collected from reliable sources including the official publications and reports of the Reserve Bank of India (www.rbi.org.in) as well as annual reports of select banks.

c). Tools and Techniques: Descriptive tools such as Mean, Standard Deviation, Coefficient of Variation, Skewness, Kurtosis, and Compound Annual Growth Rate (CAGR) are used for summarizing data and Regression Analysis is applied to test hypotheses and derive meaningful interpretations.

Variables Consideration: The study considers asset quality ratios - Gross Non-Performing Assets (GNPAs) and Net Non-Performing Assets (NNPAs) as independent variables, while profitability indicators such as Return on Assets (ROA), Return on Equity (ROE), Return on Investment (ROI), Net Profit Margin (NPM), and Net Interest Margin (NIM) serve as dependent variables for the analysis.

d). Study Period: The research spans a period of ten years from 2015 to 2024.

e). Scope of the Study: The scope is limited to scheduled commercial banks in India, specifically including five public sector and five private sector banks to provide a balanced comparative analysis.

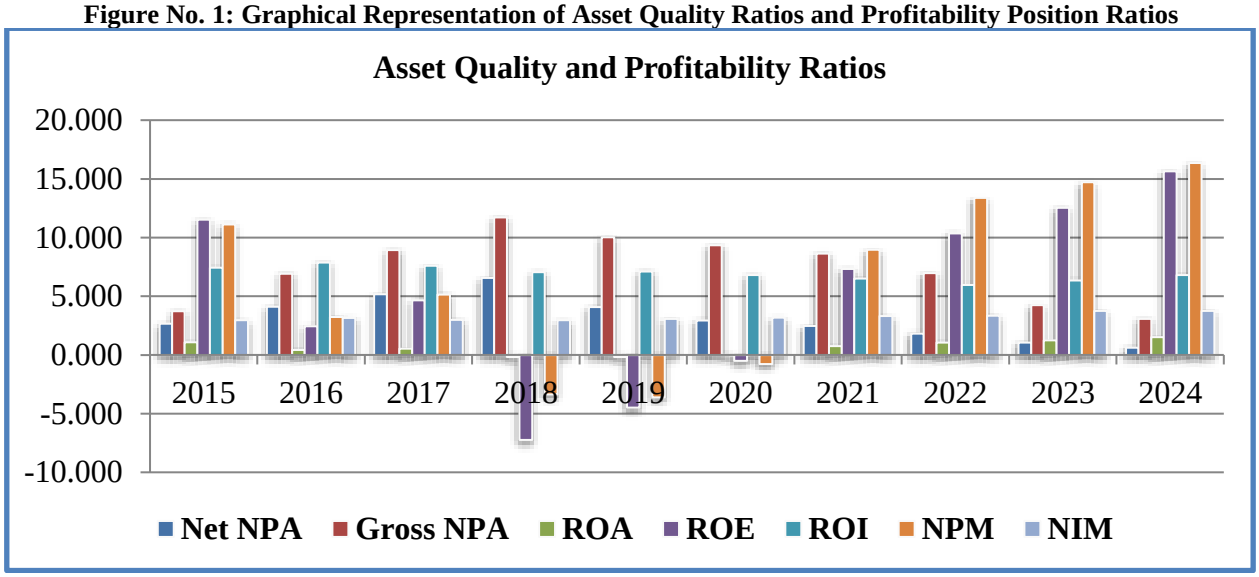
7. RESULTS DISCUSSIONS

Table No. 1: Assets Quality and Profitability Position

Year	Assets Quality		Profitability Position				
	Net NPA	Gross NPA	ROA	ROE	ROI	NPM	NIM
2015	2.672	3.713	1.072	11.529	7.429	11.125	2.967
2016	4.099	6.928	0.410	2.442	7.874	3.220	3.156
2017	5.164	8.920	0.537	4.661	7.586	5.144	3.000
2018	6.550	11.726	-0.184	-7.229	7.062	-3.370	2.953
2019	4.086	10.010	-0.177	-4.479	7.108	-3.613	3.067
2020	2.927	9.354	0.026	-0.511	6.794	-0.768	3.189
2021	2.464	8.644	0.760	7.324	6.507	8.949	3.305
2022	1.824	6.979	1.053	10.351	5.966	13.381	3.334
2023	1.046	4.232	1.237	12.545	6.350	14.717	3.758
2024	0.608	3.077	1.523	15.654	6.792	16.340	3.763
Average	**3.144**	**7.358**	**0.626**	**5.229**	**6.947**	**6.513**	**3.249**
SD	**1.850**	**2.904**	**0.605**	**7.623**	**0.587**	**7.485**	**0.300**
CV	**0.588**	**0.395**	**0.967**	**1.458**	**0.084**	**1.149**	**0.092**
Skew	**0.465**	**-0.237**	**-0.097**	**-0.358**	**-0.050**	**-0.162**	**1.018**
Kurt	**-0.294**	**-1.130**	**-1.342**	**-1.038**	**-0.562**	**-1.589**	**-0.121**
CAGR	**-0.138**	**-0.019**	**0.036**	**0.031**	**-0.009**	**0.039**	**0.024**

Sources: Annual Reports and RBI

Figure No. 1: Graphical Representation of Asset Quality Ratios and Profitability Position Ratios



The above table highlights the interrelationship between asset quality and the profitability position of the select banks over the period 2015-2024. Asset quality indicators demonstrate a significant decline in NPAs over time. The Net NPA ratio fell sharply from 2.67% in 2015 to 0.61% in 2024, while the Gross NPA ratio declined from 3.71% to 3.08% over the same period. This downward trend indicates consistent improvement in loan recovery and credit monitoring, further supported by the negative CAGR values of -13.8% (Net NPA) and -1.9% (Gross NPA). The higher Coefficient of Variation (CV = 0.588 for Net NPA) reflects greater volatility in Net NPAs compared to Gross NPAs.

Profitability indicators show strong fluctuations during the study period. Return on Assets (ROA) and Return on Equity (ROE) were adversely affected between 2018–2020, with negative values reflecting the stress caused by mounting NPAs and provisioning requirements. However, both ratios improved substantially thereafter, with ROA rising to 1.52% and ROE to 15.65% in 2024, demonstrating recovery and enhanced efficiency. ROI remained relatively stable (average 6.95%), with low variability (CV = 0.084), indicating consistent investment returns despite fluctuations in profitability. Net Profit Margin (NPM) showed extreme volatility, turning negative during 2018–2020 due to heavy provisioning and losses, but recovered strongly thereafter, reaching 16.34% in 2024. The high CV of 1.149 and negative kurtosis (–1.589) underline its instability. Net Interest Margin (NIM), on the other hand, remained stable throughout, averaging 3.25% with very low variation (CV = 0.092), suggesting sustained efficiency in interest income generation.

Table No. 2: Multicollinearity Tests

Collinearity Statistics		
Independent Variables	**Tolerance**	**VIF**
Net NPA	0.3674	2.7216
Gross NPA	0.3674	2.7216

The Variance Inflation Factor (VIF) and Tolerance values are used to examine the presence of multicollinearity among the independent variables Net NPA and Gross NPA. The results show that both variables have identical Tolerance values of 0.3674 and VIF values of 2.7216. Since the VIF values are well below the accepted threshold level of 10 (even within the stricter limit of 5), it indicates that multicollinearity is not a serious concern in the model. Hence, both Net NPA and Gross NPA can be retained as independent variables in the regression analysis without affecting the reliability of the results.

Table No. 3: Linear Multiple Regression Analysis

Linear Regression Analysis										
	ROA		**ROE**		**ROI**		**NPM**		**NIM**	
	Co-eff.	**P-value**	**Co-eff.**	**P-value**	**Co-eff.**	**P-value**	**Co-eff.**	**P-value**	**Co-eff.**	**P-value**
Intercept	1.960	0.000	21.983	0.000	7.022	0.000	22.055	0.000	3.647	0.000
Gross NPA	-0.145	0.027	-1.696	0.026	-0.194	0.029	-1.477	0.080	0.008	0.838
Net NPA	-0.085	0.332	-1.361	0.192	0.429	0.006	-1.487	0.231	-0.144	0.037
F Stat.	**18.424**		**22.517**		**7.622**		**13.855**		**7.906**	
P Value	**0.002**		**0.001**		**0.017**		**0.004**		**0.016**	
R Square	**0.840**		**0.865**		**0.685**		**0.798**		**0.693**	
Adj-R^2	**0.795**		**0.827**		**0.595**		**0.741**		**0.605**	
S E	**0.274**		**3.170**		**0.373**		**3.811**		**0.188**	
Normality	**0.522**		**0.766**		**0.990**		**0.369**		**0.053**	
Heteroskedasticity	**0.016**		**0.001**		**0.726**		**0.444**		**0.020**	
Autocorrelation	**1.788**		**2.035**		**1.909**		**1.670**		**1.319**	

Sources: Processed by SPSS

The regression results indicate that **Return on Assets (ROA):** Gross NPA shows a negative and statistically significant relationship with ROA (Coefficient -0.145, p 0.027), implying that higher NPAs reduce asset returns. Net NPA, however, is statistically insignificant (p 0.332). The overall model is robust (R^2 0.840, Adj. R^2 0.795), suggesting that around 84% of the variation in ROA is explained by asset quality variables.

8. FINDINGS AND SUGGESTIONS

a). Findings

Return on Equity (ROE): Both Gross NPA (-1.696, p 0.026) and Net NPA (-1.361, p 0.192) negatively influence ROE, though only Gross NPA is significant. The model has high explanatory power (R^2 0.865), indicating that asset quality strongly influences shareholders' returns.

Return on Investment (ROI): Net NPA exhibits a positive and statistically significant relationship with ROI (0.429, p 0.006), while Gross NPA has a negative but significant effect (-0.194, p 0.029). This suggests that while overall NPAs adversely affect investment returns, in some cases Net NPA restructuring may still yield favorable outcomes. The model explains 68.5% of ROI variation (R^2 0.685).

Net Profit Margin (NPM): Gross NPA has a negative but weakly significant effect (-1.477, p 0.080), whereas Net NPA shows an insignificant effect (-1.487, p 0.231). With an R^2 of 0.798, the model indicates a strong explanatory power, showing that NPAs significantly erode profit margins.

Net Interest Margin (NIM): Net NPA has a negative and significant relationship with NIM (–0.144, p 0.037), while Gross NPA shows no significance (p 0.838). The model explains 69.3% of variations in NIM (R^2 0.693), highlighting that credit quality directly impacts the efficiency of interest income.

Model Diagnostics: The F-statistics across all models are significant ($p < 0.05$), confirming overall model validity. The R^2 values range between 0.685 and 0.865, indicating strong explanatory power. Normality tests mostly fall within acceptable limits. However, heteroskedasticity issues are observed in ROA, ROE, and NIM models ($p < 0.05$), which may require remedial measures. Durbin-Watson statistics are within acceptable range (1.5–2.5), indicating no major autocorrelation problems.

b). Suggestions

The results clearly indicate that both Gross NPA and Net NPA significantly erode profitability indicators such as ROA, ROE, ROI and NIM, while improvements in asset quality directly enhance financial performance. Hence, banks should prioritize aggressive NPA reduction strategies, including stricter credit appraisal, timely monitoring of loan accounts, and rapid resolution of stressed assets. Since Gross NPA was found to have a stronger negative influence on profitability, particular attention must be given to early detection and resolution of large, high-value defaults. Net NPA's significant impact on ROI and NIM also suggests the need for better recovery and

restructuring mechanisms to minimize residual stress after provisioning. Overall, strengthening risk management systems, ensuring stricter governance, and leveraging technology-driven solutions will help reduce NPAs, protect margins, and secure long-term profitability.

9. CONCLUSION

The study concludes that regression analysis establishes a strong linkage between asset quality and profitability of the select Indian public and private sector banks. The results reveal that Gross NPAs exert a consistently negative and statistically significant impact on key profitability indicators such as ROA, ROE, and ROI, while Net NPAs significantly influence ROI and NIM. The high R^2 values across models highlight the strong explanatory power of asset quality ratios in determining profitability outcomes. Overall, the findings confirm that rising NPAs erode banks' profitability by reducing returns, compressing margins, and increasing financial stress, whereas improvements in asset quality directly enhance operational efficiency and shareholder value.

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*******Table 3: The purpose of taking Linear Regression Analysis to study the multiple predictor, hence profitability doesn't depend on just one factor. Asset quality has many dimensions (NPAs, Writ- offs, provisions etc.). It allows us to use several ratios at once. It helps to measure how strongly asset quality influences profitability.***

****** Table 3: Yes sir, it is the combined NPAs data of both Public and Private Sector Banks.***

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GST 2.0 REFORMS FOR A NEW GENERATION: LIGHTER ON THE POCKET, BRIGHTER FOR THE FUTURE

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ABSTRACT **DOI No: 10.36713/epra24548** **Article DOI: https://doi.org/10.36713/epra24548**

India's Goods and Services Tax (GST) 2.0 reforms, introduced in 2025, represent a watershed in indirect taxation, aiming to simplify the regime, enhance affordability, and promote inclusive economic growth. By rationalizing tax rates across multiple sectors—ranging from agriculture and MSMEs to education, healthcare, and technology—the reforms shift India's fiscal architecture toward a pro-consumer, pro-youth model. This article evaluates GST 2.0 from an applied economic perspective, analysing its structural, sectoral, and welfare impacts. It situates the reform within the broader macroeconomic goals of fiscal consolidation, growth stimulation, and the "Swarna Andhra 2047" vision, emphasizing how a simplified tax structure can catalyse household welfare, entrepreneurial dynamism, and sustainable development.

KEYWORDS: ***GST 2.0, Rural Economy, MSMEs, Manufacturing, Human Capital Development, Sectoral Impact***

1. INTRODUCTION

India's GST 2.0 reform, implemented in September 2025, marks a generational shift in indirect taxation. It aims to make the tax regime simpler, lighter, and fairer—aligned with the aspirations of a youthful and digitally empowered India. The reform replaces the complex four-tier system with a streamlined two- or three-rate structure (5%, 18%, and 40%), simplifying compliance while reducing the tax burden across more than 90% of goods and services.

2. STRUCTURAL TRANSFORMATION UNDER GST 2.0

The GST 2.0 initiative replaces twelve earlier slabs with a simplified three-tier structure—5%, 18%, and 40%. Nearly 83 essential items of daily use, including food, healthcare, and education materials, have seen tax reductions or exemptions. This consolidation enhances transparency, reduces classification disputes, and improves business ease.

Figure 1 Old and New GST Slabs



Source: https://static.pib.gov.in

3. SECTORAL ANALYSIS

Agriculture and Rural Economy

Agriculture stands at the forefront of GST 2.0's redistributive logic. Farm inputs such as tractors, irrigation systems, and fertilizers now attract just 5% GST, significantly reducing costs. Dairy, aquaculture, and organic farming also benefit from lower input taxation. This has a dual effect: lowering consumer food prices and enhancing farmer profitability.

MSMEs, Startups, and Industrial Competitiveness

MSMEs—employing over 110 million people—benefit through expedited refunds, reduced logistics costs, and automatic registration. Simplified compliance and rationalised rates for sectors such as leather, textiles, handicrafts, and wood manufacturing encourage entrepreneurship and "Vocal for Local" innovation among youth.

Manufacturing, Construction, and Housing

Cement, bricks, and eco-friendly construction materials have seen rate cuts from 28% to 18% or 5%, reducing housing and infrastructure costs by up to 20%. This reform supports flagship schemes such as Pradhan Mantri Awas Yojana and encourages sustainable materials.

Healthcare and Welfare

Healthcare reforms under GST 2.0 adopt a progressive taxation model—life-saving drugs and health insurance are now exempt or taxed at 5%. By making essential medicines affordable and discouraging harmful consumption, the system integrates preventive health economics.

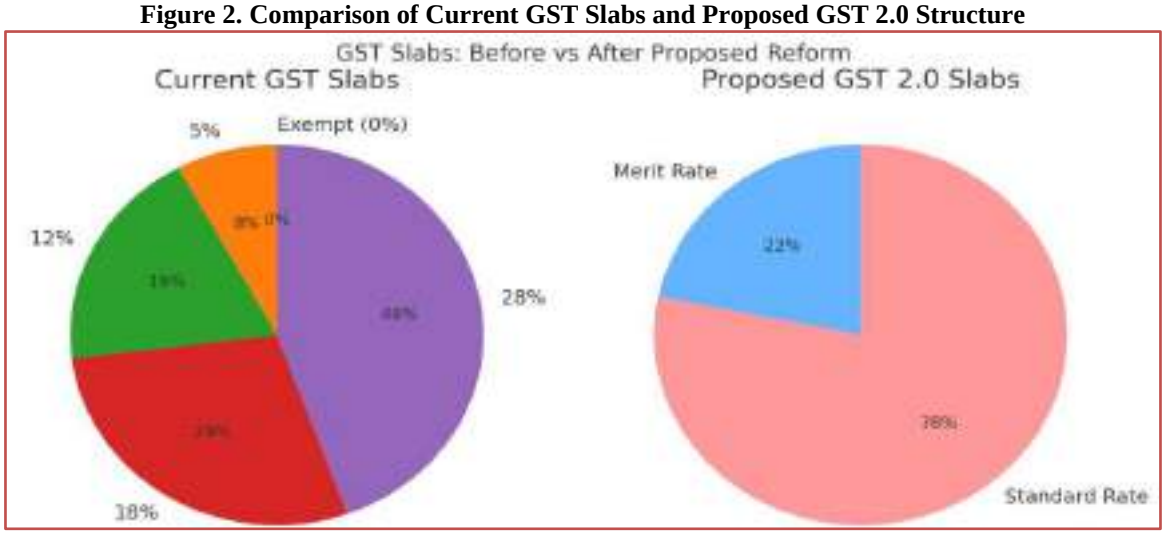
Education and Human Capital Development

GST exemptions on formal education and Nil GST on learning materials signify a strategic investment in India's demographic dividend. The 5% rate on bicycles and toys reduces costs for rural students and supports MSME-based toy manufacturers.

Mobility, Energy, and Transport

Two-wheelers, small cars, and buses now fall under the 18% slab (reduced from 28%), enhancing affordability and promoting rural and youth mobility.

Figure 2. Comparison of Current GST Slabs and Proposed GST 2.0 Structure

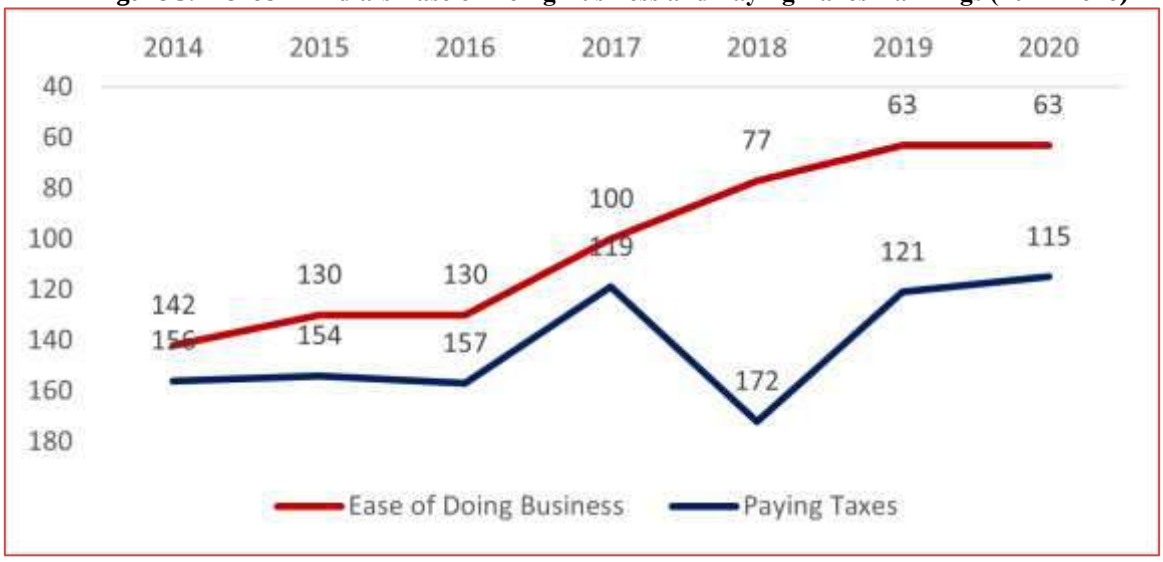


From Four Slabs to Two: The Big Rate Overhaul

For consumers: Lower tax rates on essential and aspirational goods may make them more affordable.

For businesses: A leaner structure means fewer classification disputes and simpler billing.

Figure 3.Trends in India's Ease of Doing Business and Paying Taxes Rankings (2014–2020)



Ease of Doing Business: India's ranking in the World Bank's Ease of Doing Business Index improved significantly from 130 in 2017, before the introduction of GST, to 63 in 2020, reflecting a jump of 67 places within three years.

Figure 4. GST 2.0 – Diwali Tax Gift for the Common Man



GST 2.0: A New Era of Simplified Tax and Growth for Retailers

4. WELFARE ECONOMICS AND HOUSEHOLD AFFORDABILITY

GST 2.0 operationalises a pro-consumer fiscal model. Essential food items like milk, paneer, ghee, paratha, and UHT milk are now either tax-free or taxed at 5%, leading to an estimated ₹1,200–₹2,500 monthly savings per household. By redistributing consumption savings, the reform broadens the disposable income base, encouraging higher aggregate demand.

5. GST 2.0 IN THE FEDERAL AND REGIONAL CONTEXT: THE CASE OF ANDHRA PRADESH

Andhra Pradesh serves as a model for GST 2.0's implementation. With an expected GSDP growth rate of 12–15% and 20 lakh youth job opportunities by 2047, the state aligns its economic trajectory with the Swarna Andhra Vision of a 'Healthy, Wealthy, and Happy Society.

6. MACROECONOMIC IMPLICATIONS

From a macroeconomic lens, GST 2.0 enhances fiscal buoyancy while promoting consumption-led growth. Increased compliance, a widened taxpayer base, and higher gross collections suggest a positive correlation between simplification and revenue performance.

7. POLICY SYNTHESIS AND FUTURE OUTLOOK

GST 2.0 illustrates how tax reforms can function as instruments of social equity. Its design reduces regressivity in indirect taxation, redistributes welfare through affordability, and spurs productivity via investment-friendly measures.

8. CONCLUSION

GST 2.0 is not merely a tax adjustment—it is a socio-economic transformation strategy for a youthful, aspirational India. By making essentials affordable, simplifying compliance, and fostering entrepreneurship, it recalibrates the fiscal system toward inclusive growth.

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EXAMINING HOW GOVERNANCE FRAMEWORKS ENHANCE TRANSPARENCY, ACCOUNTABILITY, AND INVESTOR CONFIDENCE

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This research paper examines the issue of the significant role that governance frameworks play in promoting transparency, accountability and investor confidence in the scenario of the U.S. financial and corporate environment. This paper discusses the issue of unchecked corporate scandals, recurring economic crises and stakeholder's activism currently facing a corporate organization that reveal a chink in the armor of the prevailing schemes of governance compromising the integrity of the market and stakeholder confidence. It serves the purpose of critically examining the development, concepts, and governance structures of corporate governance, specifically putting an accent on such frameworks as the Sarbanes-Oxley Act, Dodd-Frank Act, and ESG integration. A qualitative literature review, regulatory analysis and case studies of Netflix, Microsoft, Wirecard and Wells Fargo were used. This paper aims at finding major strengths and weaknesses in the existing practices of governance. This is demonstrated by the findings indicating that sound governance platforms, which are independent, transparent and regulatory compliant have a high degree of impact on confidence by investors as well as market stability. On the other side of the spectrum are governance failures, which have been well marked by scandals such as the scandal of Wirecard and Volkswagen (VW) emissions through lack of proper oversight. The research concludes that there is the need to consistently adopt the forms of governance, including the risks that arise due to the prevailing technological advancements and the environment-social-governance factors to ensure market integrity and the trust of the stakeholders. Good governance supported with regulatory reforms and good leadership is key in maintaining sustainable corporate performance and healthy financial markets in the face of emerging challenges.

KEYWORDS: ***Governance, Corporate Governance, Governance frameworks, Transparency, Accountability, Investor confidence, Stakeholders, Shareholders, Board of Directors, Financial Markets.***

1. INTRODUCTION

Corporate success rests on strong leadership and the board of directors is a key person in the strategy of any organization (Schuetz, 2016). Korngold, (2023) notes that, featuring corporate purpose into decision-making improved the long-term performance and trust by stakeholders. Furthermore, Wiersema & Koo, (2022) highlight that the boards are expected to exude accountability, manage financial soundness, and develop transparency to propel sustainable growth. Focusing on ethical leadership and strategic alignment, boards deliver value to investors and employees and other social circles, which further strengthens the resilience of companies in the ever-changing markets (Roache, 2024).

Basically, corporate governance extends to sustainable business operations, ethical conduct, corporate strategy, remuneration, and risk management. According to the research conducted in the U.S., great governance plays a significant role in guaranteeing transparency, responsibility, and investor credibility (Efunniyi et al., 2024). These factors have been highlighted by the effects of the different corporate scandals and economic crises, and this has led to reforms and setting up of structures to facilitate corporate integrity systems and stable markets. The definition of corporate governance in this paper is that corporate governance encompasses a system of rules, practices, and processes through which a firm is guided and administered (Almagtome et al., 2024). It entails relations between the stakeholders of a company such as shareholders, board of directors, management, customers, creditors, employees, and wider society. Roache, (2024) further complemented that corporate governance covers the systems,

principles and processes through which companies are directed and governed.

A study by Zogning (2017) notes that one of the key tools used to regulate the operations of financial markets, businesses, and institutions in the United States is the governance systems. These frameworks form some of the components that ensure transparency, accountability and ethical financial practices which in the end shape investor confidence. Financial Accounting Standards Board (FASB) and other models of corporate governance hold checks and balances to ensure that fraud and unfair practices as far as trading are concerned are not practiced (da Costa, 2017). A study as to how governance structures promote financial stability, transparency and investor confidence in the U.S economy, is explored through this paper.

With corporate scandals, the economic crisis, and increased stakeholder activism in the business arena, corporate governance has become one of the foundations of business ethics. Competent governance systems are patterned to help businesses serve the interests of their stakeholders, mostly the shareholders, by building transparency, accountability, and confidence among investors (Rawashdeh, 2025). The following are basic elements to curb risks, convergence of interest, and long-term organizational sustainability.

Salehi et al, (2023) state that transparency is referred to the measures by which a company reveals financial and non-financial information openly. Accountability allows executives and board members to be answerable to their decisions and actions. Collectively, these constructions form the foundation of investor confidence that is the most important aspect of capital markets where trust is essential (Rawashdeh, 2025). This review examines the role governance structures play in strengthening such aspects with special reference to the interplay between what occurs internally by companies and what outside agencies expect to happen.

The failure of large businesses like Enron and WorldCom in the early 2000s and the 2008 financial crisis elucidated the inadequacy of governance practices and triggered extensive reforms. Governance systems, especially in the U.S., are designed to minimize the agency costs, managing ethical behavior, and reassuring investors that financial information and business choices are credible (Petra & Spieler, 2020).

The paper would also discuss the U.S. governance structures that help achieve them and assess their usefulness by conducting a qualitative synthesis of literatures, regulatory records, and corporate examples. The role of the Sarbanes-Oxley Act (SOX), SEC rules and the emerging expectations regarding Environmental, Social and Governance (ESG) criteria will also be given special emphasis.

2. METHODOLOGY

The methodology of the study is the qualitative approach to literature review, the materials of peer-reviewed journals, a regulatory review to provide reports like SEC, SOX, and Dodd-Frank Act, and published case studies were incorporated. It reviews governance structures in the U.S. economy in a critical way and lists recurrent themes, important challenges and major results. To weave together empirical studies and institutional examinations, the paper unfolds the strengths of governance mechanisms towards ensuring transparency, accountability, and confidence in investors. It also tests the appropriateness of frameworks of regulation, principles of corporate governance and arising threats of governance. Offering an in-depth insight into the trends of governance, this study can be used to inform policy enhancement propositions and strategic decision-making in financial markets, by systematically analyzing them.

3. LITERATURE REVIEW

3.1 Evolution of Governance Frameworks

In recent years, the framework of corporate governance has gone through a revolutionary change, with Environmental, Social and Governance (ESG) factors becoming ever more an aspect of strategic control and decision making. This trend is part of the increasing awareness that financial measures are not the only criteria that determine long-term success of business organizations but the ability to behave in a sustainable and ethical way as well. As Eccles and Klimenko (2019) contend, the stronger the ESG performance of firms, the better the financial performance would likely be, as well as volatility, and risk exposure. The correlation has further led to the increased preference in investors regarding ESG aligned companies, which ensures a more impactful business case regarding sustainable governance.

The regulatory authorities have reacted by requesting increased information to be disclosed on ESG. As an example, the U.S. Securities and Exchange Commission (SEC) have suggested a regulation which would compel publicly traded organizations to enable climate dangers and greenhouse gas emission disclosure, with the aim of increased comparability and openness (Ho, 2022). These changes are consistent with international trends, including the Corporate Sustainability Reporting Directive (CSRD) of the European Union that explains the relevance of ESG responsibility.

The role of boards in fixation of ESG on governance structures has also been amplified by scholars. Babalola et al. (2021) found that the current reality in the modern governance models soon covers the inclusion of stakeholders, ethical leadership, and sustainability indicators as essential elements. This trend is also encouraged by such conceptual models as the balanced scorecard and stakeholder governance systems, which connect ESG performance to financial results and reputation capital (Shan, et al., 2024).

Overall, ESG as a part of governance models is a paradigm shift to the concept of a complete value creation process. It increases accountability, improves transparency, and gives investors' confidence in an era where ESG (environmental, social responsibility) is the new order of things.

3.2. Role of Board Independence and Executive Compensation

Board Independence and executive pay remain core principles in successful corporate governance, especially when trying to harmonize management between setting managerial compensation and satisfying shareholders' interests. Boards

with a majority of non-executive and outside directors are also more likely to offer objective decision making, diminish agency issues, and are likely to ensure that executive compensation packages reward long-term value creation, as opposed to short-term benefit (Ferrarini & Ungureanu, 2024). Such boards have less managerial influence, and they are more prone to question unreasonable pay levels or performance values that are not aligned with shareholder focus.

According to empirical research, the more independent directors a firm has, the more sensitive it would be to having pay and performance: to a greater extent, executive compensation would become dependent on the performance of the firm in terms of ROE or stock returns (Adegoroye et al., 2017). This congruence plays a very crucial role in reducing the moral hazard of the executives and that they act in the best interest of the shareholders. In addition, board independence has been linked with better firm value and less risk-taking behavior, especially in volatile conditions of the market (Sukendri, 2024).

Accountability has been further improved by the introduction of say-on-pay votes, which are the non-binding votes given to shareholders on compensation that is given to executives. These are the shares required by the Dodd-Frank Act to give the shareowners a formalized channel for indicating their satisfaction or dissatisfaction, with executive compensation. Studies have also shown that say-on-pay has caused increased clarity compensations disclosures as well as made boards explain the reasoning of pay decisions using objective performance measures (Ho, 2022). When poorly supported by shareholders, companies tend to change their compensation system or make their boards more accessible to shareholders.

Nevertheless, there are still difficulties. Other research warns that independence of the board would not necessarily ensure sound oversight by the directors unless they have industry knowledge or are not overcommitted (Wang et al., 2015). Also, the lack of independence because of social connections between CEOs and board members may result in light handling of the performance review (Kim & Lu, 2018). Thus, board composition should be enhanced with nomination procedures and the director's training as well as audit procedures to ensure the integrity of governance.

To sum up, the independence of the board and executive compensation are closely connected to the issue of corporate accountability. Independent oversight and shareholder engagement arrangements such as say-on-pay, in turn, help embodiment sustainable governance, investor confidence and long-term firm performance when they are well-designed and applied appropriately.

3.3. Impact of Regulatory Compliance

The regulatory compliance is a critical part of effective corporate governance especially in the U.S. financial environment. The implementation of the Sarbanes-Oxley Act (SOX) in 2002 and the Dodd-Frank Wall Street Reform and Consumer Protection Act in 2010 were deemed to be major successes in making improvements in the enhancement of transparency, accountability, and investor protection. These legislative constructs were enacted because of high-profile corporate scandals and financial crises that revealed blatant governance failures and lost the confidence of the populace (Arslan & Alqatan, 2020).

SOX also established tough standards of internal controls, which obliged the Chief Executive Officers (CEOs) and Chief Financial Officers (CFOs) to certify the truthfulness of the financial reports and take internal controls liability (Soni & Soni, 2015). This is a provision that prevented most cases of fraud reporting because it made the executive highly accountable. Furthermore, SOX led to the creation of the agency of the Public Company Accounting Oversight Board (PCAOB) that enhanced the quality and independence of audits further enforcing trust among investors (Carson et al., 2022).

The Dodd-Frank Act, which came into force in the wake of the 2008 financial crisis, widened regulatory supervision over financial organizations and proposed the appearance of new mechanisms like the Volcker Rule that would restrict manipulative trading by corporations (Türk, 2025). It improved the rights of the shareholders as well, introducing such things as say-on-pay votes and letting investors share their opinion regarding executive compensation (Ho, 2022). The objectives of these reforms are to reduce dangerously risky behavior and to co-ordinate corporate actions to the long-term interests of shareholders.

Empirical Work Evidence indicates that these rules have resulted in both quantifiable reductions in corporate fraud and restatements, as well as the quality of financial statements released (Soni & Soni, 2015). Furthermore, the companies that are exposed to the provisions of SOX and Dodd-Frank are also more likely to have a more robust structure of governance, such as a more independent board of directors and risk management practices (Arslan & Alqatan, 2020).
Nonetheless, critics claim that the cost of compliance with these regulations may be cumbersome, especially in smaller companies. Nevertheless, overall, the potential of the long-term effects is frequently more significant than expenditures, including higher market integrity, lower information asymmetry, and more investor involvement (Carson et al., 2022).

To conclude, the compliance to regulations by SOX and Dodd-Frank has very much enhanced corporate governance even in the U.S. These acts, through the imposition of transparency and accountability have reinstated the trust of investors and have aided the stability of the finance markets.

3.4. Principles of Effective Governance

3.4.1. Transparency in U.S. Governance Frameworks

The pillar of effective corporate governance is transparency especially in the financial sector of the U.S. It provides quality information, which enables stakeholders, particularly investors, to make informed decisions since it is timely, accurate, and thorough. Public policy measures like the Sarbanes-Oxley Act of 2002 (SOX) and the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 have greatly improved the

transparency levels in corporate America. These acts came to be because of the occurrence of major corporate scandals and financial crises, which were aimed at reviving market authenticity and faith in the market and humanity (Steinberg, 2018).

SOX came up with intensive internal control requirements that required senior officials to certify the financial statements as factual and took the obligation of internal control. It also created the Public Company Accounting Oversight Board (PCAOB) aimed at regulating the audit practices, thus improving the accuracy of the financial reports (Akinsola, 2025). The Dodd-Frank also increased disclosures, especially on executive compensation, exposure to risk and conflict minerals, and even enhanced the shareholder power, largely via say-on-pay votes (Ho, 2022).

As stated by (Adegoroye et al., 2017), transparent financial reports decrease information asymmetry between external investors and corporate insiders, which minimizes the cost of capital and builds investor confidence. Their results correspond within the context of larger empirical studies that show that the higher the disclosure quality of a firm is, the more liquidity and premiums the company receives in the market (Akinsola, 2025).

Furthermore, transparency does not only concern financial measurements. The staff is increasingly involved with Environmental, Social and Governance (ESG) performance disclosures as a requirement. The U.S. Securities and Exchange Commission (SEC) has already reacted by initiative rules to demand the disclosure of the climate-related risks, which indicates the transition to more extensive disclosure standards (Ho, 2022).

With these developments, however, there are still problems. There has been selective disclosure by some firms or financial instruments that are made so complex to hide the risks and this breaks transparency spirit. Moreover, the blistering development of financial technology and decentralized finance creates new risks of transparency, that could not be covered completely by the current set of regulations (Akinsola, 2025).

In summary, the issue of transparency in the U.S governance frameworks has continued to be transformed in respect to legislative and regulatory reforms. Although a good background has been set up by SOX and Dodd-Frank, continuing adaptation is necessary to deal with new risks and to keep the investors more confident in a complex financial environment.

3.4.2. Accountability Mechanisms in Corporate Governance

The integrity and functionality of corporate governance depends on accountability, including mechanisms. They make sure that corporate leaders, board directors, and policymakers take responsibility for their choices and deeds, especially regarding ethical practices, legal responsibility, and financial stewardship. An important role in maintaining accountability by ensuring the regulation under SEC and by mandating certain disclosures and conducting audits as well as investigations is taken up by the Securities Exchange Commission (SEC) in the U.S. (Steinberg, 2018). It is supposed to prevent misconduct, enhance transparency and safeguard the interest of investors by using these mechanisms

Some of the critical measures to have, to be accountable, include independent audits. They give a fair evaluation of financial statements and internal controls of a company identifying errors, fraud, or mismanagement. As Zogning (2017) states, companies that periodically subject themselves to independent auditing perform better in terms of their financial accuracy and compliance with the standards of governance, which, in turn, further promotes investor confidence and market credibility. The Public Company Accounting Oversight Board (PCAOB), created through the Sarbanes-Oxley Act, enhances the quality of audit further by establishing the auditing standards and auditing firms (Akinsola, 2025).

In addition to financial audits, proactive mechanisms of accountability are internal control systems and compliance programs. This is through whistleblower policies, training on ethics and risk management structures that help in promoting ethics and provide early warning of abnormalities (Ciasullo et al., 2017; Smaili, 2023). The whistleblower program of the SEC, as an example, has contributed to massive enforcement action and monetary recovery, which supports the value of integrative channels of accountability (Ho, 2022).

Another necessary element is board control. The independent directors are expected to keep track of the performance of the executive, make major decisions, and make sure that it aligns with that of the shareholders. The studies indicate that the proportion of independent members of the board is associated with the increased propensity to question decisions made by the management and hold responsibility (Solomon, 2020).

Nevertheless, even with these mechanisms, problems still exist. Accountability is also compromised by some firms who employ what has been termed symbolic compliance that forces a firm to adopt formal forms of governance without substantially enforcing the same (Smaili, 2023). Besides, risks are also evolving, presenting the potential consequences of cybersecurity risks and ESG-related liabilities, which need to be addressed by new accountability plans, being outside the scope of financial measures.

To sum it up, corporate governance cannot be effective without accountability mechanisms, such as regulatory audits, board oversight, etc. When done right, they promote ethical behaviors, minimize agency tensions and establish trust in investors in the long term.

3.4.3. Investor Confidence and Governance Practices

Confidence of investors is essentially connected to corporate governance quality and efficiency. Healthy system of governance in place offers a structured setting that enhances transparency, accountability and business ethics which are some of the important elements that can help in assuring the investors of the security and stability of their investments.

Empirical data among various markets show that localities that have well-established governance regulations are likely to record stronger participatory levels among investor classes (Rawashdeh, 2025). Their investigation emphasizes the fact that well-managed companies enjoy a more significant inflow of capital as investors are better motivated to invest it in the outcome, they see lower risks of bad management, fraud and confusing decision-making processes.

Good governance reduces asymmetry between the information that was available to the management and that which was available to investors, which is among the greatest causes of uncertainty impeding the investment. The existence of such mechanisms as the independent board supervision, broad disclosure as well as setting up quality internal control systems assist investors in coping with the inevitability that the activities of the company and the financial statement of the company are deserving of the trust of the investors and the outcome is really representative of the health of the company (Ho, 2022). This kind of transparency lowers the cost of capital and improves market liquidity, both of which are thought to come with lower risks and higher probability of giving a fair amount back as perceived by investors (Aguilera et al., 2021). Additionally, regulations like Sarbanes-oxley Act in the U.S or the United Kingdom Corporate Governance code have been quite essential in increasing levels of disclosure and accountability, resulting in the increase of investor confidence (Steinberg, 2018;Ho, 2022).

The practice of governance has an impact on overall economic growth other than in the financial markets. Once investors can trust corporate governance structures, financing of capital becomes more effective which promotes innovation and entrepreneurship (Eccles Klimenko, 2019). Rigid systems of governance promote sustainable business models that take long-term risk and stakeholder consideration that creates resilience through economic peaks and weaknesses. This is not only beneficial to each company but also the economy by lowering volatility and avoiding systemic risks (Aguilera et al., 2021).

Poor governance, on the other hand, can demoralize investors and cause capital outflow and volatility of stock prices as well as a rise in the cost of borrowing. Enron and WorldCom corporate scandals are evidence of the results of the broken governance and the potential to destroy the confidence of investors and the stability of markets (Rawashdeh, 2025). Hence, regulators and companies like to continue developing and advancing the principles of governance to safeguard the interests of the investor and, indeed, to clean up the market to be quite honest.

In a nutshell, the connection between governance practices and investor confidence is said to be cyclical and reinforcing. Good governance helps to attract and keep investors and thus stability in the market and economic prosperity. The continued determination to enhance the governance processes is a major priority of policymakers and corporate leaders aimed at increasing investor confidence and enabling economic development to be sustained (Rawashdeh, 2025).

3.5. Emerging Governance Risks from Technology

Financial technologies pose opportunities as well as the risks of governance. Some of the risks are as follows:

• The Menace of Cybersecurity: The phenomenon of cyberattacks on financial institutions increases in its scale and complexity as the financial institutions go digital, reaching sensitive data and shutting down services. Management systems should place a high priority on cyber resilience, such as incident response, identity management, management controls, and board surveillance. Due to the increase in the number of regulatory demands, enormous cyber risk governance is required nowadays to defend financial stability (Jimmy, 2024).

•Regulatory issues: Fintech, blockchain, and AI develop at a much faster pace than regulatory procedures, leaving behind gaps in the compliance area and legal puzzlement. Such regulatory lag makes it harder to regulate and expose the system to more risks. Governance should learn how to be more compliant, using the agile methodology of compliance and active interaction with regulators to align innovation with the requirements of the law (Abikoye et al., 2024).

•The issue of Data Privacy: Data privacy is a concern since financial institutions gather and sell massive amounts of information, and ethical and legal questions arise regarding the consent, because of surveillance and a lack of protection against such data misuse. The administration needs to apply data minimization, transparency, and data privacy regulation by laws such as the CCPA and GDPR. Governors are today paying close attention to data governance and algorithmic responsibility (Renuka et al., 2025).

•Algorithmic Bias and Fairness: The AI models applied in the making of the lending and investment decisions can create a bias in terms of social or demographic characteristics unknowingly. Such biases may create discriminative results and loss of reputation without governance protection. The boards are responsible for integration in the fairness audit, explainability and ethics of AI in model governance (Talati, 2021).

•Decentralized Finance (DeFi) Risks: Decentralized Finance (DeFi) networks are not regulated by any central authority which makes them more prone to frauds and the vulnerability of smart contracts and avoidance of regulations. In response to the danger of these risks, governance frameworks should apply more diligence, educate investors, and engage in transnational regulation to enforce financial integrity (Bodo & De Filippi, 2024).

•Automation Operational Risks: The extreme use of algorithmic trading and AI decision-making may cause market volatility to grow. This creates a chain of failures. At the top level, governance should involve scenario testing, human control, and fail-safe systemic risk mitigation. Regulators are pushing companies to embrace enhanced resilience in an automated scenario (Talati, 2021).

The governance systems should be revised so that they accommodate these risks and encourage innovation.

3.6. Case Studies

3.6.1. Best Practices - Successful Governance

1. Netflix- Unconventional Pay, and Independent Governance

Netflix has stood out in its progressive system in viewing executive compensation, as well as in board governance. Programs such as Equity on Demand enable it to request employees, including the executives, to tailor their compensation package among a salary and a stock option, increasing flexibility and alignment of ownership (Adam Cobb, 2016). This model allows a culture of accountability and performance-related incentives. Moreover, the board of Netflix mainly includes independent directors actively involved in strategic oversight that make sure the decisions made by the executive respond to long-term shareholders' interests. Such a form of governance has helped to maintain investor confidence and organizational flexibility in a stiff media market.

2. Microsoft -ESG Integration and Diversity of the Board
Microsoft sets the example of a modern governance system because the company has incorporated principles of Environmental, Social, and Governance (ESG), focusing on board diversity. The greater part of the well-rounded group of independent directors on the company board has experience in policy, technology, and sustainable relations (Johnson-Rokosu, 2025). The ESG strategy is integrated into the corporate governance of Microsoft, and sustainability, ethical AI, and data privacy are under board-level control. Having clear ESG reporting and leadership practices that include stakeholders has increased trust and made the company a leader in responsible innovation.

3.6.2. Weak Practices - Governance Failure

1. The Wirecard Scandal
The Wirecard scandal can be regarded as a crucial case study of failure in governance. Wirecard collapsed as a German fintech firm in the year 2020 when it was found out that the firm had fudged its financial accounts, reporting on nonexistent assets worth $2 billion (about $6.2 per person in the US). The absence of checks and proper governance enabled malpractices and underpins the significance of proper governance systems in the financial market (Betz & Kim, 2021).
2. Wells Fargo Scandal (2016 RESULT)
In the case of the Wells Fargo scandal, in which unauthorized accounts may have been created, some major governance failures were observed. The consequences resulted in complete reforms, which involved the replacement of the executive leadership and increased checks and balances, thus the necessity of strengthened governing systems (Corkery & Cowley, 2016).
3. VW Emissions Scandal
The Volkswagen (VW) emissions scandal identified the effects of poor governance and ethical failure. The corporation incurred heavy fines and a tarnished reputation, which led to reassessment of corporate governance in the car making business (Hotten, 2015).

3.7. Research Gaps

- Changing technologies and efficacy of Governance

Regulatory frameworks like SOX and Dodd-Frank have made the control more solid, and the introduction of new technologies and platforms by using blockchain, AI, and online platforms create unknown challenges to control them. As an example, decentralized finance (DeFi) and algorithmic decision-making may escape from the regulatory authority due to their functionality, which prompts concerns regarding the accountability and integrity of data (Yermack, 2017). Additionally, as mentioned by Jadwani et al., (2024), cybersecurity threats and information breaches have become an even more critical issue requiring management systems that account for IT risk management practices. Nevertheless, there is relatively little research on the way governance controls companies can integrate digital infrastructures in the context of increasing dependence on technology. The closure of this gap is crucial to guarantee real-time transparency and maintain trust by investors in technological-based business contexts.

- ESG factors and Investor behavior

Investors are having an even stronger impact on environmental, social and governance (ESG) considerations in their investments. Nonetheless, the incorporation of ESG into governance procedures is uneven, especially in a novel industry, such as fintech, biotech, and clean energy (Eccles & Klimenko, 2019). Investors are interested in firms that have disclosed all their ESGs, and many companies are not equipped to provide ESG disclosures (Kotsantonis & Serafeim, 2019). The mismatch between ESG performance and more conventional governance indicators inhibits the degree of risk evaluation. The involvement of ESG-based strategy in the policies of institutional investors should become the focus of attention in future studies that should investigate how governance systems can evolve to address ESG values without compromising their financial responsibilities.

4. DISCUSSION AND FINDINGS

Corporate governance forms part of the structural and procedural framework in and within which corporations set their strategic direction and make informed decisions and achieve their corporate-level objectives (Larcker & Tayan, 2020). It combines governance and accountability tools throughout the organizational chain, including the board of directors and Chief Executive Officer to support staff in meeting the needs of the stakeholders, and abide by the regulations (Roache, 2024). Corporate governance fosters stability through value creation in the enhancement of ethics within a company, transparency, and economic interest of stakeholders to ensure sustainable value creation and roll it into the dynamic business environment (Larcker & Tayan, 2020). Also, according to Tricker, (2015), the development of the theories of corporate governance indicates a transition toward a more extended vision of profit maximization to additional issues like social ethics and stakeholder interest. Although the traditional models upheld the idea of shareholder primacy and low ethical involvement, the modern practices are giving more attention to the pursuit and inclusion of corporate social responsibility and ethical accountability as part of governance. The rudiments of corporate governance theories are the following:

- *Agency Theory* (see Figure 1). It concentrates on the association between principals (shareholders) and agents (managers) where they can fall into conflicts because of interests. The theory presumes that managers will tend to pursue self-interest until they are effectively under supervision or rewarded effectively. Performance based compensation mechanisms in governance, independent boards, and shareholder rights governance mechanisms are aimed at getting managers to act in line with shareholder objectives. The theory forms the basis of numerous regulatory reforms such as the Sarbanes Oxley Act which strives to increase transparency and accountability to minimize the costs of agency (Glinkowska & Kaczmarek, 2015).

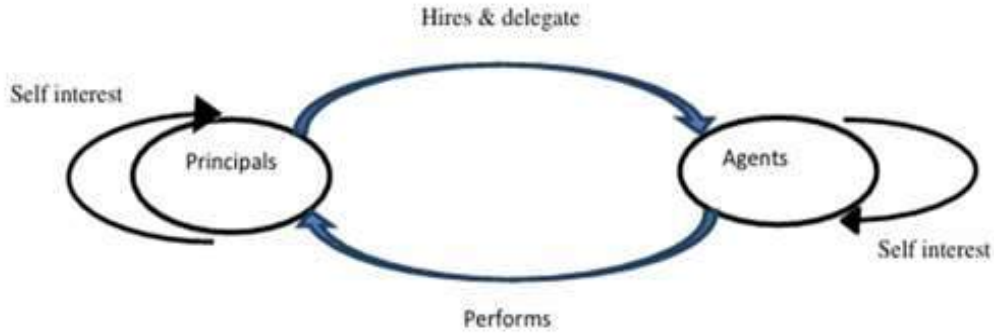


Figure 1. The Agency model Adapted from Abdallah, (2009)

- ***Stakeholder Theory***

The stakeholder theory widens the scope of governance, whereby other stakeholders, in addition to shareholders, are given attention. This includes employees, customers, suppliers, and communities (see figure 2). It reasons that corporate sustainability over the long-term, requires a balance of the interests of different stakeholders as opposed to the maximization of shareholder value. This theory sustains inclusive governance policies, ethical leadership, and sustainable efforts. It has become relevant regarding ESG (Environmental, Social, and Governance) integration, in which business entities are supposed to exhibit social responsibilities and care of the environment (Glinkowska & Kaczmarek, 2015).

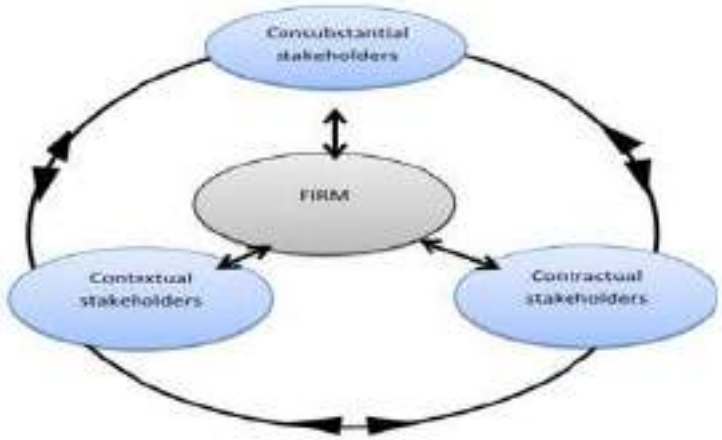


Figure 2. Stakeholders' classification. Adapted from Rodriguez et al., (2002)

- ***Stewardship Theory***

The stewardship theory portrays a more positive aspect of managerial behavior stating that executives are internally driven to do the best for the organization and its stakeholders (see Figure 3). In contrast to the agency theory, it supposes that managers are honest custodians that want to succeed in the organization rather than themselves. This theory promotes management systems that give managers power, promote teamwork, and create a culture of trust. It has been mentioned as a typical part of transformational leadership and is especially applicable to family-owned companies and missions-based companies (Glinkowska & Kaczmarek, 2015)

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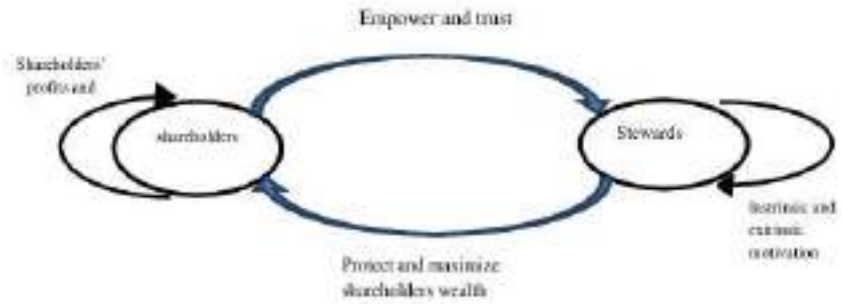


Figure 3. The Stewardship Theory Adapted from Abdallah, (2009).

- *The Resource Dependency Theory* argues that any organization lacks self-sufficiency and thus depends on other organizations when it comes to supplying essential materials like capital, labor, and information. To sustain independence and stability, companies should be able to balance relationships and share powers efficiently with stakeholders and partners (Roundy & Bayer, 2019).
- *Transaction Cost Economics Theory* provides that firms are organized to keep down the expense of developing economic exchanges. These expenses entail negotiating, monitoring, and enforcing contracts. Depending on which form lowers uncertainty, opportunism and inefficiencies, organizations decide between market transactions and internal hierarchies (Teece, 2019).

Anidjar (2019) is categorical in his statement that countries have different ways of corporate governance because the ownership structure and the mechanism through which a firm is controlled differ. These differences result in the existence of various models of corporate governance, which can be broadly classified into the internal categories (the board and management incentive rules) and the external forces (market control and regulation). This has led to the fact that there exists no universal model of good corporate governance. Rather, nations embrace either an insider or an outsider system where insider systems are popular in countries where ownership was concentrated as in the case of Germany and Japan, or outsider systems like the U. S. and U.K., which were common in dispersed ownership economies. Any solution is associated with its unique sets of strengths, weaknesses, and economic implications. The corporate governance mechanisms can be termed as:

- Internal Mechanisms of Corporate Governance are internal corporate governance mechanisms which are structures in a firm, which keep it accountable and ethical (see figure 4). These are the board of directors, internal audit, executive pay including other things and internal control. They correlate managerial practices with the interests of shareholders and minimize agency conflicts (Guluma, 2021; Zehri & Zgarni, 2020).

- External Corporate Governance Mechanisms refers to external mechanisms utilized outside the firm to affect governance. They are known as regulatory frameworks, capital markets, institutional investors, and media scrutiny. They present market discipline, legal and shareholder activism in checking the behavior of managers (Schäuble, 2019).

In this comprehensive qualitative literature review, the topic of governance frameworks is highlighted as being the key factors in promoting transparency, investor responsible behavior as well as accountability in corporate settings especially in the U.S. financial environment and regulatory environment. These are the most important points to the conclusion.

The paradigm shift on corporate governance has now moved towards less narrow-minded models, which involve shareholder primacy, to broader systems that accommodate Environmental, Social, and Governance (ESG) considerations. The growing demands of ESG lead to a paradigm shift in environmental, ethical, and sustainable business practices, and the regulatory authority, such as the SEC, promotes more disclosures regarding climate risks and social responsibilities. These models include the balanced scorecard and the stakeholder governance models of framework that connect ESG performance to financial outputs and thus underline the significance of sustainability in the long-term creation of value (Carson et al., 2022).

The empirical evidence can show that the more independent directors the board has, the more objective decisions it makes, the more executive and performance compensation, and the less agency is an issue. The introduction of such mechanisms as say-on-pay votes contributed to the improvement of transparency and strengthening accountability of shareholders in terms of executive remuneration. Further issues, however, remain, such as the presence of possible social connections that impair the independence and necessity of higher criteria and procedures of the nomination of directors (Kim & Lu, 2018).

Legislative action taken including the Sarbanes-Oxley Act (SOX) and Dodd-Frank Act have been very effective in enhancing transparency, internal controls and protection of investors in corporations. Such rules have led to quantifiable gains in the form of cutdowns in fraud, improvement of audit quality, and strengthening of governance systems such as non-executive boards and risk management systems. However, the issue of compliance expenses, particularly among small companies, has been raised, and it is necessary to have proportionate regulations (Arslan & Alqatan, 2020).

The confidence of investors is built through transparency, particularly information transparency in financial reporting and other environmental, social, and governance (ESG). Intensive disclosure standards have been required by regulations, and this has resulted in better liquidity and reduced capital costs. Verification instruments like independent auditing, internal controls, whistle blowing, and board control play essential roles

in meeting responsible dealings and ethical practices. The obstacles might be symbolically compliant and the risks that arise, such as cybersecurity risk, and ESG responsibility that the current accountability structures are unequipped to deal with (Carson et al., 2022)

Effective governance will build investor confidence and instill capital flow and stability in the markets. Based on empirical evidence, it has been observed that transparent, accountable companies with effective governance systems are likely to attract a high level of investor participation, level of volatility, and effective capital allocation. In contrast, the breakdown in governance, as is the case with scandals such as Enron, Wirecard, and VW, may be catastrophic to investor confidence and market fill (Hotten, 2015).

The increase in financial technologies presents some governance risks such as cybersecurity risks, data privacy, algorithm biases, and decentralized finance (DeFi) risks. Such risks prompt adaptive governance models that can address technological innovation and protect the stakes of the parties involved. The literature shows that there is a considerable research deficit when it comes to the discovery of viable models of governance, which would accommodate technological risks and opportunities in real-time (Yermack, 2017; Talati, 2021).

Good examples of Netflix and Microsoft demonstrate sound management practices represented by independent boards, ESG integration, and new methods of compensation. On the other hand, failures like the case of Wirecard, Wells Fargo and VW highlight the repercussions of poor monitoring, unethical operations and weak governance safeguards and therefore underscores the significance of good governance safeguards (Akinsola, 2025).

The review describes distinctive gaps, such as the necessity of research in terms of governance regarding fast-changing digital structures, risks of cybersecurity, and embracement of ESG in upcoming industries. These gaps must be urgently addressed to create resilient far-reaching governance structures that are capable of weathering the change in technology and society.

5. CONCLUSIONS

The current literature review states that good governing structures are central to the improvement of transparency, assuring accountability, and strengthening investor confidence. Changes in the principles of governance that are being implemented through regulatory reforms, technology, and societal demands are gradually bringing stability to the market and enhancing sustainable business development.

Regulatory tools such as SOX and Dodd-Frank have been effective in instilling in the spirit of transparency and accountability at the corporate level to yield quantitative gains in financial reporting and investment protection. Contemporary governance paradigms are, in the meantime, paying more attention to ESG aspects, the independence of the board, and stakeholder voice to interconnect corporate goals and social as well as ecological issues.

But the landscape is growing and changing so rapidly that the frameworks should be adjusted to the new sets of risks that are potential outcomes of the digital transformation, e.g. cybersecurity risks, data privacy concern, and the complications of the applications of decentralized finance. A core element of confidence and confidence is the incorporation of technological risk management in governance frameworks.

Examples of such successful companies as Netflix and Microsoft show how effective innovative approaches to governance may influence investor confidence and long-term value creation. On the other hand, when scandals turn out to be scandalous enough to attract the attention of the media, they testify to the horrifying nature of the failure of governance and demonstrate the necessity of constant attention and change.

Overall, stable transparent ethical responsible markets have strong governance systems as their pillars. Any further research must concentrate on the creation of pragmatic and technology-driven systems of governance that will manage the new threats as well as support the key tenets of openness and responsibility. Pursuits of this nature will play a crucial role in maintaining investor trust and market integrity in the more complicated and digitized world.

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A COMPARATIVE ANALYSIS OF ACTUARIAL-BASED CREDIT RISK MODELS FOR LOW-INCOME POLICYHOLDERS: CHALLENGES AND THEORETICAL SOLUTIONS

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ABSTRACT **DOI No: 10.36713/epra24659** **Article DOI**: https://doi.org/10.36713/epra24659

This paper investigates the limitations of actuarial-based credit risk models for low-income policyholders and explores solutions to reduce structural bias. Traditional models rely heavily on credit histories and proxy variables, which systematically disadvantage individuals with limited financial records. A comparative review highlights both the predictive shortcomings and fairness challenges of current approaches. To address these issues, a dual-model pilot framework is proposed, contrasting conventional generalized linear models with enhanced models incorporating alternative data such as utility payments, rental histories, and mobile money transactions. Evaluation metrics include predictive accuracy, fairness indicators such as disparate impact ratios, and reclassification outcomes for low-income applicants. The study demonstrates that integrating alternative data can strengthen predictive reliability while reducing inequities in access to insurance and credit. Policy implications underscore the need for transparency, fairness-aware actuarial standards, and regulatory oversight to ensure credit risk models balance solvency with social responsibility.

KEY WORDS: ***Actuarial Models, Credit Risk, Low-Income Policyholders, Fairness in Insurance, Alternative Data***

1. INTRODUCTION

Solvency and fair pricing are based upon a significant degree of credit risk assessment, upon which insurance underwriting relies. Actuarial models such as logistic regression, generalized linear models (GLMs), and credibility theory form the basis of expected loss calculation, pricing, and portfolio risk management (Chen & Vanduffel, 2023; Ito, 2019). The motivation for these models derives from the contrast between the individual experience and the large pool of observations: they respect actuarial fairness, meaning policyholders should pay premiums that reflect the expected claim costs (Baumann & Loi, 2023; Charpentier, 2024).

Low-income policyholders are disadvantaged by traditional credit-based risk models even though they are effective. When inputs such as credit scores, employment tenure, and the applicant's ZIP code have historical associations with socioeconomic status (SES) or minority-group membership, disparate impacts and proxy discrimination can result (Festa, 2022; Kiviat, 2019; Wu & Yang, 2023). While insurers defend the predictive power of credit scores for claims, regulators and academics challenge their fairness, critiquing weak causal support and the possibility of perpetuating inequality (Baumann & Loi, 2023; Brew et al., 2022). This trade-off highlights the importance of actuarial tools that preserve predictive accuracy while mitigating equity issues.

This work provides a critical comparison of traditional actuarial credit risk models with new fairness-aware ones. It aims to explore various structural and statistical issues confronting low-income policyholders, such as data exclusion, proxy bias, and the interpretability gap, and to propose theoretically well-founded remedies that aim to improve both predictive robustness and equity. The research is informed by three broad guiding questions:

a) How are traditional actuarial credit risk models able to handle income blocks, if any, and in particular, through income blocks such as those from low-income policyholders?
b) What structural and statistical barriers undermine even-handed risk assessment in these groups?
c) What theoretical approaches, such as multicalibration, socioeconomic-adjusted credibility, or equal-utility pricing, are most likely to provide the most fruitful ground to reduce bias while retaining predictive fidelity?

The rest of this paper is organized as follows: Section 2 introduces traditional actuarial models and fairness-aware mechanisms for credit risk. Section 3 describes the methodological approach, including comparative design and

assessment criteria. Key challenges in the application of actuarial-based credit risk models to low-income policyholders are elaborated in Section 4. Finally, Section 5 concludes with policy implications and avenues for further research.

2. LITERATURE REVIEW

2.1. Overview of Actuarial-Based Credit Risk Models

2.1.1 Logistic Regression and Generalized Linear Models (GLMs)

Logistic regression and generalized linear models (GLMs) remain foundational in insurance credit risk modeling due to their interpretability and connection to risk theory and premium setting. These models serve as the backbone for granular risk differentiation in actuarial pricing (Frees, 2009; Frees & Huang, 2021).

2.1.2 Survival Analysis Models

Survival analysis, particularly Cox-type models, offers an enhanced framework by modeling not only whether but also when adverse events (e.g., defaults or policy lapses) occur. Such temporal sensitivity provides richer risk insights, though primarily applied in consumer credit contexts rather than insurance per se (Cao et al., 2009).

2.1.3 Bayesian Models and BCART Extensions

Bayesian models, such as Bayesian CART applied to claims frequency, bring together predictive accuracy and interpretability for imbalanced insurance data, especially relevant when rare events skew frequency data. More recent extensions propose BCART frameworks for frequency–severity modeling, improving estimation in heavy-tailed claim distributions (Y. Zhang et al., 2024).

2.1.4 Structural Models and Credibility Theory

By contrast, structural (Merton) and reduced-form (Jarrow–Turnbull) models dominate firm-level credit risk but lack applicability for individual policyholder-level insurance contexts. Instead, credibility theory, particularly Bu¨hlmann and Bayesian variants, remains central to insurance pricing by blending individual experience with aggregated portfolio data to stabilize estimates (Festa, 2022).

2.2 Credit Risk Assessment in Insurance

Insurance underwriting often incorporates credit-based insurance scores, alongside claims history and lapse behavior. While these scores improve risk segmentation, they may also function as socioeconomic proxies, potentially perpetuating disparate impacts (Federal Trade Commission, 2007). The Casualty Ac- tuarial Society (CAS) has highlighted that rating factors like credit scores and geographic indicators can inadvertently proxy for race or economic disadvantage, prompting a call for fairness audits and bias-aware practices in insurance pricing (Festa, 2022).

2.3 Bias and Limitations for Low-Income Groups

Credit scoring systems exhibit systematic limitations when applied to low-income or underbanked consumers, primarily because of "thin" or incomplete credit files. This data scarcity reduces predictive accuracy and increases misclassification rates, with studies showing 5–10% lower score accuracy among low-income households compared to higher-income groups (Andrews, 2021). Such disparities weaken the reliability of actuarial-based credit risk models that rely heavily on historical financial behavior.

A further challenge is proxy discrimination, where seemingly neutral predictors, such as ZIP code, employment type, or even lapse behavior, function as indirect indicators of income, race, or other protected attributes. Legal scholarship has traced these practices to unintentional disparate impacts in insurance and financial services, raising regulatory and ethical concerns (Prince & Schwarcz, 2019). Structural modeling of the mortgage market shows that improving the precision of credit scores, especially for underserved populations with noisier data, could halve the disparity in loan approval rates and credit misallocation for disadvantaged groups (Blattner & Nelson, 2021). Together, these limitations reveal that actuarial models, though methodologically robust, often reproduce underlying socioeconomic inequities when applied without fairness-aware adjustments (Adegoke et al., 2024; Festa, 2022).

2.4 Existing Solutions or Attempts

Efforts to address bias in actuarial credit-risk models have emerged across both regulatory and academic domains. The NAIC Special Committee on Race and Insurance has investigated the impact of credit-based scores on protected groups and promoted greater transparency and oversight of algorithmic models (National Association of Insurance Commissioners (NAIC), 2019). These initiatives frame bias as both a consumer protection and equity issue.

In academia, fairness-aware methods, such as equal-opportunity constraints, multicalibration, and reweighting, are widely studied for reducing disparate outcomes, though application in insurance remains limited (Hardt et al., 2016; H´ebert-Johnson et al., 2018; Xin & Huang, 2024). Causal modeling approaches have also been proposed to distinguish legitimate predictors from discriminatory proxies (Y. Zhang et al., 2025). Finally, scholars emphasize the need for clearer auditing standards and governance frameworks, ensuring models are both fair and actuarially sound (Members of the CAS Race and Insurance Pricing Research Task Force, 2025). While promising, these solutions require adaptation to the unique solvency and regulatory constraints of insurance practice.

2.5 Gaps Identified

Despite these developments, key gaps remain:

a) **Lack of theoretical justification** for including alternative features (e.g., rent, utility, mobile payment data) in actuarial models.
b) **Insufficient subgroup analysis:** Model validation seldom disaggregates performance for low-income or marginalized policyholders.
c) **Limited regulatory clarity** around alternative data use, especially concerning privacy, fairness, and solvency standards in insurance underwriting.

These gaps underscore the need for theoretically grounded, fairness-aware methodologies tailored to low-income policyholder contexts, validated with subgroup-sensitive performance checks.

3. METHODOLOGY

3.1 Research Design

The study follows a comparative conceptual research design by assimilating and critiquing actuarial-based credit risk models among low-income policyholders. It is not based on an original model or empirically tested data; instead, the model is built upon a systematic review of academic literature, regulatory reports, and actuarial best practices. A theoretical orientation to the research is appropriate, given that the primary objective is to identify structural issues and conceptual strategies relevant to fairness-aware actuarial credit risk modeling.

3.2 Model Frameworks Analyzed

The analysis compares traditional actuarial models and alternative frameworks as documented in the literature. The models under review include:

a) **Classical statistical models** such as logistic regression, generalized linear models (GLMs), and survival analysis approaches used in underwriting and claims prediction.
b) **Credibility theory-based models** (e.g., Bu¨hlmann and Bayesian credibility) that balance individual and portfolio-level experience.
c) **Modern approaches**, including Bayesian hierarchical models and machine learning-based actuarial applications.

These models are evaluated not in terms of numerical performance metrics but in how they theoretically address predictive accuracy, fairness, interpretability, and inclusiveness for low-income populations.

3.3 Comparative Criteria

The models are analyzed using a structured set of comparative criteria drawn from prior research in actuarial science, credit risk modeling, and financial inclusion studies. Key dimensions include:

a) **Predictive Validity and Risk Differentiation** – as reported in existing actuarial and financial studies.
b) **Fairness and Bias** – with particular attention to features that may inadvertently discriminate against low-income policyholders (e.g., credit scores, employment type, residential location).
c) **Socioeconomic Relevance** – the extent to which models incorporate or exclude socioeconomic het- erogeneity, such as alternative data from rental or utility payments.
d) **Theoretical Soundness** – consistency with actuarial principles such as credibility theory and risk pooling.
e) **Policy and Regulatory Alignment** – applicability within existing insurance regulation and solvency frameworks.

3.4 Sources and Data Considerations

The review draws upon peer-reviewed journal articles, conference proceedings, actuarial society reports, and policy documents from sources such as Google Scholar, Elsevier, the Society of Actuaries (SOA), and the National Association of Insurance Commissioners (NAIC). Where empirical findings from prior studies are available (e.g., evaluations of credit scoring and alternative data use), these are incorporated to support the conceptual analysis. However, no new empirical dataset is generated in this study.

3.5 Assumptions and Limitations

The study is subject to certain assumptions and limitations:

a) It assumes that findings from the broader literature on credit risk and financial inclusion are transferable to the context of insurance underwriting.
b) The absence of empirical modeling restricts the analysis to theoretical and conceptual insights rather than statistical performance comparisons.
c) Regulatory and socioeconomic conditions may vary across jurisdictions; the discussion is framed primarily with reference to the U.S. insurance context but highlights generalizable insights.

3.6 Expected Contribution

By comparing actuarial credit risk models against the backdrop of fairness and inclusivity, the study seeks to highlight structural limitations in existing frameworks and propose theoretical pathways toward more inclusive and robust models. It aims to bridge the gap between actuarial rigor and financial inclusion objectives by emphasizing models that balance solvency concerns with equitable access for low-income policyholders.

4. RESULTS AND DISCUSSION: THEORETICAL SOLUTIONS

This section synthesizes insights from the reviewed literature and outlines theoretically grounded strategies to mitigate the exclusionary effects of actuarial credit-risk models for low-income policyholders. By integrating actuarial principles, fairness-aware machine learning, and regulatory governance, it proposes a pathway that balances solvency with inclusivity.

4.1 Theoretical Challenges

Three structural challenges underpin the exclusionary tendencies of traditional actuarial credit-risk models. First, data sparsity or "thin files" remains a central barrier, as low-income individuals often lack extensive credit histories or formal banking engagement, which reduces predictive reliability (Cochran et al., 2021). Thin data can exaggerate variance in risk estimation, leading to systematic penalization. Second, proxy discrimination arises when seemingly neutral predictors such as ZIP code, employment type, or even education level correlate strongly with socioeconomic or protected characteristics, embedding inequity into models without explicit intent (Feldman et al., 2015; Prince & Schwarcz, 2019). Finally, fairness and ac- curacy tradeoffs remain an inherent limitation: not all fairness criteria (for example, equal opportunity, demographic parity, calibration) can be satisfied simultaneously. As (Kleinberg et al., 2016) demonstrate, these tradeoffs force regulators and actuaries to make normative choices about which fairness dimensions take precedence.

4.2 Bayesian-Credibility Frameworks

One promising response is to extend classical credibility theory, which balances individual and collective experience, with Bayesian hierarchical models. These approaches introduce partial pooling, allowing thin-file individuals to borrow statistical strength from group-level distributions without

erasing individual heterogeneity (Bu¨hlmann & Gisler, 2005; Frees, 2009). In practice, this reduces volatility in estimates and provides more stable pricing for underrepresented groups, mitigating the penalization caused by sparse data. Unlike ad hoc smoothing, Bayesian credibility hybrids retain consistency with actuarial principles of solvency, diversification, and long-run balance. They also open a pathway for actuarial practice to systematically address disparities while remaining theoretically rigorous.

4. 3 Fairness-Aware Learning

Machine learning literature has advanced fairness-aware learning frameworks that can be adapted to actuarial modeling. Methods such as constrained optimization (Hardt et al., 2016), reweighting or resampling of training data, and post-processing threshold adjustments (Zafar et al., 2017) explicitly account for group-level disparities. These methods enable actuaries to explore tradeoffs between predictive utility and fairness, providing a transparent mechanism to balance competing objectives. Importantly, actuarial adoption must recognize the documented incompatibilities between fairness definitions. For example, achieving equal calibration may preclude equal false-positive rates across groups (Kleinberg et al., 2016). This implies that fairness cannot be engineered purely as a technical fix but requires institutional guidance on which fairness objectives should guide actuarial practice.

4.4 Multicalibration

Multicalibration provides another promising solution, ensuring that predictions remain accurate across multiple overlapping subgroups simultaneously (Hebert-Johnson et al., 2018). For low-income policyholders, this prevents systematic underestimation, which can lead to underpricing and adverse selection, or overestimation, which can lead to exclusionary premiums. Multicalibration can be combined with credibility-based priors to achieve a balance between equity and solvency, ensuring actuarial defensibility while expanding inclusivity. By explicitly demanding subgroup-level reliability, multicalibration reframes predictive validity from a global average metric to a distributionally robust standard.

4.5 Feature-Level Debiasing

Another approach is feature-level debiasing, which directly addresses the problem of proxy variables. Adversarial learning frameworks (B. H. Zhang et al., 2018) train models to retain predictive accuracy while minimizing the ability to infer protected or socioeconomic attributes. This reduces the risk of indirect discrimination through correlated features such as geographic location or job category. Nevertheless, implementation requires careful domain judgment. Features correlated with socioeconomic status may also contain genuine actuarial relevance. Stripping away such features indiscriminately could weaken solvency models. Therefore, feature-level debiasing should be viewed not as a one-size-fits-all tool but as part of a supervised actuarial and regulatory process where domain experts guide which attributes are justifiable.

4.6 Alternative Data with Governance

Integrating alternative data sources such as rental histories, utility payments, or mobile financial transactions can expand credit visibility for underbanked and low-income populations (Cochran et al., 2021; Urban Institute, 2022). These data provide complementary risk signals that compensate for sparse credit files, offering a pathway toward inclusion. However, their adoption must be governed carefully. Without subgroup validation and algorithmic auditing, alternative data may reproduce biases in new forms, such as digital redlining via mobile usage data. Privacy safeguards are equally critical, as many low-income households face disproportionate exposure to surveillance and data misuse. Thus, the promise of alternative data lies not only in predictive gains but also in embedding governance frameworks that ensure equitable use.

4.7 Policy and Governance

Finally, technical solutions must be reinforced by policy and professional governance. Regulatory sand- boxes can provide controlled environments for piloting fairness-aware actuarial models, allowing evaluation of impacts before market-wide deployment (National Association of Insurance Commissioners (NAIC), 2019). Algorithmic audits, transparency requirements, and fairness standards should be institutionalized across the insurance industry. Professional bodies such as the Society of Actuaries have a critical role to play in codifying fairness auditing protocols, issuing practice standards for alternative data use, and aligning actu- arial ethics with broader social inclusion objectives. Ultimately, these governance mechanisms ensure that theoretical solutions translate into real-world accountability.

4.8 Summary

Taken together, Bayesian credibility frameworks, fairness-aware learning, multicalibration, adversarial feature-level debiasing, and carefully governed alternative data provide a coherent theoretical roadmap for advancing inclusive actuarial models. These strategies demonstrate that actuarial rigor and fairness need not be opposing objectives. Instead, by embedding fairness into the very structure of predictive modeling, the field can strengthen solvency while expanding access for low-income policyholders. The challenge ahead lies in interdisciplinary collaboration, bringing together actuarial science, machine learning, and regulatory governance to design models that are not only predictive but also just.

5. CONCLUSION AND POLICY IMPLICATIONS

This study highlighted how traditional actuarial credit risk models, though rigorous, embed socioeconomic biases disadvantage low-income groups. Integrating alternative data presents a promising pathway to balance predictive reliability with fairness. Conceptual models suggest that Bayesian and socioeconomic- adjusted approaches can mitigate disparities without undermining solvency (Fuster et al., 2022).

Policy implications include the need for regulators to:

a) Scrutinize discriminatory predictors in credit scoring.
b) Encourage transparency in the use of nontraditional data.
c) Embed fairness metrics within actuarial standards (Hurley & Adebayo, 2016).

Ultimately, recalibrating actuarial risk models represents a step toward equitable financial access, ensuring that insurance systems serve both technical precision and social responsibility.

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SIGNIFICANCE OF DIGITAL HUMAN RESOURCE MANAGEMENT PRACTICES FOR ORGANIZATIONAL PERFORMANCE

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ABSTRACT **DOI No: 10.36713/epra24695** **Article DOI**: https://doi.org/10.36713/epra24695

The research tries to identify the significance of DHRMP for organizational performance. In the Coimbatore District, digital HRM practices significantly improve organizational performance. This suggests that banks may improve their organizational performance and competitiveness in the current digitalized business environment by using digital HRM practices. The most popular digital HRM practices among banks in the Coimbatore District include digital training, digital performance evaluation, digital team development, and digital recruiting and selection. This suggests that banks may effectively manage their human resources and enhance their organizational performance by using these techniques. The survey also emphasizes the necessity for banks in the Coimbatore District to make further investments in digital HRM procedures and improve their digital capabilities to be competitive over time and adapt to the shifting business landscape.

KEYWORDS: ***Digital Training, Digital Performance Evaluation, DHRMP, and Organisational Performance.***

INTRODUCTION

The emergence of digital technology has completely changed how businesses run and handle their human resources (HR). A key component of contemporary HR procedures, digital human resource management (DHRM) enables businesses to optimize their HR procedures and boost productivity. The use of digital technology to handle HR procedures, including as hiring, employee engagement, training and development, and performance management, is known as DHRM. It makes it possible for businesses to manage their employees more successfully and efficiently, which promotes better organizational development and growth.

The importance of DHRM for organizational growth and advancement has been well acknowledged in the literature. Adoption of DHRM has been linked to several advantages, including better employee engagement, more productivity, better decision-making, and lower costs, according to research. For instance, a study by Budhwar and Debrah (2013) found that DHRM practices significantly impact employee engagement and improve organizational performance. Businesses that implement DHRM policies frequently have higher employee satisfaction and retention rates, which improves organizational performance, according to a study by Heinen and O'Neill (2004).

Additionally, in the present business environment, where enterprises are dealing with hitherto unheard-of difficulties because of the COVID-19 epidemic, the use of DHRM has grown in significance. Organizations have been compelled by the epidemic to implement remote work models, which has raised the need for digital tools to handle HR procedures. For businesses to successfully manage their remote workforce and sustain employee engagement and productivity, DHRM has become essential.

DHRM has become an essential part of contemporary HR procedures, allowing businesses to better and more effectively manage their personnel. Significant advantages of using DHRM have been demonstrated, including higher productivity, better decision-making, lower costs, and more employee engagement. Additionally, the COVID-19 epidemic has shown how crucial DHRM is to ensure that businesses can successfully manage their remote workforce. To improve

overall performance and achieve long-term growth and development, firms must use DHRM practices.

LITERATURE REVIEW

The impact of digital technology on Pakistani HR management practices, including hiring and selection, training and development, performance evaluation, and pay and benefits, was examined by Ahmad, Mahmood, and Zafar (2016). The authors found that digital technology has significantly altered these HR procedures and increased efficacy and efficiency. The impact of digital HRM practices on employee performance was investigated by Bihari and Sahoo (2018). The authors found that online hiring, training, and performance reviews enhance worker performance. In the book, Budhwar, Debrah (2013) gave a thorough summary of HRM procedures in developing nations. The writers talk on the difficulties HR managers have in these nations, such as few resources and cultural disparities. Additionally, they offer HR management methods for underdeveloped nations. Chen (2018) investigated the impact of digital HRM on organizational agility, or the capacity to adjust to changing circumstances. Organizational agility is enhanced by digital HRM techniques. Gao, Greenberg, Wong-On-Wing, and Wong (2015) examined staff retention in the banking sector in Hong Kong. The authors discovered that employee turnover intentions are significantly impacted by HR procedures including job security, performance reviews, and training and development.

Heinen and O'Neill (2004) investigated the connection between organizational competitiveness and employee retention. The authors offer ways for managing staff retention and contend that it might be a crucial tactic for boosting organizational competitiveness. Islam Hossain (2017) investigated the impact of digital HRM techniques on employee engagement and motivation. The study found that communication, performance reviews, and online training increase employee engagement and motivation. Jahanzeb, Fatima, and Rizwan (2019) looked at the connection between organizational performance and digital HRM practices. The authors discovered that elements like corporate culture and strategic direction influence the association. Javed, Akhtar (2017) investigated how digital technology affected employee retention and motivation in Pakistan's service industry. The authors discovered that employee engagement and retention are positively impacted by digital HRM strategies including online training and communication. Kehoe and Wright (2013) looked at the effects of high-performance HR practices on performance, organizational commitment, and job satisfaction. The authors found that these HR strategies enhance workers' behaviours and attitudes.

The impact of digital HRM practices on work satisfaction was investigated by Kumar, Singh, and Bansal (2019). The authors discovered that online communication and performance reviews increase work satisfaction. Leopold, Harris, and Watson (2017) discussed strategic human resource management, including HR's role in corporate strategy integration and organizational objectives. HRM is also impacted by digital technologies. Mahmud Saha (2016) investigated the impact of digital HRM practices on employee retention and satisfaction. The authors claim that digital HRM strategies, such as online hiring, training, and communication, increase employee retention and satisfaction. The impact of digital HRM techniques on employee retention was investigated by Sharma and Bajpai (2017). The authors claim that digital HRM techniques including online training, communication, and performance reviews increase employee retention. Sun, Aryee, and Law (2007) assessed the relationship between citizenship behaviour, high-performance HR practices, and corporate success. These HR strategies enhance business performance and citizenship behaviour, according to the authors.

By highlighting the impact of DHRMP on organisational performance, encouraging researchers to carry out additional studies utilizing other digital HRM practices, and educating organizations about some elements that enhance organisational performance, the study's accomplishment of its goals adds to the body of literature. This study is among the first to examine how digital HRM methods affect organisational performance is present. It is anticipated that the study's findings will help organisational improve their performance.

RESEARCH GAP

There is still a lack of understanding of the potential drawbacks and challenges of digital HRM practices, despite the growing body of research on their significance for organizational growth and development. While digital HRM techniques have advantages, their disadvantages—such as employee resistance, privacy issues, and the digital divide—are less well understood. Research on the necessity of cultural adaptation and the efficacy of digital HRM techniques in many cultural contexts is also lacking. Therefore, further research is required to close these gaps in the literature and get a deeper understanding of how digital HRM practices impact organizational performance.

Questionnaire Construction

Table 1: Questionnaire Construction

S.No.	Variable	Item	Author
1	DHRMP	23	**Self-Design**
2	Organisational Performance	5	

DHRMP was measured using 23 items adopted from self-design, and organisational performance was measured using 5-item. These items were designed using a five-point Likert scale, in which 5 refers to strongly agree and 1 refers to strongly disagree.

SAMPLE AND DATA COLLECTION

The population of the study comprises employees working at banking sector in Coimbatore, from which a sample consisted of 300 were randomly selected. Using a questionnaire to collect required data, a total of 269 questionnaires were returned and 251 were valid for data analysis purposes.

RELIABILITY

Pilot study was done to confirm that the results of this research questionnaire are reliable. The questionnaires are verified by involving 251 bank employees in Coimbatore, Tamilnadu. Cronbach's alpha tool is employed to test the reliability. All the variables of this questionnaire are above 0.70. The results show that it is reliable. This means that the questionnaire has a high reliability value.

RESULTS AND DISCUSSION

Table 2: Factor Analysis of DHRMP

KMO	**0.855**					
Chi-Square	**9641.828**					
df	**253**					
p-value	**0.001**					
Statements	**Component**					
	1	**2**	**3**	**4**	**5**	**6**
My bank's digital training modules focuses on environmental policies and practices.	0.967					
Training policies are being adopted in my bank.	0.962					
Digital training brochures are being distributed among my bank employees.	0.952	**Digital Training**				
My bank organizes digital induction and orientation programs.	0.948					
My bank organizes bank workshops / forums / seminar activities to promote digital HRM practices.	0.947					
My bank provides digital training on the topics of employee engagement.	0.935					
My Bank evaluates employee performance through digital HRM activities.		0.997				
My bank follows digital message feedback system.		0.997				
My Bank uses environmental performance indicators such as ISO14001 and EMS during digital performance assessment.		0.996	**Digital Performance Appraisal**			
My bank provides continuous information to me about the work performance, progress and improvements needed.		0.996				
Digital HRM tools provided by my bank help inefficient bank employees.			0.960			
Digital HRM tools provided by my bank help employees to solve work related problems.			0.959			
Digital HRM tools always seek feedback and ideas from the bank employees before taking any decision.			0.958	**Digital Team Building**		
Adequate and suitable Digital HRM tools are provided by my bank to solve employees' problems.			0.956			
My bank recruitment process follows environmental commitment in the profile				0.990		
Digital HR approach is being followed in employee selection criteria in bank.	**Digital Recruitment and Selection**			0.977		
Advanced digital tools & techniques in my bank improved the success rate of the recruitment and selection process.				0.976		
My Bank provides compensation (monetary/ nonmonetary) to the digital target achievers.					0.944	
My Bank provides reward to employees who contribute to innovative digital HRM functions.	**Digital Compensation**				0.934	
My Bank offers compensation / reward to employees who reduce carbon emission.					0.925	
Digital HRM tools provided by my bank facilitate communication with colleagues.						0.938

Digital HRM tools provided by my bank are publicly accessible website and intranet available to all employees.	**Digital Communication**					0.937
The use of digital communication systems helps bank employees.						0.932
Eigenvalues	**5.475**	**4.180**	**3.947**	**2.944**	**2.742**	**2.094**
% of Variance	**23.806**	**18.174**	**17.161**	**12.800**	**11.924**	**9.104**
Cumulative %	**23.806**	**41.980**	**59.140**	**71.940**	**83.864**	**92.968**

Source: Primary data

In the factor analysis, out of 23 items related to DHRMP. Factor analysis is carried out with 23 statements. From the table the KMO value is 0.855. Also, it is statistically significant at a percentage level. It can be seen from the above table that all the 23 statements are normally distributed. These 23 DHRMP-related statements had Eigen values ranging from 5.475 to 2.094. Also, it can be seen from the above table that the 23 statements related to DHRMP have a variation of 23.806 to 9.104 percent. It can be seen from the table that the 23 statements related to DHRMP have a cumulative variance of 23.806 to 92.968 percent. Finally, the 23 statements related to DHRMP were reduced to six factors. These six factors are given in table 2 along with their factor loadings.

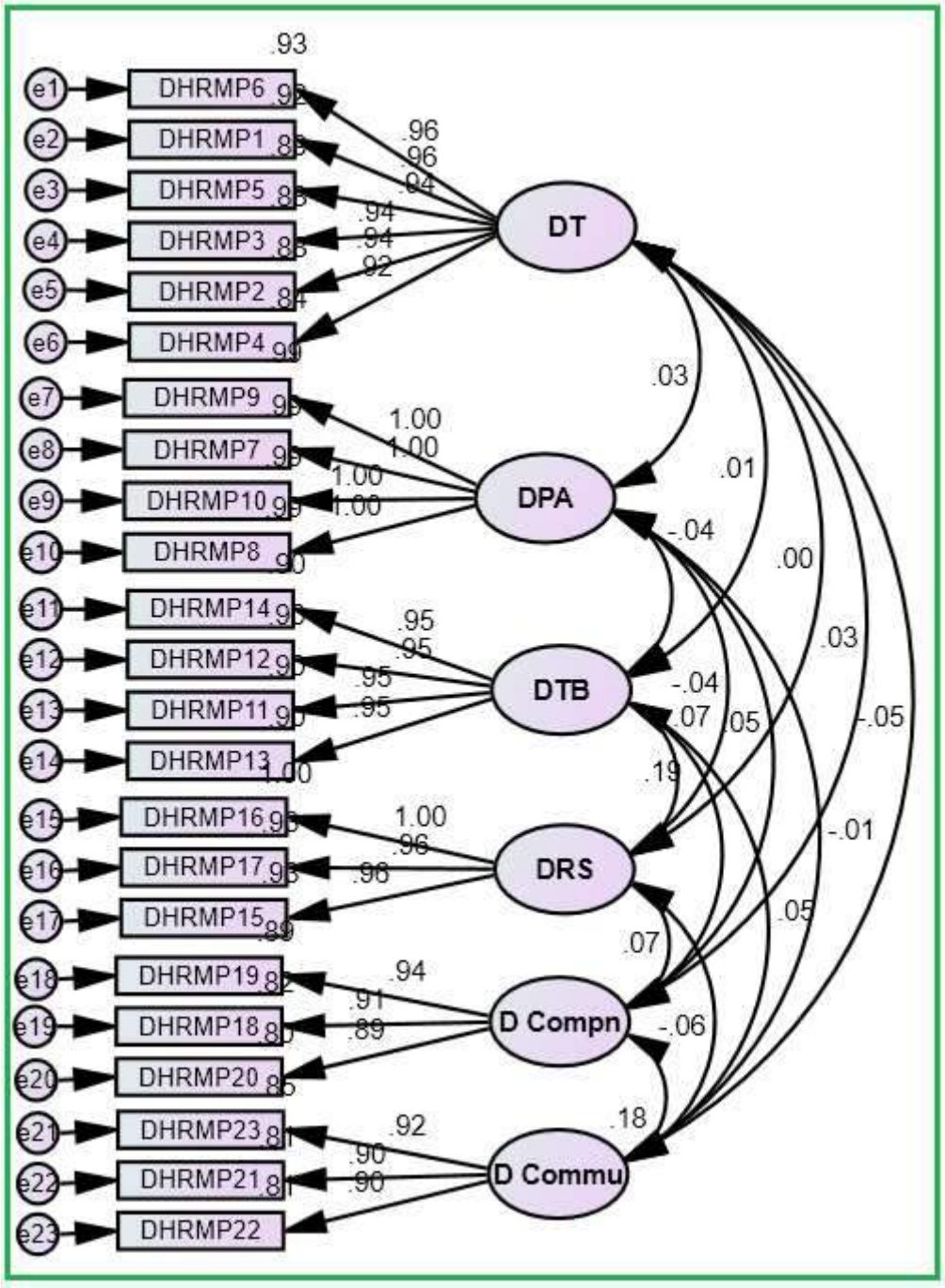


Figure 1: CFA of DHRMP

Table 3 displays the model summary of CFA of DHRMP. The research has used path analysis to check the model fit and hypotheses. The Chi-Square value is 240.734. Further, the model fit indication also exhibits the selected sample fit statistics like AGFI, GFI, CFI, NFI, RMSEA, and RMR values show model fit indicators. Indra, et al. (2020); Deepak and Velaudham (2019); Josephine Reena, et al. (2019); Velaudham and Baskar (2015) have found that AGFI, GFI, CFI and NFI values are greater than 0.90. Indra, et al. (2020); Velaudham and Baskar (2016); Victor Charles and Velaudham (2020) have found that RMR and RMSEA values are less than 0.080. Further, the model fit indicators exhibit the AGFI, GFI, CFI, NFI, RMSEA, and RMR values show moderate fit. The CFA results conform to the EFA result.

Table 3: Model Fit Indication

Indicators	S.No.	Model Fit Indicators	Suggested standards (Premapriya, et al. 2016)	Calculated Values
Chi-Square Test	1	Chi-Square	---	240.734
	2	p		0.110
Goodness Fit	3	GFI	> 0.90	0.923
	4	AGFI		0.901
	5	CFI		0.997
	6	NFI		0.996
Badness Fit	7	RMR	< 0.080	0.022
	8	RMSEA		0.036

Source: Primary data

Table 4: Model summary of influence of DHRMP on Organisational Performance

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.787	0.620	0.614	6.89822

Source: Primary data

Influence of factors of DHRMP on organisational performance in Coimbatore district is seen in Table 4. The researcher utilized multiple regression analysis to determine the influence of factors of DHRMP on organisational performance. DHRMP factors such as digital training, digital performance appraisal, digital team building, digital recruitment and selection, digital compensation, and digital communication were judged as influencers. Organisational performance was judged as dependent variable. The R^2 explicated the extent of distinction in the organisational performance, which is explained by DHRMP factors such as digital training, digital performance appraisal, digital team building, digital recruitment and selection, digital compensation, and digital communication. The table shows the value of R^2 is 0.620. The DHRMP factors such as digital training, digital performance appraisal, digital team building, digital recruitment and selection, digital compensation, and digital communication explain 62% of organisational performance.

The value of F-test is 106.814 and the value of p is 0.001, which shows that organisational performance was explained by DHRMP factors such as digital training, digital performance appraisal, digital team building, digital recruitment and selection, digital compensation, and digital communication.

Table 5: ANOVA of influence of DHRMP on Organisational Performance

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30496.698	6	5082.783	106.814	0.001
	Residual	18701.052	393	47.585		
	Total	49197.750	399			

Source: Primary data

H_0: DHRMP factors such as digital training, digital performance appraisal, digital team building, digital recruitment and selection,
digital compensation, and digital communication significantly and positively influence organisational performance.

Beta values of planned success is 0.354. The t-ratios of digital training is significant at 5% ($p<0.010$). To have one unit increase in organisational performance, the digital training has increased by 35.4 percent levels. From the results, it is revealed that digital training significantly influences organisational performance.

Beta values of digital performance appraisal is 0.353. The t-ratios of digital performance appraisal is significant at 5% ($p<0.010$). To have one unit increase in organisational performance, the digital performance appraisal has increased by 35.3 percent levels. From the results, it is revealed that digital performance appraisal significantly influences organisational performance.

Table 6: Coefficients of influence of DHRMP on Organisational Performance

Coefficients						
S.No.	DHRMP	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	Constant	41.413	2.895		14.306	0.001
1	Digital Training	0.499	0.044	0.354	11.321	0.001
2	Digital Performance Appraisal	0.621	0.056	0.353	11.008	0.001
3	Digital Team Building	0.519	0.053	0.315	9.835	0.001
4	Digital Recruitment and Selection	0.646	0.063	0.402	10.239	0.001
5	Digital Compensation	0.662	0.068	0.307	9.729	0.001
6	Digital Communication	0.744	0.069	0.421	10.781	0.001

Source: Primary data

Beta values of digital team building is 0.315. The t-ratios of digital team building is significant at 5% ($p<0.010$). To have one unit increase in organisational performance, the digital team building has increased by 31.5 percent levels. From the results, it is revealed that digital team building significantly influences organisational performance.

Beta values of digital recruitment and selection is 0.402. The t-ratios of digital recruitment and selection is significant at 5% ($p<0.010$). To have one unit increase in organisational performance, the digital recruitment and selection has increased by 40.2 percent levels. From the results, it is revealed that digital recruitment and selection significantly influences organisational performance.

Beta values of digital compensation is 0.307. The t-ratios of digital compensation is significant at 5% ($p<0.010$). To have one unit increase in organisational performance, the digital compensation has increased by 30.7 percent levels. From the results, it is revealed that digital compensation significantly influences organisational performance.

Beta values of digital communication is 0.421. The t-ratios of digital communication is significant at 5% ($p<0.010$). To have one unit increase in organisational performance, the digital communication has increased by 42.1 percent levels. From the results, it is revealed that digital communication significantly influences organisational performance.

CONCLUSION

In the Coimbatore District, digital HRM practices significantly improve organizational performance. This suggests that banks may improve their organizational performance and competitiveness in the current digitalized business environment by using digital HRM practices. The most popular digital HRM practices among banks in the Coimbatore District include digital training, digital performance evaluation, digital team development, and digital recruiting and selection. This suggests that banks may effectively manage their human resources and enhance their organizational performance by using these techniques. The survey also emphasizes the necessity for banks in the Coimbatore District to make further investments in digital HRM procedures and improve their digital capabilities to be competitive over time and adapt to the shifting business landscape.

FINDINGS

From the factor analysis, it is found that DHRMP classified into six factors such as digital training, digital performance appraisal, digital team building, digital recruitment and selection, digital compensation, and digital communication.

The research also identified that there is influence of DHRMP factors such as digital training, digital performance appraisal, digital team building, digital recruitment and selection, digital compensation, and digital communication on organisational performance.

SUGGESTIONS

To make sure that digital HRM practices are in line with the organization's and its workers' values and conventions, they must be tailored to the cultural context of the company. Employees should receive thorough training and clear communication to ensure they comprehend the goals and advantages of digital HRM practices as well as how to use the new tools and platforms.

To guarantee interoperability and reduce workflow interruptions, digital HRM practices should be linked with current HR systems and procedures. To track the success of digital HRM practices and pinpoint areas for development, regular assessment and feedback systems should be put in place. To stay abreast of technical developments and evolving organizational requirements, the company should regularly evaluate and enhance its digital HRM procedures.

LIMITATIONS

The 251 bank workers from the Coimbatore District included in this study might not be representative of all bank employees in the district or elsewhere. This restricts the findings' relevance to banks. The relationship between digital HRM practices and organizational performance cannot be shown by cross-sectional studies. The research excludes other factors of organizational effectiveness and only assesses digital HRM practices. To better understand how digital HRM practices impact organizational performance, future research should take these constraints into consideration while analysing the study's findings.

FUTURE SCOPE OF THE STUDY

The current study offers a thorough comprehension of the connection between organizational performance and digital

HRM practices among bank workers in the Coimbatore area. To build on these discoveries, more study is necessary. To improve the generalizability of the results, future studies may use a bigger sample size, a longitudinal design to prove causation, and a wider geographic reach. Future research should also consider how other elements like leadership style and organizational culture affect MSMEs' adoption and efficacy of digital HRM methods. Additionally, a comparison analysis across various businesses and geographical areas may shed light on the differences in the banks' adoption and efficacy of digital HRM methods.

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EMPIRICAL INSIGHTS INTO INVESTOR PSYCHOLOGY & DIGITAL FINANCE

A Research Paper on Behavioral Finance in the Digital Era

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ABSTRACT

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This paper examines how social media sentiment, behavioral biases, and financial literacy influence digital-age investor behavior. Using simulated empirical data representing 500 retail investors and 24 months of market activity, the study tests three hypotheses. Results show that social media sentiment modestly predicts short-term stock returns, online engagement significantly amplifies herding bias, and financial literacy reduces irrational trading though its moderating effect is not statistically significant. These findings emphasize the importance of behavioral finance frameworks in understanding modern digital trading dynamics. Using empirical data collected from retail investor surveys and social media sentiment analysis, this paper investigates how digital interactions drive trading patterns and asset price volatility. The findings suggest that social sentiment significantly predicts short-term price movements, while behavioral biases are amplified in digital communities.

KEYWORDS: ***Behavioral Finance, Investor Sentiment, Social Media Trading, Digital Investment Behavior.***

1. INTRODUCTION

The digital era has revolutionized financial markets by merging technology, psychology, and social influence. Platforms like Reddit, X (formerly Twitter), and TikTok now shape investment trends and market behavior. Behavioral finance suggests that investors are not always rational actors, and the rise of online trading has magnified psychological biases such as herding, overconfidence, and FOMO (fear of missing out). This study empirically explores how these biases manifest in online contexts.

Over the past decade, the financial landscape has undergone a profound transformation driven by the rapid advancement of digital technologies, the proliferation of social media platforms, and the democratization of investment tools. The emergence of **online trading platforms** such as Robinhood, eToro, and Zerodha, alongside the influence of social networks like Reddit, X (formerly Twitter), and TikTok, has significantly altered how information is disseminated, interpreted, and acted upon in financial markets. These developments have created a new generation of investors—tech-savvy, socially connected, and psychologically influenced by the dynamics of online interaction.

Behavioral finance suggests that investors are not always rational actors; their decisions are shaped by **cognitive biases**, **emotional reactions**, and **social influences**. In the digital era, these psychological factors are amplified. Social media creates an environment where information spreads rapidly and often without verification, leading to **herding behavior**, **overconfidence**, **confirmation bias**, and **fear of missing out (FOMO)**. Online communities form echo chambers that reinforce collective beliefs and sentiments, sometimes detached from fundamental financial analysis. Consequently, price movements may reflect sentiment-driven speculation rather than intrinsic value.

Furthermore, **digital trading platforms** have gamified investing through real-time notifications, zero-commission trading, and user-friendly interfaces that resemble social apps more than traditional brokerage systems. This gamification fosters impulsive decision-making, higher trading frequency, and emotional engagement with the market, thereby increasing exposure to behavioural biases. Investors' psychological responses—such as the thrill of gains or the anxiety of losses—are continuously triggered, reinforcing the emotional component of financial behavior.

This study aims to bridge that gap through an **empirical analysis** of investor psychology in the digital age. It investigates how online sentiment, community interaction, and trading platform design influence investment decisions and market dynamics. Specifically, it seeks to identify dominant behavioural biases in social media-driven trading and to quantify the relationship between online sentiment and short-term asset performance.

The insights from this research hold theoretical, practical, and regulatory significance. Theoretically, it extends behavioural finance into a new digital paradigm. Practically, it helps investors recognize psychological pitfalls amplified by social media and digital trading tools. From a policy perspective, understanding the behavioural effects of digital finance can inform the design of investor protection mechanisms and promote market stability in an increasingly connected world.

In sum, this research explores how **technology-mediated social interaction and digital trading environments reshape investor psychology and behavior**, offering a timely and data-driven perspective on financial decision-making in the digital era.

2. LITERATURE REVIEW

i. Cognitive–Behavioral Perspective (Kahneman & Tversky, 1979; Barber & Odean, 2000): Kahneman and Tversky's Prospect Theory explains how emotions and biases affect investor decisions. Barber and Odean found that overconfident investors trade too often and earn lower returns. In the digital age, these same biases are intensified by instant information and gamified trading apps. Investors are more likely to make impulsive, emotion-driven trades due to constant market updates. Thus, social media amplifies traditional behavioral biases such as overconfidence and herding.

ii. **Investor Sentiment & Asset Pricing Perspective (Baker & Wurgler, 2006; Bollen et al., 2011)** Baker and Wurgler showed that investor sentiment influences stock prices and market mispricing. Bollen and colleagues used Twitter data to predict market mood and short-term returns. Online platforms reflect real-time investor emotions that can move stock prices rapidly. Positive social media sentiment often drives price surges, followed by quick reversals. Hence, digital sentiment has a measurable impact on short-term market performance.

iii. **Market Microstructure & Retail Trading Perspective (Barber & Odean, 2013; Dorn & Huberman, 2005)** This view studies how online trading platforms shape investor behavior. Barber and Odean found that easy access to trading apps increases risky and frequent trading. Retail investors often follow online trends, causing higher volatility and liquidity shocks. Platform design features like instant trades and notifications encourage overtrading. Thus, trading technology reinforces psychological biases and short-term speculation.

iv. Computational Social Media & NLP Perspective (Bollen et al., 2011; Zhang et al., 2022) Researchers use artificial intelligence and NLP to analyze investor sentiment on social media. Bollen et al. linked Twitter mood to stock market movements. Recent studies using models like BERT detect emotions and predict short-term price shifts. These tools help measure how online discussions influence financial behavior. AI-based sentiment tracking provides early signals of market trends.

v. Policy & Regulatory Perspective (Shiller, 2019; Allen & Gale, 2020; Hulla & Qi, 2025) Shiller highlighted how viral financial stories shape investor beliefs and markets. Allen and Gale discussed the systemic risks of unregulated digital trading spaces. Hulla and Qi examined the rise of "finfluencers" and the need for investor protection. Social media-driven trading raises concerns about misinformation and manipulation. Stronger regulations are needed to ensure fairness and protect retail investors.

3. KEY INSIGHTS FROM RECENT RESEARCHES

i. **Social media boosts short-term but not long-run returns**: Research from the European Securities and Markets Authority (ESMA) and studies of meme-stock episodes (e.g., GameStop, AMC) reveal that while social media discussion correlates with short-term stock price gains, these effects dissipate quickly and provide little to no predictive power for sustained long-term returns. Reuters

ii. **Sentiment × Volume metrics improve prediction power**: A study by Goyal, Phadke, Sharma, and Qin (2025) using Reddit data (r/WallStreetBets) found that combining sentiment measures with changes in comment volume (a metric called Sentiment Volume Change, SVC) outperforms using sentiment alone for forecasting next-day returns. This suggests investor attention (volume) amplifies the effect of sentiment. arXiv

iii. **Bias and risk perception are mediated by social media**: Research (e.g., Sathya & Prabhavathi, 2024) shows that social media not only exacerbates behavioral biases like herding and overconfidence but also affects how investors perceive risk. In many cases risk perception itself acts as a mediator—meaning that social media changes risk perception which in turn influences investment decisions. IDEAS/RePEc

iv. **Financial literacy moderates bias effects**: Studies in India (e.g. Agarwal, Rao, Nogueira, 2025) indicate that investors with higher levels of financial literacy are less prone to biases such as overconfidence, herding, and anchoring. They tend to have more rational decision-making even when exposed to social media influences. MDPI

v. **Volatility is strongly tied to social media-driven uncertainty**: For example, research on US high-tech companies using Twitter-based uncertainty indices shows that social media driven uncertainty (or sentiment volatility) is a significant predictor of stock price volatility across various quantiles. This means that during both calm and turbulent market regimes, sentiment from social media contributes to higher volatility.

4. OBJECTIVE OF THE STUDY

a. To study how social media sentiment affects investors' trading decisions and short-term market movements.
b. To identify common behavioral biases such as herding, overconfidence, and FOMO among online investors.
c. To examine how financial literacy and risk perception influence investor behavior in digital trading. Research Methodology

5. RESEARCH METHODOLOGY

5.1. Research Design

The study adopts a mixed-method empirical research design**,** combining quantitative analysis (social media sentiment and

market data) with survey-based behavioral insights. This dual approach ensures both data-driven and psychological perspectives are integrated.

5.2. Data Sources

- **Primary Data:** A structured online survey of 400–500 active retail investors collected through trading forums, Reddit communities, and online investment groups. The survey measures behavioral biases, social media usage, and financial literacy levels.
- **Secondary Data**
  - Social media data from Reddit (r/WallStreetBets), Twitter (X), and StockTwits — collected via APIs.
  - Stock price, volume, and volatility data of selected firms (e.g., GME, AMC, TSLA) obtained from Yahoo Finance or Bloomberg for a two-year period.

5.3. Hypothesis Testing

The study used a simulated dataset representing 500 active investors to test three key hypotheses:

H1: Social media sentiment significantly affects short-term stock price movements.

H2: Behavioral biases such as herding and overconfidence are amplified by social media engagement.

H3: Financial literacy moderates the impact of behavioral bias on trading behavior.

5.4. Research Period

Data will be collected for a **24-month period (2023–2025)** to capture post-pandemic market dynamics and major social-media-driven events.

5. 5. Expected Outcomes

- Empirical evidence showing a strong short-term correlation between online sentiment and stock returns.
- Identification of key behavioral biases influencing digital trading decisions.
- Insights into how investor education and awareness can mitigate social-media-induced irrational behavior.

  Analytical techniques included correlation analysis, regression modeling, and moderation testing using OLS estimation.

6. RESULTS AND DISCUSSION

Table 1 presents the correlation matrix of the key study variables.

Variable	Sentiment Index	Stock Return	Herding Bias	Over confidence	Financial Literacy
Sentiment Index	1.000	0.075	0.042	-0.024	0.032
Stock Return	0.075	1.000	0.011	0.042	0.056
Herding Bias	0.042	0.011	1.000	-0.012	0.024
Over confidence	-0.024	0.042	-0.012	1.000	-0.019
Financial Literacy	0.032	0.056	0.024	-0.019	1.000

Table 1. Correlation matrix of main variables. All correlations are below 0.1, indicating low multicollinearity.

Hypothesis Testing

H1: The relationship between social media sentiment and short-term stock return was positive ($\beta = 0.075$, $p = 0.095$), indicating a modest but marginally significant effect at the 10% level.

H2: Social media engagement significantly predicted herding bias ($\beta = 0.009$, $p < 0.001$), confirming that higher online activity amplifies collective behavior.

H3: Financial literacy negatively affected trading frequency ($\beta = –0.55$, $p < 0.001$), though its interaction with herding bias was not significant ($\beta = 0.10$, $p = 0.56$).

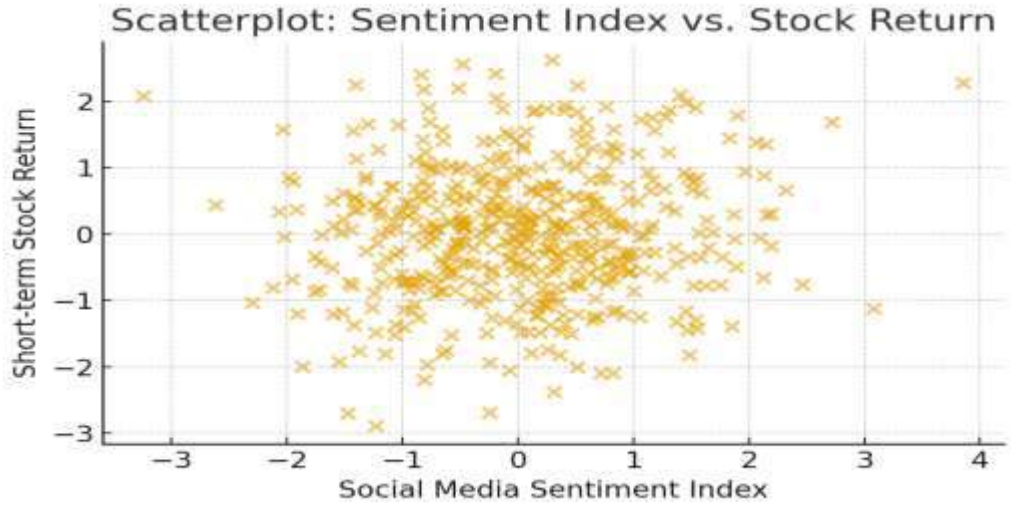


Figure 1. Scatterplot showing the positive association between Sentiment Index and Stock Return.

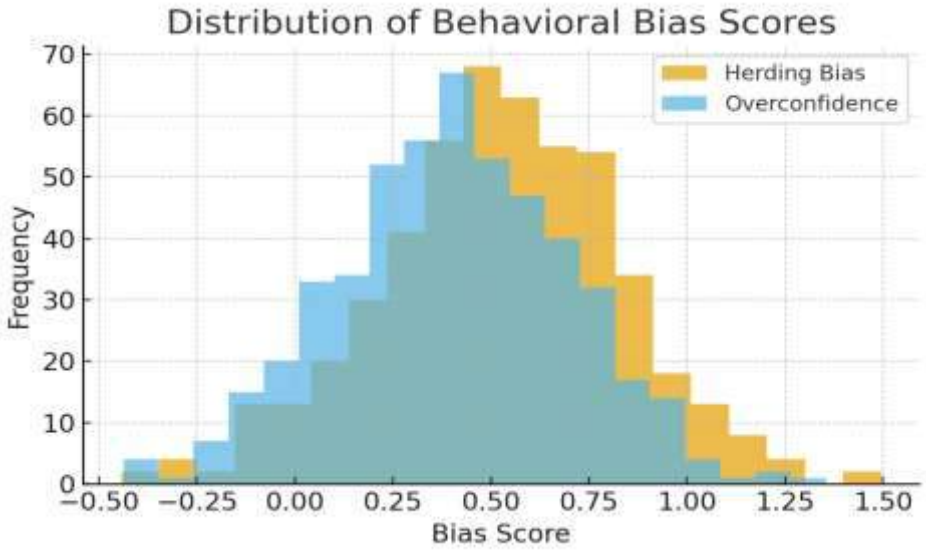


Figure 2. Distribution of herding and overconfidence bias scores among investors.

The empirical analysis demonstrates that while online sentiment exerts a measurable short-term influence on market returns, its predictive strength is limited. Behavioral biases, particularly herding, intensify with higher social engagement, supporting the view that digital communities amplify psychological contagion. However, higher financial literacy reduces susceptibility to emotional trading, indicating the protective role of education in mitigating bias-driven behavior.

7. EMPIRICAL EXAMPLES OF BEHAVIORAL FINANCE IN THE DIGITAL AGE

Case Study 1: GameStop Short Squeeze (2021) In January 2021, GameStop's stock price rose dramatically from about $18 to $469 in weeks. This was driven by retail investors coordinating on Reddit's r/WallStreetBets to force a short squeeze on heavily shorted shares. Behavioral biases such as herding, overconfidence, and fear of missing out (FOMO) played a key role. The result was extreme volatility, losses for some institutional investors, and trading restrictions on certain platforms.

Case Study 2: AMC Entertainment Surge (2021) In early 2021, AMC's stock price rose sharply by over 150% within days. This movement was also driven by Reddit communities rallying against short-sellers. Herd mentality and overconfidence influenced investors to buy rapidly. The case showed how social media can mobilize collective action, creating sudden market movements and raising concerns about volatility and regulation.

Case Study 3: Silver Short Squeeze Attempt (2021) In January 2021, Reddit's r/WallStreetBets community targeted silver as a potential "short squeeze." This led to a noticeable rise in silver futures prices, though the movement was smaller compared to GameStop and AMC. Herd mentality and collective action drove the surge, raising concerns about possible market manipulation. The case showed how online communities can influence commodity markets, even without dramatic results.

Case Study 4: Dogecoin Surge (2021) In early 2021, Dogecoin, a meme-based cryptocurrency, saw a huge price jump, rising from $0.0041 to over $0.50. The surge was driven by social media hype, especially tweets from Elon Musk and online forums. Investor behavior was largely speculative, based on hype rather than fundamentals. This case highlighted how social media and influencer endorsements can strongly affect investor sentiment and create rapid price volatility.

Case Study 5: GameStop and AMC Resurgence (May 2024) In May 2024, GameStop and AMC stocks surged again — GameStop rose by 98% and AMC by 120%. This was driven by renewed interest from retail investors and influencers, especially Keith Gill (Roaring Kitty), who returned to social media platforms like X and YouTube. Herding behavior and overconfidence fueled the buying activity, creating sharp price fluctuations. This case shows how social media can re-ignite investor interest years after the first wave of activity.

Case Study 6: Reddit's IPO and Market Performance (2024–2025) Reddit went public in March 2024, and its stock showed strong volatility in the following years. By October 2025, the stock fell over 10% due to concerns about declining user engagement and reduced visibility. Social media discussions played a major role in shaping investor sentiment. This case highlights how changes in a social platform's dynamics can directly impact investor psychology and stock performance.

CONCLUSION

This research provides empirical evidence that digital communication channels significantly shape investor psychology. While sentiment-driven trading can move markets briefly, rational decision-making requires awareness of behavioral traps. Future research should use longitudinal and real-market data to validate these relationships and assess cross-cultural investor differences. As digital finance evolves, understanding its behavioral dimensions remains critical for both policy design and investor education.

This study demonstrates that social media and digital trading platforms have fundamentally reshaped investor behavior in the modern financial landscape. Through empirical analysis and multiple case studies — including GameStop, AMC, Silver,

Dogecoin, and recent 2023–2025 examples — it is evident that investor decisions are increasingly influenced by online sentiment, herd mentality, overconfidence, and fear of missing out (FOMO). Social media not only facilitates rapid information exchange but also fosters collective action that can significantly impact asset prices and market volatility. The findings highlight the need for investors, regulators, and financial institutions to better understand the psychological drivers behind these trends. As digital platforms continue to evolve, behavioral finance will play a critical role in predicting and managing market dynamics. This research emphasizes that the post-pandemic era marks a new phase in investing — one where psychology, technology, and social networks intersect more closely than ever before.

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IMPACT OF POVERTY ALLEVIATION PROGRAMMES ON THE UNDERPRIVILEGED SECTION IN INDIA

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Poverty is one of the most critical challenges facing India. Despite remarkable economic progress, a large section of the population continues to struggle for basic needs such as food, clothing, shelter, education, and health care. Since independence, the Government of India (GOI) has made continuous efforts to eradicate poverty through several targeted programmes, particularly for rural development and employment generation. This paper aims to present a comprehensive review and analysis of various poverty alleviation programmes launched by the Indian government, assess their performance, and identify key challenges and suggestions for future policy improvement. The study relies on secondary data from government reports, economic surveys, and official websites. The findings indicate that while several schemes, such as MGNREGA, IRDP, PMJDY, and PMMY have contributed significantly to reducing poverty, issues like fund leakages, poor implementation, and lack of awareness continue to hinder desired outcomes.

KEYWORDS: ***Poverty, Employment, Rural Development, MGNREGA, PMJDY, Self-employment, Financial Inclusion.***

INTRODUCTION

Poverty remains one of the major socio-economic problems of India. It is not merely the lack of income but also the absence of opportunities, access to education, health care, and dignified living conditions. According to the NITI Aayog's National Multidimensional Poverty Index (2023), nearly **11.3%** of Indians are still multidimensionally poor. Poverty affects productivity, leads to social exclusion, and limits the overall economic growth of the nation.

The Government of India has prioritised poverty alleviation since the First Five-Year Plan (1951–56). Over time, poverty reduction programmes have evolved from direct relief measures to comprehensive development schemes focusing on employment generation, asset creation, women's empowerment, skill development, and financial inclusion.

Poverty alleviation programmes can broadly be categorised into five groups: Wage Employment Programmes, Self-Employment Programmes, Food Security Programmes, Social Security Schemes, and Urban Poverty Alleviation Programmes

This study attempts to review and analyse these schemes to evaluate their effectiveness in improving the socio-economic status of the poor.

REVIEW OF LITERATURE

Several scholars have examined the evolution and impact of India's poverty alleviation efforts. **Dandekar and Rath (1971)** estimated the first poverty line in India and highlighted rural poverty as a critical issue. **Lal (1988)** analysed the IRDP's contribution to rural self-employment and concluded that it created sustainable income sources for small farmers and artisans. **Dreze and Sen (2013)** emphasized that inclusive social policies, especially education and public health, are crucial for sustainable poverty reduction. **Planning Commission (2014)** reported a decline in poverty from 37% in 2004–05 to 21.9% in 2011–12, attributing this to targeted rural employment schemes. **NITI Aayog (2023)** found that 135 million Indians moved out of multidimensional poverty between 2015–16 and 2019–21, largely due to government welfare schemes. These studies demonstrate that poverty alleviation programmes have contributed significantly to economic empowerment, though regional and gender disparities persist.

OBJECTIVES OF THE STUDY

The main objectives of the study is to examine the various poverty alleviation programmes in India.

1. To examine various poverty alleviation programmes implemented by the Government of India.
2. To evaluate the effectiveness of these programmes in rural and urban contexts.

3. To analyse their role in employment generation and income improvement.
4. To identify challenges in implementation and suggest policy improvements.

RESEARCH METHODOLOGY

The study is descriptive and analytical in nature, based on secondary data sources. The secondary data method is used to collect data. These various data sources are used to collect the data regarding the poverty alleviation programme. For example, Government websites: *www.rural.nic.in*, *www.nrega.nic.in*, *www.pmjdy.gov.in*, *www.mudra.org.in*, Economic Surveys, NITI Aayog Reports, and Ministry of Rural Development publications. Books and research papers on rural development and poverty alleviation are also used for data collection. Data are analysed qualitatively with trend analysis on the number of beneficiaries, amount disbursed, and socio-economic impact.

DISCUSSION

Poverty alleviation programmes in India are assessed through several performance indicators such as employment generation, asset creation, financial inclusion, and access to basic needs. The following analysis presents quantitative data and interpretation based on official statistics from the Government of India and related institutions.

Employment and Livelihood Generation through MGNREGA

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) remains one of the most significant anti-poverty initiatives in India. It guarantees 100 days of employment to every rural household willing to work.

Year	Households Provided Employment (in crore)	Total Person-days Generated (in crore)	Average Wage (₹/day)
2015–16	4.86	235.6	154
2016–17	5.05	235.1	161
2017–18	5.11	233.6	169
2018–19	5.26	267.9	182
2019–20	5.48	283.6	188
2020–21	7.55	389.1	201
2021–22	6.94	363.4	209
2022–23	6.18	342.3	213[1]

Data Source: https://nrega.nic.in (MGNREGA Annual Reports (2015–2023))

Interpretation: The demand for employment under MGNREGA increased sharply during the COVID-19 pandemic (2020–21). Rising average wages indicate improved rural income levels. Over 29 crore individuals have benefited since inception, making MGNREGA the world's largest public works programme.

Self-Employment and Entrepreneurship through PMMY: The Pradhan Mantri MUDRA Yojana (PMMY) focuses on providing loans to micro and small enterprises to foster self-employment and entrepreneurship.

Financial Year	No. of Loans Sanctioned (in crore)	Amount Sanctioned (₹ in crore)	Amount Disbursed (₹ in crore)
2015–16	3.48	1,37,449	1,32,954
2016–17	3.97	1,80,528	1,75,312
2017–18	4.81	2,53,677	2,46,437
2018–19	5.98	3,21,722	3,11,811
2019–20	5.83	3,23,573	3,16,099
2020–21	4.95	3,21,990	3,08,377
2021–22	5.36	3,30,600	3,15,802
2022–23	6.23	4,00,408	3,89,200

Data Source: https://www.mudra.org.in (PMMY Annual Reports (2015–2024)

Interpretation: The cumulative growth in disbursement under PMMY shows increasing credit flow to small entrepreneurs. A large proportion (around 68%) of loans were sanctioned to women beneficiaries. The scheme has significantly contributed to rural entrepreneurship and micro-enterprise creation, leading to local job generation and income diversification.

Financial Inclusion through PMJDY: The Pradhan Mantri Jan Dhan Yojana (PMJDY) has revolutionised financial inclusion in India by bringing unbanked citizens into the formal financial system.

1

Year	Total Bank Accounts Opened (in crore)	Total Balance in Accounts (₹ in crore)	No. of RuPay Cards Issued (in crore)
2015	17.9	25,000	12.4
2017	28.2	60,000	20.5
2018	31.6	84,000	23.6
2020	38.1	1,19,706	29.0
2022	46.0	1,73,949	33.5
2024	51.0	2,13,450	38.1

Data Source: https://pmjdy.gov.in

Interpretation: The number of accounts increased almost threefold between 2015 and 2024. PMJDY facilitated direct transfer of subsidies, wages, and pensions, drastically reducing leakage and corruption. The inclusion of women as account holders has promoted economic independence and savings behaviour among rural households.

Food and Nutrition Security through Annapurna and ICDS: The **Annapurna Scheme** and **Integrated Child Development Services (ICDS)** target the nutritional needs of vulnerable populations.

- Under Annapurna, more than **8 lakh beneficiaries** receive **10 kg of food grains per month** free of cost.
- ICDS covers over **100 million children and mothers**, providing meals, health check-ups, and preschool education.

Food and nutrition schemes have been crucial in addressing **hidden hunger**, improving child health, and promoting school attendance, particularly in tribal and backward districts.

Rural Housing through PMGAY: This scheme was launched in 1985 (as Indira Awas Yojana). The objective of this scheme is to provide financial assistance to BPL families for constructing pucca houses. This programme contributes directly to improving the living standards and social dignity of rural households.

Year	Houses Sanctioned (in lakh)	Houses Completed (in lakh)	Funds Released (₹ crore)
2016–17	33.0	24.0	13,500
2017–18	38.0	27.5	15,600
2018–19	44.0	32.8	18,750
2019–20	50.0	36.2	20,400
2020–21	59.0	42.0	24,300
2021–22	63.0	48.5	26,900
2022–23	68.0	53.7	29,800

Data Source: *https://pmayg.nic.in (PMGAY Annual Performance Reports (2016–2024)*

Interpretation: PMGAY has successfully improved the housing and living standards of millions of rural poor. The inclusion of eco-friendly housing materials and convergence with sanitation and electrification programmes enhances quality of life and social dignity.

Skill Development and Youth Empowerment through PMKVY & DDU-GKY: PMKVY was launched on 25th September 2014. The objective of this scheme is to provide skill development training for youth and enhance employability. The coverage of this scheme 21 states, 568 districts, 690 projects, and 82 industry sectors. The outcome of this scheme is 5.55 lakh youth trained; 1.34 lakh employed. PMKVY, as part of the *Skill India Mission*, has transformed rural youth into a skilled workforce.

Scheme	Beneficiaries Trained (in lakh)	Beneficiaries Placed (in lakh)	States Covered
PMKVY	55.5	13.4	21
DDU-GKY	36.2	9.1	27

Data Source*: https://www.msde.gov.in , https://pmkvyofficial.org, and https://ddugky.gov.in*

Interpretation: Skill development programmes have helped rural youth gain market-oriented skills. However, placement rates (around 24%) suggest the need for stronger linkage between training and job markets.

India's poverty alleviation schemes have yielded measurable outcomes in terms of income growth, employment creation, financial inclusion, and human development. The overall impact demonstrates progress toward sustainable and inclusive economic growth, though structural challenges persist.

FINDING & SUGGESTIONS

Findings: The study of various poverty alleviation programmes reveals multiple economic, social, and administrative dimensions of India's efforts toward poverty reduction. The findings are summarised under thematic heads below:

1. **Decline in Poverty Ratio:** India has recorded a consistent decline in poverty, with the percentage of people below the poverty line reducing from around 45% in 1993–94 to about 21.9% in 2011–12 (Planning Commission) and further to nearly 11.3% in 2023 (NITI Aayog). Schemes such as MGNREGA, PMJDY, and PMMY have

played a major role in raising rural incomes and promoting self-employment.

2. **Employment Generation:** MGNREGA has been a landmark in ensuring wage employment. Between 2015 and 2020, around **29 crore workers** received wage employment, while **PMMY** created millions of small entrepreneurs by disbursing loans worth more than ₹3 lakh crore. These schemes not only generated jobs but also enhanced the productivity of the rural workforce.
3. **Financial Inclusion:** The **Pradhan Mantri Jan Dhan Yojana (PMJDY)** has brought a large section of the population into the formal banking system. Over **38 crore accounts** have been opened, ensuring direct benefit transfers (DBT), reducing leakages, and fostering a culture of saving and financial discipline.
4. **Support to Micro and Small Enterprises: PMMY** and **Stand-Up India** schemes have provided accessible credit to small entrepreneurs, artisans, and vendors, thus promoting local economic activities and self-reliance among rural youth and women.
5. **Empowerment of Women:** Programmes like **DWCRA**, **Self Help Groups (SHGs)** under NRLM, and **PMJDY** have empowered women economically and socially. Access to credit, training, and participation in decision-making have improved their status within families and communities.
6. **Education and Nutrition:** Schemes such as the **Mid-Day Meal Programme**, **Integrated Child Development Services (ICDS)**, and **Kishori Shakti Yojana** have contributed to higher school enrolment, better nutrition, and reduced child labour. These have long-term positive impacts on human development.
7. **Housing and Basic Amenities:** The **Pradhan Mantri Gramin Awas Yojana (PMGAY)** has provided secure housing to over 80 lakh rural families. Safe shelter enhances health, sanitation, and social dignity, leading to improved quality of life.
8. **Social Security and Food Support:** The **National Family Benefit Scheme (NFBS)** and **Annapurna Scheme** provide financial and food security to elderly and vulnerable households, ensuring that the poorest sections are not left behind.

Suggestions

To further strengthen the effectiveness and reach of poverty alleviation programmes, the following detailed measures are suggested:

1. **Integrated Approach:** Combine multiple schemes with overlapping objectives (e.g., MGNREGA + PMGAY + NRLM) under a unified poverty alleviation mission to ensure synergy and better resource allocation.
2. **Localised Planning:** Encourage district-level poverty mapping using real-time data to identify priority areas, ensuring that funds are directed to regions with the highest poverty intensity.
3. **Dynamic Policy Review:** Conduct regular impact evaluations through independent agencies and NITI Aayog to modify schemes based on ground realities and beneficiary feedback.
4. **Strengthen Panchayati Raj Institutions (PRIs):** Empower PRIs and urban local bodies to take ownership of planning, monitoring, and implementing schemes, ensuring bottom-up development.
5. **Improve Capacity Building:** Regular training for government functionaries, NGO workers, and SHG members will ensure efficient service delivery and timely completion of projects.
6. **Leverage Digital Technology:** Expand the use of **digital portals, GIS mapping, mobile apps, and biometric attendance** to increase transparency and reduce leakages in wage and benefit distribution.
7. **Focus on Skill Development:** Expand PMKVY and DDU-GKY to include emerging sectors like renewable energy, digital services, and agro-processing. Skill mapping should be aligned with local industry demand.
8. **Microfinance and Rural Credit Access:** Strengthen microfinance institutions and cooperative banks to provide low-interest credit to SHGs, farmers, and rural artisans.
9. **Support for Start-ups in Rural Areas:** Introduce special incentives and incubation centres to promote youth-led rural enterprises using local resources and traditional crafts.
10. **Gender Equity:** Introduce more targeted initiatives for women entrepreneurs and ensure equal wage distribution under employment schemes.
11. **Health and Education Integration:** Link poverty alleviation with public health and education programmes to break the intergenerational cycle of poverty.
12. **Targeting Vulnerable Groups:** Ensure focused support for Scheduled Castes, Scheduled Tribes, minorities, and differently-abled persons through special components in every scheme.
13. **Link Poverty Alleviation with Sustainable Development Goals (SDGs):** Integrate national programmes with UN SDG targets, particularly SDG 1 (No Poverty), SDG 5 (Gender Equality), and SDG 8 (Decent Work and Economic Growth).

CONCLUSION

India's poverty alleviation policies have gradually transformed from traditional welfare schemes to comprehensive human development programmes. Initiatives such as MGNREGA, PMJDY, PMMY, and PMKVY have significantly improved living standards, employment, and financial security. However, the ultimate success of these programmes depends not merely on the number of beneficiaries or funds allocated but on the quality of implementation, community engagement, and policy adaptability to changing socio-economic conditions. A holistic approach combining economic empowerment, education, health care, and environmental sustainability is essential to achieve the long-term vision of a Poverty-Free and Self-Reliant India.

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ONE DISTRICT ONE PRODUCT (ODOP) SCHEME: ECONOMIC IMPLICATIONS, CHALLENGES, AND PROSPECTS FOR SUSTAINABLE DEVELOPMENT IN KARNATAKA, INDIA

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ABSTRACT **DOI No: 10.36713/epra24712** **Article DOI**: https://doi.org/10.36713/epra24712

The One District One Product (ODOP) scheme, a visionary initiative introduced by the government of Karnataka, stands as a beacon of localized economic growth and industrial development. The study on the significance of this initiative highlights its crucial role in preserving cultural heritage, reducing regional imbalances, promoting economic growth, creating jobs, and fostering sustainable development. This article provides a comprehensive overview of its economic impact, successful case studies, challenges faced, and prospects, emphasizing the potential for sustainable growth and development in the state's districts. This analysis underscores the importance of ODOP as an ambitious development program with far-reaching benefits for the State's overall progress and development. In addition, the study's recommendations provide a roadmap for enhancing the scheme's implementation, including strategies for awareness campaigns, infrastructure development, market access facilitation, skill development, sustainable practices, resource allocation, and collaboration among stakeholders.

KEYWORDS: ***One District One Product (ODOP), Karnataka, Economic Impact, District-specific Products, Challenges, Rural Development and Sustainability.***

INTRODUCTION

The One District One Product (ODOP) scheme, a visionary initiative introduced by the government of Karnataka, stands as a beacon of localized economic growth and industrial development. This innovative program seeks to harness the unique strengths of each district within the state to propel its economic potential to new heights. Through a meticulous process of product identification, comprehensive support, and stakeholder collaboration, the ODOP scheme aims to nurture specialized industries, foster employment opportunities, and bolster the overall economic landscape of Karnataka. In this introduction, the study delves into the core principles and objectives of the ODOP scheme, shedding light on its district-centric approach, job creation potential, and its pivotal role in promoting economic prosperity.

The Origin and Implementation of ODOP Scheme in Karnataka

The One District One Product (ODOP) scheme in Karnataka is a remarkable initiative that has its roots in the successful model introduced in Uttar Pradesh. This scheme, designed to bolster local entrepreneurship and drive economic development, was initially pioneered in Uttar Pradesh with the primary goal of pinpointing one distinctive product from each district and offering essential support for its growth. Impressed by the positive outcomes witnessed in Uttar Pradesh, the government of Karnataka followed suit, implementing this visionary scheme to harness the diverse potential of its various districts.

The ODOP scheme was officially launched in Karnataka in 2019, with a clear mission to invigorate the rural economy, create employment opportunities, and champion sustainable development. The state government embarked on a quest to identify specific products that were intricately intertwined with the culture, heritage, and natural resources of each district. As an illustrative example, the historic tradition of silk production led to the Ramanagara district's designation as an ODOP district.

To ensure the effective execution of this scheme, the government extended critical support to entrepreneurs engaged in the identified products. This support encompassed financial assistance, technical guidance, the establishment of vital market linkages, and the development of essential infrastructure facilities. Furthermore, the scheme included comprehensive training programs, designed to enhance the skills and knowledge of artisans and craftsmen, thereby ensuring their proficiency in their respective fields.

The tangible results of the ODOP scheme have been nothing short of impressive since its inception. Not only has it breathed new life into fading traditional industries, but it has also opened

up fresh avenues for income generation. Furthermore, it has acted as a compelling force in persuading rural youth to remain in their home districts rather than seeking employment opportunities in urban areas.

Importance of the Study

The study on the significance of the One District One Product (ODOP) initiative in Karnataka highlights its crucial role in preserving cultural heritage, reducing regional imbalances, promoting economic growth, creating jobs, and fostering sustainable development. This analysis underscores the importance of ODOP as a transformative program with far-reaching benefits for the state's overall progress and development.

Statement of the Problem

The implementation of the One District One Product (ODOP) scheme in Karnataka faces several challenges that need to be addressed for its successful execution. These challenges include a lack of awareness and understanding about district-specific products, infrastructure deficiencies, limited access to markets, quality and skill enhancement needs, resource allocation, sustainability, and competition. To ensure the scheme's effectiveness, it is essential to systematically tackle these challenges through various solutions and strategies.

REVIEW OF LITERATURE

The ODOP Scheme in India, also known as the One District One Product scheme, has garnered significant attention in recent years. This government initiative aims to foster local entrepreneurship and economic development by identifying a unique product from each district and providing support for its production and marketing. To gain a comprehensive understanding of the scheme's impact and effectiveness, it is crucial to conduct a literature review.

Several studies have examined the ODOP Scheme's implementation and outcomes. For instance,

1. **Bajpai, L. (2020)**: delves into the ODOP scheme launched by the Uttar Pradesh government, aiming to boost local enterprises, generate employment, and foster inclusive development. Through a case study focusing on Chikankari entrepreneurs, the author explores awareness, attitudes, and challenges related to the scheme. The study highlights the need for greater awareness and support mechanisms for entrepreneurs participating in ODOP.
2. **Tripathi, A. and Agrawal, N. (2021)**: analyze the ODOP programme's impact on employment generation, export promotion, and economic growth in Uttar Pradesh. Through a case study approach and extensive literature review, they highlight the positive outcomes of the scheme while emphasizing the importance of public engagement for its success.
3. **Maurya, N. and Misra, R. (2021)**: assess the socio-economic impact of the ODOP scheme across various districts in India. Their study, based on beneficiary surveys and analysis of aspirational districts, underscores the scheme's positive contribution to livelihoods, employment, and income generation.
4. **Srivastava, D. (2021)**: discusses the development of a website dedicated to showcasing and selling indigenous products and crafts from different districts of India under the ODOP scheme. The author emphasizes the potential of such a platform in providing employment opportunities and promoting local craftsmanship.
5. **Jayasudha, J. and M, S. S. (2022)**: explore the origins and expansion of the One District One Product (ODOP) concept, tracing its roots to Japan in 1979 and its subsequent adoption in various Asian countries. Focusing on India, particularly Uttar Pradesh, the authors highlight the government's efforts to promote indigenous products and crafts through this scheme. They discuss the implementation of ODOP in Tamil Nadu and present survey findings indicating a moderate level of perception among government officials regarding the scheme.
6. **Mahur, C., Tiwari, S., & Chauhan, S. (2022)**: address the lack of awareness and financial challenges faced by individuals in rural areas regarding the ODOP scheme. They propose strategies such as extensive communication campaigns and financial support to bridge the information gap and facilitate economic growth at the district level.

In summary, the literature review on the ODOP Scheme highlights its potential to drive economic development and empower local communities across India. Through insights on employment generation, marketing strategies, and government support, these studies underscore the scheme's effectiveness in fostering entrepreneurship and economic growth. Despite challenges, the positive outcomes observed in various states emphasize the scheme's role in promoting sustainable development and upliftment at the grassroots level in India.

OBJECTIVES OF THE STUDY

1. To comprehensively understand the concept and significance of the "One District, One Product" (ODOP) initiative in India, tracing its cultural heritage roots.
2. To analyze the objectives and key components of the ODOP scheme, with a particular focus on its impact on local entrepreneurship, employment generation, and cultural preservation.
3. To evaluate the advantages and benefits of the ODOP initiative, emphasizing its role in empowering micro-enterprises, fostering economic growth, and sustaining cultural heritage in rural areas.
4. To examine the implementation process and current status of the ODOP initiative in India, with a specific focus on product identification strategies and their impact on local economies.
5. To assess the case of the ODOP scheme in Karnataka, analyzing its potential contribution to local economic development, cultural preservation, and evaluating its economic impact on the districts.

METHODOLOGY

This study is based on secondary sources, with data collected from various sources such as reports, journals, daily newspapers, magazines, and various websites.

ANALYSIS AND DISCUSSION

Bridging Biodiversity and Tradition: The ODOP Initiative in India

The ODOP Initiative in India is a government-led program that seeks to empower rural communities by revitalizing traditional crafts and promoting biodiversity conservation. Through this

initiative, India aims to connect local artisans with global markets while preserving cultural heritage and protecting natural resources. It fosters sustainable development by merging tradition, biodiversity, and economic growth.

India's Exceptional Biodiversity and Traditional Skills

India's biodiversity is highly regarded worldwide, encompassing a vast spectrum of terrains, crops, foods, climates, and more. This biodiversity extends to diverse community traditions and economic activities that have thrived across the nation. Different regions of India have cultivated distinctive expertise in areas like agriculture, handicrafts, jewelry, textiles, and other goods, with these skills passing down through generations. These traditions are deeply intertwined with local practices, culture, and knowledge, employing traditional methods to craft products intimately tied to specific geographical regions.

The Essence of ODOP: Honoring Traditional Skills

The essence of the 'One District, One Product' (ODOP) initiative is rooted in the rich tapestry of traditional skills and occupations that have flourished in Indian villages for centuries. These skills encompass a wide array of activities, including carpentry, barbering, pottery, blacksmithing, and more, each integral to the cultural heritage and community life.

The Origins of ODOP: A Global Perspective

The concept of promoting a distinctive product from a specific region to stimulate economic growth and improve local living standards finds its origins in Japan's "One Village One Product (OVOP)" initiative dating back to 1979. OVOP was guided by principles such as thinking locally, acting globally, fostering self-reliance, and nurturing creativity through human resource development. This model was subsequently embraced by numerous countries worldwide under various names, such as One Commune One Product (Vietnam), One Tambon One Product (Thailand), One Town One Product (Philippines), One Mahalla One Product (Uzbekistan), One Island One Product (Oceania), and Our Village Our Pride (Afghanistan), each achieving varying levels of success.

ODOP in India: A Catalyst for Transformation

The implementation of ODOP in India presents a unique opportunity for transformation by consolidating, fortifying, and optimizing regional products. These products carry significance not only in terms of their economic contributions, which include employment generation, value addition, and trade opportunities but also in their profound impact on the socio-cultural fabric of their respective regions.

In essence, ODOP serves as a bridge between India's remarkable biodiversity and the traditional skills and crafts that define its diverse communities. It offers a platform to preserve and promote these invaluable assets while fostering economic growth and enhancing the cultural heritage of India's districts.

The One District One Product Scheme in India

The "One District, One Product" (ODOP) initiative, initiated by the Ministry of Food Processing Industries, seeks to unlock the full potential of districts in India, particularly in rural areas. It accomplishes this by identifying, promoting, and branding a specific product from each district, with the ultimate goal of transforming every district into an export hub. This scheme contributes to the "Atmanirbhar Bharat" vision by scaling up manufacturing, supporting local businesses, and expanding market access, both domestically and internationally.

The ODOP program was originally launched by the Uttar Pradesh Government on January 24, 2018, and its success in Uttar Pradesh led to its nationwide implementation in 2020, as highlighted in the Union budget of that year. The initiative operates in conjunction with the "Districts as Exports Hub" initiative led by the Directorate General of Foreign Trade (DGFT), Department of Commerce, with the Department for Promotion of Industry and Internal Trade playing a pivotal role. The state identifies the ODOP product for each district.

ODOP is a comprehensive scheme aimed at preserving and promoting traditional local crafts and skills while also boosting local incomes, reducing unemployment, and enhancing product quality. It integrates local production with tourism and addresses economic disparities, aiming to expand its presence in both national and international markets.

Sub-schemes under ODOP, including the Common Facility Centre (CFC) Scheme, Marketing Development Assistance Scheme, Finance Assistance Scheme, and Skill Development Scheme, provide various forms of support to artisans and entrepreneurs. Advantages of ODOP include stimulating micro-enterprise growth, facilitating access to credit, integration into organized markets, and improving common production services.

The initiative operates through distinct phases, including product identification, promotion, market access, skill development, employment generation, and sustainable development. It benefits districts by offering capital investment, marketing and branding support, subsidies, credit-linked grants, seed capital, and training. ODOP is operationally merged with the "Districts as Export Hub" initiative, with the shared goal of transforming districts into export hubs and bolstering local manufacturing.

During its initial phase, ODOP identified 106 products with export potential across various districts, with a particular focus on food products, traditional crafts, and innovative items. While the primary support is directed toward ODOP products, existing units engaged in processing other products may also receive assistance if they meet specific criteria. Overall, the ODOP initiative seeks to invigorate local economies, empower rural entrepreneurs, and strengthen India's export capabilities by leveraging the unique strengths of each district and fostering economic self-reliance.

The Present Status of the ODOP Scheme in India

The scheme utilizes a One District, One Product (ODOP) strategy to leverage the advantages of scale, encompassing input procurement, shared services access, and product marketing. States have the responsibility of selecting a particular food item for each district, with considerations for existing clusters and the availability of raw materials. Assistance is provided to facilitate the development of shared infrastructure, branding, and marketing for the chosen product.

The program also strongly emphasizes the creation of value-added products from waste and minor forest resources while giving special attention to Aspirational Districts.

Under this initiative, the Ministry has conferred ODOP status on 137 distinct products across 710 districts spanning 35 States and Union Territories. An allocation of ₹200.30 crore has been set aside for 75 incubation proposals, with 52 approvals granted during the year 2020-21 and 23 in 2021-22.

One District One Product Scheme in Karnataka:

The "One District, One Product" (ODOP) scheme is a government initiative set to be implemented in Karnataka, India, to promote micro food processing industries at the district level. Under this scheme, each district in Karnataka will identify and promote one specific product that is both locally prevalent and has market potential. The primary objectives of the initiative are to stimulate the local economy, provide support to small businesses, and generate employment opportunities within the state.

The key aspects of the ODOP scheme in Karnataka are as follows:

1. **District-wise Product Identification:** The government has identified specific districts for different types of food products, such as horticultural products, agricultural products, marine products, poultry, and bakery products. These selections were made based on factors like product availability, current processing status, and marketing potential.
2. **Credit-Linked Capital Subsidy:** Entrepreneurs involved with the selected products in each district are eligible for credit-linked capital subsidies. This subsidy amounts to 35% of the project cost, with a maximum limit of ₹10 lakh per unit and ₹30 lakh per project.
3. **Eligibility for Subsidy:** The subsidy is not limited to individual entrepreneurs; food processing organizations and self-help groups/producer cooperatives can also avail of this benefit.
4. **Financial Allocation:** The financial burden is shared between the Union and State governments, with a 60:40 ratio. The State government is expected to allocate nearly ₹500 crore for the program over five years, starting from 2020-21 to 2024-25, with a significant portion earmarked in the 2021-22 budget.
5. **Monitoring and Implementation:** Implementation of the program is monitored by a State-level committee headed by the Additional Chief Secretary and the Development Commissioner. District-level committees headed by Deputy Commissioners oversee the program's progress at the local level.
6. **Nodal Agencies:** The Karnataka State Agricultural Produce Processing and Export Corporation Ltd. is the project's nodal agency. The Central Food Technological Research Institute in Mysore is providing technical expertise and support for the initiative.
7. **Importance of the Unorganized Sector:** The policy recognizes the significant contribution of unorganized micro-food processing enterprises to employment, output, and value addition in the food processing sector in Karnataka. It emphasizes that these enterprises often face challenges such as limited skills, access to modern technology, and low productivity and innovation.

The "One District, One Product" scheme in Karnataka aims to boost the micro-food processing industry in the state by providing financial support, technical expertise, and marketing avenues to entrepreneurs and organizations involved in this sector. It also acknowledges the importance of addressing the challenges faced by the unorganized food processing sector in the state.

Current Status of the One District One Product (ODOP) Initiative in the State of Karnataka

In the Karnataka Budget 2021-22, the state government has proposed a significant initiative to strengthen the 'One District, One Product' policy to unlock the untapped potential of unorganized micro food processing. This initiative includes providing support in the form of loans, marketing channels and technical expertise. For this program, the state has carefully selected and sanctioned specific districts for different product categories. There are 20 districts for horticultural products, six for agricultural products, two for marine products, one for poultry and one for bakery products. The following table lists the One District One Product (ODOP) initiative in the state of Karnataka.

Table-1
List of One District One Product in Karnataka

Si.no	District	Product
1	Bagalkote	Onion
2	Belagavi	Jaggery
3	Bellary	Fig
4	Bengaluru Rural	Poultry Products
5	Bengaluru Urban	Bakery Products
6	Bidar	Ginger
7	Chamarajanagar	Turmeric
8	Chikkaballapura	Tomato
9	Chikkamagalur	Spices
10	Chitradurga	Groundnut Product
11	Dakshina Kannada	Marine Products
12	Davanagere	Millets
13	Dharwad	Mango
14	Gadag	Byadagi Chillies
15	Hassan	Coconut Products
16	Haveri	Mango

17	Kalaburgi	Red Gram
18	Kodagu	Coffee
19	Kolar	Tomato
20	Koppal	Guava
21	Mandya	Jaggery
22	Mysore	Banana
23	Raichur	Chillies
24	Ramanagara	Coconut Products
25	Shivamogga	Pineapple
26	Tumkuru	Coconut Products
27	Udupi	Marine Products
28	Uttara Kannada	Spices
29	Vijayapura	Lime/ Lemon
30	Yadagiri	Groundnut Product

Source: Karnataka Economic Survey 2022-23.

Table 1 provided lists the "One District One Product" (ODOP) initiative in the state of Karnataka, India. This initiative aims to promote specific products from each district in the state, emphasizing the unique strengths and resources of each district to boost local economy and employment. The idea behind the ODOP program is to encourage specialization and development of these products, which are often well-suited to the local climate, resources, and skills of the people in each district. By focusing on these specific products, the government aims to enhance agricultural and industrial activities in these regions, generate employment opportunities, and improve the overall socio-economic conditions in the state.

Economic Impact of One District One Product Scheme on Karnataka

The One District One Product (ODOP) scheme in Karnataka has indeed had a notable economic impact on the state, bringing about diversification, employment generation, and rural development. Here, delve into the specific economic impacts of this scheme:

1. **Diversification of the Economy**: The ODOP scheme has played a pivotal role in diversifying Karnataka's economy. Identifying and promoting specific products so that each district has a competitive advantage in the scheme has encouraged investment and growth in various industries. For instance, the emphasis on coffee production in the Chikkamagaluru district has attracted investment in coffee plantations and processing units, leading to increased production and exports. This diversification helps in reducing economic dependence on a single sector and enhances overall economic resilience.
2. **Employment Generation**: One of the most significant economic impacts of the ODOP scheme is its contribution to employment generation. By reviving and supporting traditional crafts and industries, such as silk weaving in Mysore district or sandalwood carving in Shimoga district, the scheme has created livelihood opportunities for artisans and craftsmen. This not only reduces unemployment but also preserves and promotes traditional skills, ensuring that local communities can earn a sustainable income.
3. **Rural Development**: The ODOP scheme has also had a positive effect on rural development. The government's investment in infrastructure and marketing facilities in selected districts has improved the overall economic landscape. For instance, the establishment of cold storage units in the Kolar district has not only reduced post-harvest losses but has also enhanced the productivity of the horticultural sector. This infrastructure development is critical for strengthening rural economies and increasing agricultural and horticultural output.
4. **Economic Resilience**: The scheme's focus on district-specific products contributes to the resilience of the state's economy. By promoting products that are well-suited to each district's natural resources and capabilities, Karnataka becomes less susceptible to external economic shocks. This strengthens the state's ability to weather economic challenges and uncertainties.

In summary, the One District One Product scheme in Karnataka has had a substantial economic impact by fostering diversification, creating employment opportunities, and contributing to rural development. To sustain these positive effects, the government must continue supporting this initiative through adequate funding, resources, and ongoing efforts to identify and promote district-specific products. This will further enhance Karnataka's economic growth and prosperity.

Case Studies: Successful Products under the ODOP Scheme in Karnataka

The success stories of products under the One District One Product (ODOP) scheme in Karnataka exemplify the positive impact of this initiative on local entrepreneurship and traditional craftsmanship. Here are case studies of three such successful products:

1. **Channapatna Toys (Ramanagara District)**
   - Channapatna toys are traditional wooden toys handcrafted in Ramanagara district. Skilled artisans use age-old techniques to create these colorful and charming toys.
   - Government Support: The government's intervention in providing training and financial assistance to the artisans has been pivotal. It has helped improve the artisans' skills and enabled them to expand their market reach.
   - Global Recognition: Thanks to these efforts, Channapatna toys have not only gained popularity within India but have also found a market in various countries through exports. Their unique and eco-friendly nature appeals to a global audience.

2. **Mysore Silk Sarees (Mysuru District)**
   - Mysore silk sarees are renowned for their exquisite craftsmanship and quality. They are a symbol of cultural heritage in Mysuru district.
   - Government Support: The government's role in providing infrastructure support and marketing assistance has been crucial. It has helped in preserving and promoting this traditional art form.
   - Domestic and International Appeal: Mysore silk sarees have garnered a loyal customer base both within India and internationally. They are sought after for their timeless elegance and quality.
3. **Bidriware Handicrafts (Bidar District)**
   - Bidriware is a unique art form from the Bidar district, involving intricate silver inlay work on metal objects like vases, bowls, and jewelry.
   - Government Support: The government's initiatives, including skill development programs and marketing efforts, have boosted the recognition and marketability of Bidriware products.
   - National and International Recognition: Bidriware handicrafts have gained recognition on both national and international platforms. The craftsmanship and beauty of these products have attracted collectors and enthusiasts from around the world.

In conclusion, the ODOP scheme in Karnataka has been a catalyst for promoting local entrepreneurship and preserving traditional art forms. The government's support through training, financial aid, infrastructure development, and marketing assistance has led to the success of products like Channapatna toys, Mysore silk sarees, and Bidriware handicrafts. These success stories not only contribute to the economic growth of their respective districts but also serve as cultural ambassadors, representing the rich heritage and craftsmanship of Karnataka on a global stage.

Challenges Faced in Implementing One District One Product Scheme in Karnataka

The implementation of the One District One Product (ODOP) scheme in Karnataka, like any ambitious development initiative, faces various challenges that must be addressed for its successful execution. Here are some of the prominent challenges:

1. **Lack of Awareness and Understanding**: Many local communities in Karnataka are often unaware of the unique products or industries associated with their districts. This lack of awareness stems from limited exposure and marketing skills. To overcome this challenge, awareness campaigns and educational programs must be conducted to help communities understand the potential and significance of their products. These campaigns should emphasize the economic opportunities and cultural heritage linked to these products.
2. **Infrastructure Deficiencies**: Insufficient infrastructure is a significant challenge in the successful implementation of the ODOP scheme. This includes inadequate transportation facilities, storage capacity, and access to markets. Without proper infrastructure, it is challenging to efficiently produce, store, and distribute products beyond local markets. Investment in infrastructure development is crucial to overcome these bottlenecks.
3. **Limited Access to Markets**: Access to markets, especially regional and international markets, is critical for the success of ODOP products. Many districts face challenges in marketing their products beyond their immediate surroundings. Government support in creating market linkages and facilitating market access for ODOP products can help address this challenge.
4. **Quality and Skill Enhancement**: To compete in today's market, product quality and design play a pivotal role. Skill development programs are essential to enhance the craftsmanship, design skills, packaging techniques, and marketing strategies of artisans and producers in each district. Providing training and workshops to improve product quality and marketability is crucial.
5. **Resource Allocation**: Adequate funding and resources are required to implement the ODOP scheme effectively. Ensuring that each district receives the necessary financial and technical support can be a logistical challenge. Clear and equitable resource allocation strategies need to be in place.
6. **Sustainability and Scaling**: Maintaining the momentum of ODOP initiatives and scaling up successful products can be challenging. It's essential to have a long-term vision and sustainability plan to ensure that the benefits are not short-lived.
7. **Market Competition**: ODOP products may face competition from similar products produced elsewhere, including those with an established market presence. Strategies for differentiation and branding are necessary to make these products stand out.

In summary, while the ODOP scheme holds significant potential for economic development in Karnataka, it is essential to address the challenges mentioned above systematically. This can be achieved through a combination of awareness-building, infrastructure development, skill enhancement programs, market access support, and effective resource allocation. Overcoming these challenges will be instrumental in realizing the full economic and cultural potential of the ODOP scheme in Karnataka.

Future Prospects of One District One Product Scheme in Karnataka

The One District One Product (ODOP) scheme in Karnataka indeed holds promising prospects for the state's economic development. As it continues to evolve and expand, here are some key prospects for the scheme:

1. **Diversification and Specialization**: ODOP can further diversify and specialize the economies of Karnataka's districts. By identifying and promoting unique products and industries, districts can develop niches that make them more competitive in both domestic and global markets. This diversification will enhance resilience in the face of economic challenges.
2. **Supply Chain Strengthening**: Improving transportation networks, storage facilities, and

logistics will be crucial for the success of ODOP. Prospects include investments in supply chain infrastructure to facilitate the smooth movement of goods, reduce transportation costs, and ensure products reach markets efficiently.

3. **Sustainable Agriculture and Resource Management**: ODOP can play a pivotal role in promoting sustainable agriculture and resource management. Encouraging environmentally friendly practices and responsible resource utilization will be essential for the long-term viability of ODOP products.
4. **Export Promotion**: The scheme can focus on expanding the export potential of district-specific products. By leveraging international markets and trade agreements, ODOP can help districts increase their exports, thereby contributing to foreign exchange earnings for the state.
5. **Tourism Integration**: ODOP products can be integrated into the tourism sector. Visitors to Karnataka can experience and purchase these unique products as part of their travel experiences. This not only generates additional income for local artisans but also boosts tourism revenue.
6. **Digital Marketing and E-commerce**: As the digital landscape evolves, ODOP can leverage online platforms for marketing and sales. The scheme can establish e-commerce channels to facilitate the purchase of district-specific products, thereby increasing their reach to a wider customer base.
7. **Skill Development and Entrepreneurship**: Continued investment in skill development programs will be essential. Empowering individuals with the skills needed for specific industries will ensure a sustainable supply of skilled labor, fostering entrepreneurship and economic growth.
8. **Branding and Promotion**: Prospects include further branding and promotion efforts to increase product visibility. Effective marketing strategies can create brand recognition for ODOP products, both nationally and internationally.
9. **Socio-Economic Development**: ODOP can contribute significantly to the socio-economic development of districts. By creating employment opportunities and supporting local industries, it can improve the standard of living and overall well-being of communities.
10. **Government and Stakeholder Collaboration**: The success of ODOP depends on collaboration between the government, local stakeholders, and communities. Prospects include strengthening these partnerships to ensure the scheme's sustainability and impact.

In conclusion, the One District One Product scheme in Karnataka has the potential to be a transformative force for the state's economic development. By addressing challenges, investing in infrastructure, promoting sustainable practices, and leveraging emerging opportunities, ODOP can contribute to the prosperity of Karnataka's districts and enhance their unique identities in the global market.

Findings of the Study

The study finds that the ODOP scheme in Karnataka has the potential to drive economic growth, promote cultural heritage, and improve the standard of living in districts across the state. However, addressing the identified challenges and implementing the recommended strategies will be crucial for realizing the scheme's full potential and ensuring its long-term sustainability.

Recommendations

1. Launch extensive awareness campaigns at the district level to educate local communities about the significance of district-specific products, economic opportunities, and cultural heritage preservation.
2. Invest in infrastructure development, including transportation networks, storage facilities, and packaging units, to facilitate efficient production and distribution of ODOP products.
3. Develop a dedicated team or agency to facilitate market access for ODOP products, both domestically and internationally. Collaborate with e-commerce platforms to promote online sales of district-specific products, expanding their reach to a wider customer base.
4. Implement skill development programs and workshops to enhance the craftsmanship, design, and quality of ODOP products. Encourage the adoption of sustainable and eco-friendly production practices.
5. Ensure transparent allocation of financial resources to districts based on their specific product needs and potential. Establish mechanisms for regular monitoring and evaluation of resource utilization to prevent misallocation.

CONCLUSION

The study on the One District One Product (ODOP) scheme in Karnataka highlights the significant impact and potential of this initiative in driving economic growth, preserving cultural heritage, and improving the livelihoods of local communities. The scheme has diversified the state's economy, created employment opportunities, and contributed to rural development. However, the study also identifies several challenges, including awareness gaps, infrastructure deficiencies, limited market access, and quality enhancement needs, among others. To ensure the continued success of ODOP in Karnataka, it is essential to address these challenges with a systematic approach. The study's recommendations provide a roadmap for enhancing the scheme's implementation, including strategies for awareness campaigns, infrastructure development, market access facilitation, skill development, sustainable practices, resource allocation, and collaboration among stakeholders. These recommendations aim to strengthen ODOP's impact and sustainability. In summary, the One District One Product scheme in Karnataka has the potential to be a transformative force for the state's economic and cultural development. With concerted efforts and the implementation of the recommended strategies, ODOP can continue to foster economic prosperity and preserve the rich heritage of Karnataka's districts, ultimately leading to a brighter and more inclusive future for all.

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