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CONTENTS

EDITORIAL

The present issue of the journal brings together a diverse yet interconnected set of scholarly contributions that reflect the evolving dynamics of consumers, workplaces, technology, and financial systems in a rapidly transforming socio-economic landscape.

This issue presents a multifaceted exploration of sustainability, gender equity, digital transformation, and monetary innovation. It opens with studies on women's preferences for green skincare and sustainable packaging, highlighting how environmental awareness, safety, and ethical branding shape consumption. Gender equity features prominently through analyses of women as drivers of economic growth and empirical insights into workplace gender inequality, revealing structural and experiential barriers to inclusion. Digital transformation is examined via influencer–affiliate integration in e-commerce and UPI adoption in unorganized sectors, underscoring financial inclusion and market efficiency. The issue concludes with a case study on the Indian Rupee and CBDC, offering perspectives on India's evolving digital monetary landscape.

We are proud to publish the Vol. 23 No: 02, edition of SYNERGY- I.T.S Journal of I.T & Management. The mission of SYNERGY- I.T.S Journal of I.T & Management is to publish empirical research that tests, extends, or builds management theory and contributes to management practice. All empirical methods including, but not limited to, qualitative, quantitative, field, laboratory, meta-analytic, and mixed methods are welcome.

As we embark on this journey of discovery and exploration, we invite you, our readers, to join us in the pursuit of knowledge and understanding.

Editor—Synergy

Female Consumers' Preferences for Green Skincare Products: A Comprehensive Analysis

Dr. Nirmesh Sharma[1]

Seema Rani[2]

Abstract

In recent years, sustainability and eco-consciousness have significantly influenced consumer behavior, particularly in the beauty and personal care industry. This research explores female consumers' preferences for green skincare products, examining key factors that drive purchasing decisions, such as environmental awareness, ingredient safety, brand ethics, and product effectiveness. The study also analyzes demographic variations, marketing influences, and perceived benefits of green skincare products. Using qualitative and quantitative data, this paper provides insights into how businesses can effectively cater to the growing demand for eco-friendly skincare solutions. The global skincare industry has witnessed a paradigm shift towards sustainability, driven by increasing consumer awareness of environmental and health concerns. Female consumers, in particular, have emerged as a key demographic in the green skincare market, favoring products formulated with natural, organic, and eco-friendly ingredients. This study provides a comprehensive analysis of female consumers' preferences for green skincare products, examining the factors influencing their purchasing decisions, including environmental consciousness, health considerations, brand transparency, and social influences. The demand for green skincare is primarily driven by growing concerns over the adverse effects of synthetic chemicals, microplastics, and excessive packaging waste. Women, as primary consumers in the skincare industry, exhibit a heightened preference for products that align with their values of sustainability and ethical responsibility. This study explores how factors such as perceived product efficacy, trust in certifications, and ingredient transparency influence purchasing behaviors. Additionally, the role of marketing strategies, including influencer endorsements and eco-labeling, in shaping consumer perceptions is examined.

An in-depth analysis of consumer behavior suggests that female consumers value safety, efficacy, and sustainability when selecting skincare products. Many are willing to pay a premium for brands that demonstrate a commitment to green initiatives, such as cruelty-free testing,

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biodegradable packaging, and carbon-neutral production processes. However, despite growing awareness, some barriers to adoption remain, including skepticism regarding green washing practices, higher price points, and limited availability of effective green alternatives.

The study also highlights demographic variations in green skincare preferences. Younger consumers, particularly Millennials and Gen Z, are more likely to prioritize ethical sourcing, minimalistic formulations, and sustainable packaging, while older demographics tend to focus on proven efficacy and dermatological safety. Furthermore, regional and cultural differences impact consumer perceptions of green skincare, with Western markets placing significant emphasis on organic and vegan formulations, whereas Asian consumers often prioritize herbal and traditional botanical extracts. Social media and digital platforms play a crucial role in influencing purchasing decisions. The rise of beauty influencers, product reviews, and brand transparency on social media has significantly shaped consumer trust and brand loyalty. Brands that effectively communicate their sustainability efforts through storytelling, third-party certifications, and corporate social responsibility initiatives are more likely to gain consumer preference.

Despite the positive growth in the green skincare market, challenges remain in balancing sustainability with product performance. Many consumers express concerns about the efficacy of natural alternatives compared to conventional products. Additionally, the lack of standardized regulatory frameworks for green skincare claims can contribute to consumer confusion and mistrust.

Future research should explore the long-term shifts in consumer behavior towards green skincare, the economic feasibility of sustainable formulations, and the impact of innovative green technologies on product effectiveness. Moreover, investigating cross-cultural differences and the role of government policies in promoting eco-friendly beauty products would provide valuable insights for industry stakeholders. In conclusion, female consumers' preferences for green skincare products are influenced by a complex interplay of environmental awareness, health consciousness, brand credibility, and social influences. As sustainability continues to drive consumer choices, brands must adopt transparent, ethical, and scientifically backed approaches to meet the evolving

Keywords: Female Consumers, Skin Care, Green Products

1. Introduction

1.1 Background of Green Skincare

The skincare industry has evolved with increasing awareness of environmental sustainability and health-conscious consumption. Green skincare products, characterized by natural, organic, and eco-friendly ingredients, are becoming main stream due to concerns over synthetic chemicals and environmental impact. Background of the Skincare Industry and Sustainability

The beauty and personal care industry has long been defined by trends in innovation, performance, and luxury. However, in recent years, the growing global consciousness regarding environmental degradation and personal health has spurred an increasing interest in products that prioritize natural ingredients and sustainable practices. Green skincare—defined as products formulated with organic, naturally derived ingredients and packaged using sustainable methods—has emerged as a crucial segment in this transformation.

Female consumers, in particular, are at the forefront of this movement. With rising awareness about the potentially harmful effects of synthetic chemicals and a strong inclination toward wellness and self-care, many women now actively seek products that combine efficacy with eco-friendly credentials. This trend not only reflects a shift in purchasing behavior but also indicates a broader cultural movement that places environmental and ethical concerns at the center of consumer decision-making.

1.2 Research Objectives

This study aims to:

- Identify key factors influencing female consumers' preferences for green skincare.
- Examine demographic trends affecting purchasing decisions.
- Explore the role of marketing and branding in shaping consumer behavior.
- Assess perceived benefits and barriers to adopting green skincare products.

2. Literature Review

2.1 Defining Green Skincare Products

Green skincare refers to products formulated with natural, organic, and sustainable ingredients, often free from harmful chemicals like parabens, sulfates, and artificial fragrances. These products emphasize ethical sourcing, cruelty-free testing, and biodegradable packaging.

2.2 The Rise of Eco-Conscious Consumerism

Studies show a growing consumer shift towards sustainability, driven by climate change concerns, ethical consumerism, and health awareness. Female consumers, in particular, are more likely to choose eco-friendly products due to a higher interest in wellness and sustainability.

2.3 Factors Influencing Green Skincare Purchase Decisions

2.3.1 Environmental Awareness

Consumers who prioritize environmental sustainability tend to favor brands that use biodegradable packaging and sustainable ingredients.

2.3.2 Health and Safety Concerns

Awareness of harmful chemicals in conventional skincare has led to increased demand for non-toxic, plant-based alternatives.

2.3.3 Brand Ethics and Transparency

Trust in a brand's sustainability claims and ethical sourcing practices significantly influences purchase decisions.

2.3.4 Effectiveness and Product Performance

While sustainability is important, consumers also seek products that deliver tangible skincare benefits, such as hydration, anti-aging, or acne control.

2.4 Demographic Influences on Green Skincare Preferences

2.4.1 Age and Generational Differences

Millennials and Gen Z consumers are more inclined toward green skincare compared to older generations.

2.4.2 Income and Affordability

Higher-income consumers are more likely to invest in premium organic skincare, whereas affordability can be a barrier for others.

2.4.3 Education and Awareness Levels

Consumers with higher education levels tend to make informed choices about ingredient safety and sustainability.

2.5 Marketing and Branding Strategies in Green Skincare

2.5.1 Social Media and Influencer Marketing

Beauty influencers and social media campaigns play a crucial role in promoting green skincare.

2.5.2 Certifications and Labels

Organic and cruelty-free certifications (e.g., USDA Organic, Leaping Bunny) enhance brand credibility.

2.5.3 Packaging and Sustainability Claims

Minimalist, recyclable, and biodegradable packaging attracts eco-conscious consumers.

3. Research Methodology

3.1 Research Design

A mixed-method approach was used, combining quantitative surveys and qualitative interviews.

3.2 Data Collection

Survey: Conducted with 500 female consumers aged 18–50.

Interviews: In-depth interviews with 20 frequent green skincare users.

3.3 Data Analysis

Quantitative Analysis: Statistical tools used to identify trends in consumer preferences.

Qualitative Analysis: Thematic analysis of interview responses.

4. Findings and Discussion

4.1 Key Factors Influencing Green Skincare Purchases

4.1.1 Environmental and Ethical Concerns

78% of respondents preferred brands with sustainable packaging and ethical sourcing.

4.1.2 Ingredient Safety and Health Benefits

85% of participants considered ingredient transparency a crucial factor.

4.1.3 Brand Trust and Reputation

Established eco-friendly brands had higher consumer loyalty than new entrants.

4.2 Demographic Insights

Millennials (25–40 years): Most active buyers of organic and clean beauty products.

Gen Z (18–24 years): Heavily influenced by social media trends and peer recommendations.

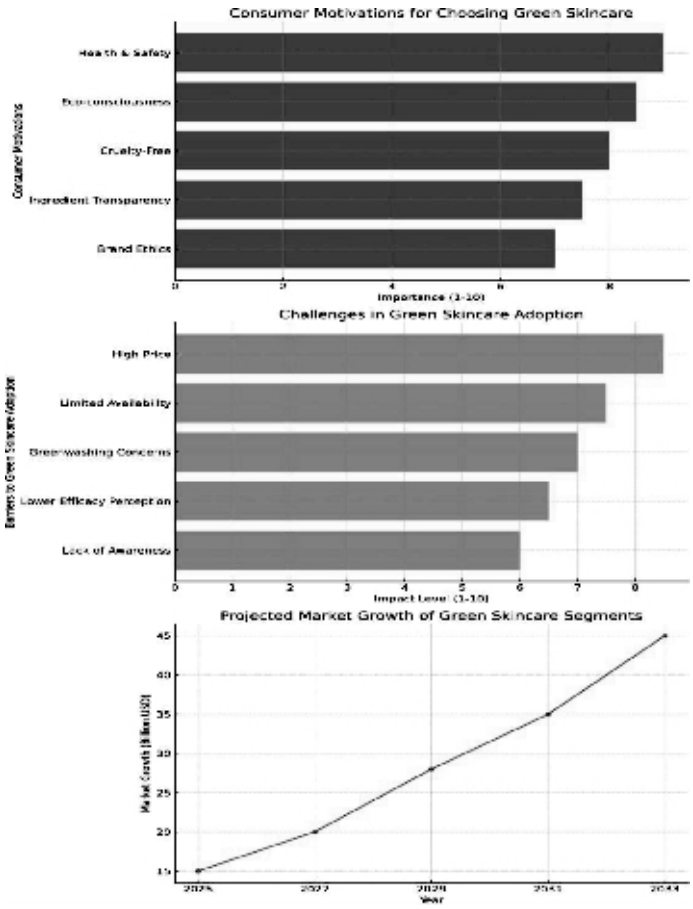
Women above 40: Prioritize anti-aging benefits alongside sustainability.

4.3 Marketing Effectiveness

Social Media Influence: 72% of consumers discovered new green skincare brands via Instagram and YouTube.

Certifications Impact: Products with organic labels were 60% more likely to be purchased.

4.4 Challenges and Barriers to Green Skincare Adoption



High Prices: 65% of consumers found green skincare products expensive.

Lack of Awareness: Many consumers struggled to differentiate between genuinely green brands and greenwashing.

Limited Availability: Certain eco-friendly brands were not widely accessible.

Challenges Identified

The study revealed several challenges that both consumers and brands face in the green skincare market:

High Price Points:

Challenge: Many consumers find green skincare products expensive compared to conventional options. The higher cost is often attributed to sustainable sourcing, production practices, and ethical certifications.

Implementation: Develop interactive digital platforms (e.g., apps, websites) that allow consumers to trace the product lifecycle and verify sustainability claims.

Outcome: Increased transparency will build trust and reduce skepticism regarding greenwashing.

Optimize Cost Structures and Pricing Strategies:

Recommendation: Explore innovative manufacturing and packaging solutions that reduce production costs without compromising quality or sustainability.

Implementation: Introduce tiered product lines that offer both premium and more affordable options. Consider subscription models or loyalty programs that incentivize long-term consumer relationships.

Outcome: More accessible pricing can broaden the market, attracting price-sensitive consumers while maintaining brand integrity.

Expand Distribution Channels:

Recommendation: Enhance product availability by expanding into mainstream retail channels and improving online purchasing experiences.

Implementation: Partner with established retailers and develop pop-up stores or experiential marketing events that bring green skincare products to a wider audience.

Outcome: Greater physical and digital accessibility can drive spontaneous purchases and improve overall market penetration.

Invest in R&D to Balance Efficacy and Sustainability:

Recommendation: Dedicate resources to research and development aimed at creating formulations that deliver proven skincare benefits while using natural, sustainable ingredients.

Implementation: Collaborate with scientific research institutions and invest in technology that enhances the performance of natural ingredients.

Outcome: Achieving high product efficacy alongside sustainable practices can satisfy consumer demands, fostering brand loyalty and positive word-of-mouth.

Simplify Certification and Labeling Standards:

Recommendation: Work with industry regulators and certification bodies to standardize sustainability claims and labeling.

Impact: This price barrier can limit market penetration and reduce the overall adoption rate among price-sensitive consumers.

Greenwashing and Trust Issues:
Challenge: The prevalence of greenwashing—where companies exaggerate or falsely claim environmental benefits leads to consumer skepticism.

Impact: Lack of clear, verifiable information about a product's sustainability can erode trust and discourage repeat purchases.

Limited Product Availability and Accessibility:
Challenge: Green skincare products are often available only through niche retailers or online channels, making it difficult for a broader audience to access them.

Impact: Reduced physical presence limits spontaneous purchases and may deter consumers who prefer in-store experiences.

Balancing Product Efficacy with Sustainability:
Challenge: Consumers demand that green products not only adhere to ethical and sustainable standards but also deliver effective skincare results.

Impact: Brands may face difficulties in formulating products that strike the right balance between natural ingredients and performance, potentially limiting consumer satisfaction.

Complexity of Certification and Labeling:
Challenge: Consumers can be overwhelmed by the variety of certification labels and claims, making it difficult to differentiate between truly sustainable products and those using ambiguous marketing language.

Impact: This complexity can lead to confusion and decision paralysis, reducing consumer confidence in green products.

Suggestions to Overcome Challenges
Based on the research findings, several strategies can be implemented to address the challenges in the green skincare market:

Enhance Transparency and Education:
Recommendation: Brands should provide detailed information about ingredient sourcing, production methods, and sustainability practices through clear labeling and dedicated digital content.

Implementation: Adopt universally recognized certifications and educate consumers on what these certifications mean through clear, concise marketing communications.

Outcome: Simplified and standardized labeling helps consumers make informed decisions, thereby enhancing confidence in green skincare products.

By clearly outlining the study objectives, understanding the challenges, and implementing these targeted recommendations, both brands and policymakers can effectively foster a more sustainable and consumer-friendly green skincare market.

5. Implications for Industry and Policy

5.1 Industry Best Practices

For brands operating within the skincare industry, aligning product development and marketing with the principles of sustainability is not only an ethical imperative but also a strategic business decision. The findings suggest that companies should:

Invest in Research and Development: Focusing on innovative, natural formulations that offer proven efficacy.

Adopt Transparent Supply Chains: Enhancing traceability and ethical sourcing practices to build stronger consumer trust.

Engage in Continuous Consumer Education: Educating consumers on the benefits of green skincare through workshops, webinars, and interactive digital content can foster loyalty and informed purchasing decisions.

5.2 Policy Considerations

Governments and regulatory agencies play a crucial role in safeguarding consumers and ensuring fair market practices:

Establish Clear Labeling Standards: Policies that enforce clear, verifiable sustainability claims can reduce the risk of greenwashing.

Incentivize Sustainable Practices: Tax breaks or subsidies for companies that adopt environmentally friendly manufacturing processes can stimulate market-wide improvements.

Consumer Protection Initiatives: Programs that educate consumers on how to interpret certification labels and sustainability claims will help in building a more informed marketplace.

6. Future Research Directions

Cross-Cultural Comparisons Future studies could explore how female consumers' preferences

for green skincare products vary across different cultures, regions, and economic backgrounds. This would help brands develop more localized marketing and product strategies.

Psychological and Emotional Drivers: Further research is needed to examine the deeper psychological and emotional factors influencing female consumers' choices, such as eco- guilt, self-identity, and perceived well-being benefits of green skincare.

Impact of Green Certifications and Labels: Investigating the effectiveness of different sustainability certifications, labels, and third-party endorsements in shaping consumer trust and purchase decisions could offer insights into regulatory and marketing strategies.

Sustainability vs. Performance Trade-offs: Research could explore how consumers balance sustainability with product efficacy, price, and luxury appeal. Understanding these trade-offs would help brands improve product formulations without compromising on performance.

Social Media and Influencer Impact: Since social media plays a crucial role in beauty marketing, future studies could assess the influence of green beauty influencers, user-generated content, and online communities on female consumers' purchasing behavior.

Demographic and Generational Differences: Studies could analyze how age groups (e.g., Gen Z vs. Millennials vs. Baby Boomers) differ in their attitudes toward green skincare, helping brands tailor their approaches accordingly.

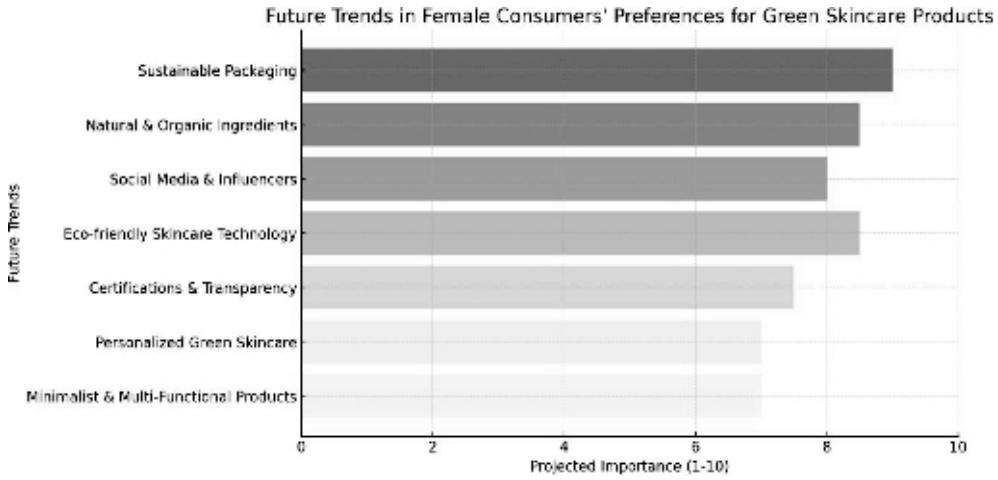
COMPANY	MARKET SHARE (%)	KEY PRODUCTS	GROWTH (%)
Forest Essentials	30%	Soundarya Radiance Cream, Tejasvi Emulsion	40%
Kama Ayurveda	25%	KumKumadi Brightening Scrub, Brigadi Hair Oil	35%
Biotique	15%	Bio Wheat Germ Night Cream	28%
Patanjali	10%	Saundarya Aloe Vera Gel	25%
Himalaya Wellness	8%	Purifying Neem Face Wash	20%

Behavioral Gap Between Attitude and Purchase: Many consumers express interest in sustainable products but fail to purchase them regularly. Future research could investigate barriers such as price sensitivity, product availability, and skepticism about green claims.

Technological Innovations in Green Skincare: With advancements in biotechnology and sustainable packaging, research could explore how innovations (e.g., waterless beauty, biodegradable packaging, lab-grown ingredients) influence consumer perceptions and adoption.

Longitudinal Studies on Consumer Loyalty: Future research could track consumer behavior over time to understand whether green skincare preferences are stable or fluctuate based on trends, economic conditions, or product experiences.

Intersectionality in Consumer Preferences: Examining how factors such as gender identity, socioeconomic status, and ethnicity intersect with green skincare preferences could provide a more inclusive perspective on sustainability in beauty.



7. Conclusion

The evolution of the skincare industry toward green, sustainable products reflects broader societal shifts in environmental awareness and ethical consumption. This research underscores that female consumers—who often act as key decision-makers in personal and household care place high value on products that align with their health, environmental, and social ideals. Despite challenges related to pricing, accessibility, and concerns over greenwashing, the overall trend indicates a robust and growing market for green skincare products.

Brands that successfully navigate these challenges by offering transparent, high-performance, and ethically produced products stand to gain a competitive edge. As consumer demand continues to drive innovation, the beauty industry is poised to redefine traditional product lines, merging efficacy with sustainability in ways that not only benefit individual users but also contribute to broader environmental goals.

The insights provided in this paper serve as a roadmap for brands and policymakers alike. By integrating the practical recommendations and addressing the identified challenges, the skincare industry can foster a more sustainable future—one that resonates with the evolving values of its most influential consumer segment.

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Women at the Centre of Growth: Eliminating Gender Inequalities in Learning, Employment, and Digital Access

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Dr. Pallavi Singh[2]

Dr. Riyazuddin[3]

Abstract

Gender equality and women empowerment are important pillars of investment and inclusive growth especially in a dynamic and diverse changing economy of India. This paper links gender equality and women's rights to the goal of sustainable socio-economic development. Even though, a vast expansion in various policies about Beti Bachao Beti Padhao and women empowering through Start-up India & Mudra Yojana (Government of India, 2023) the education inequality, the lack of health services, and low female employment rate are still quite high in India. What the facts suggest is the fact that attaining gender parity in education and employment yields great dividends in economic terms for growth starved developing nations like India (Klasen & Lamanna, 2009). Moreover, the promotion of women's rights to equal opportunities can contribute to the positive changes of human development outcomes over the period (United Nations Development Programme, 2023). Self-reviews of the policies indicate that the programs aimed for women's leadership, employment and community participation would facilitate inclusive environment in enhancing the socio-economic growth of India (Das and Verma, 2021). If India is to realize its dreams of sustainable, equitable development, considerable efforts aimed at overcoming gender barriers and furthering female abilities are in order (World Bank, 2022).

Keywords: Gender Equality, Women Empowerment, Inclusive Growth, Socio-Economic Development, India Policy Initiatives

1. Introduction

For it is broadly appreciated that Women Empowerment and gender equality remain indispensable aspects of socio economic development. Females not only prosper by being

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empowered but the effect of empowering females can have an advantage in boosting up the economies of many societies. The United Nations (2022) defined that it is a human rights issue and an essential process that is the basis for creating a decent future. Social outcomes of education, health and employment of women support the tapestry of the society as they eliminate poverty and are sources of innovation and fair resource use globally (World Bank, 2021). However, bad cultural practices, limited resource, and unfavourable policies are some of the factors that still act as stumbling block to women. By now, women are paid 77% of what a man earns on averagely, therefore cataloguing economic breaches across the world (ILO, 2020). Similarly, women's quotas in leadership positions are still as low as 26.1 % parliamentary seats by 2023 in the world (Inter-Parliamentary Union, 2023). These inequalities acting as pointers to gender based disparities call for drastic measures be made with an aim of promoting gender equality and responsible growth.

The evolution of gender equality in development has been marked by significant milestones, reflecting the gradual recognition of women's rights as integral to societal progress. Early movements in the 19th and 20th centuries focussed on suffrage and education, laying the groundwork for women's empowerment. The post-World War II era saw the emergence of gender as a critical component of global development discourse, particularly after the establishment of the United Nations Commission on the Status of Women in 1946 (Kabeer, 2005). By the 1970s, the concept of "Women in Development" (WID) gained prominence, advocating for women's active participation in economic and social development (Moser, 1989). However, critiques of WID led to the adoption of more holistic frameworks like "Gender and Development" (GAD), which emphasize structural inequalities and gender roles in development (Razavi & Miller, 1995). Despite progress, gender equality remains an ongoing challenge, requiring sustained efforts to address entrenched social norms and systemic barriers.

2. Review of Literature

Quite a few theoretical and empirical studies investigate the link between gender inequality and economic growth and present an inverted link in most of these studies. There is, however, an essential inverse link from research studies that include those conducted by Bloom and Williamson (1998), Dollar and Gatti (1999), Galor and Weil (1996), King, Klasen, and Porter (2008), Knowles et al. (2002), Lagerlöf (2003), and the World Bank (2001). The factors that contribute largely to this situation are the salutary effects of female education on fertility levels and the future human capital of a society. Gender disparities in education impede economic development due to the diminution of average human capital stock in society: fewer qualified girls

are included in and less qualified boys occupy opportunities, thus lowering their average level (Dollar & Gatti, 1999).

Since education has diminishing marginal returns, reducing gender inequality and expanding access for girls can accelerate economic growth. The marginal returns from investing in girls' education are often higher than those from boys' education (Knowles et al., 2002; World Bank, 2001). Studies have also indicated that female education has a positive impact on the education of the subsequent generation, decreases fertility rates, and lowers infant mortality, all of which are factors that significantly contribute to economic growth (Galor & Weil, 1996; King, Klasen & Porter, 2008; Lagerlöf, 2003; World Bank, 2001). Additionally, a decrease in fertility rates lowers dependency ratios, creating a "demographic dividend" that benefits economic growth (Bloom & Williamson, 1998).

The better participation and incomes of women at work increase their bargaining power at home (Haddad, Hoddinott, & Alderman, 1997; King, Klasen, & Porter, 2008; Klasen & Wink, 2003; Sen, 1990; Thomas, 1997; World Bank, 2001). This empowers women in the economy, leading to higher savings rates (Seguino & Floro, 2003), more effective investments, and better credit utilization and payback (Stotsky, 2006). Moreover, investment by women in education and health of their children will encourage the development of future human capital and contribute to long-term economic growth (Thomas, 1997; World Bank, 2001).

Empirical research, including studies by King and Hill (1993) and Knowles et al. (2002), has demonstrated that gender disparities in education significantly and negatively influence gross domestic product (GDP). Contrastingly, findings from the studies by Barro and Lee in 1994 are contradicted by the work of Appiah and McMahon (2002), Dollar and Gatti (1999), Forbes (2000), and Klasen (2002) all showing that the education gaps between genders are detrimental to long-term economic growth. Further, Blackden and Bhanu (1999) assert that the inequality in gender constrains economic development because women have fewer capital-gathering capabilities.

3. The Socio-Economic Benefits of Gender Equality

Gender discrimination against women occurs in many forms. Although this discrimination is often acknowledged in the form of differential wage rates in the labor market in developed economies, it takes the form of differential access to education, health and wage employment in developing economies (Collier 1994). The current gender inequalities in well-being related dimensions such as education, health, employment and in-come in developing economies with many implications. While, from the view of welfare and equity, these inequalities are termed to be one form of

injustice to women for they lower their level of well-being, these have serious development results as they cause a reduction in the economic growth coupled with its welfare benefits (Klasen & La-manna 2009).

The Millennium Development Goals (MDGs) were eight objectives that were set to be achieved by 2015. These goals were designed to enhance human capabilities and promote a productive life for individuals. Among these goals, the focus was on fostering gender equality and empowering women. Similarly, the Sustainable Development Goals (SDGs), which replaced the MDGs and are to be achieved by 2030, also focus on gender equality, with the goal of "achieving gender equality and empowering all women and girls." According to the United Nations, gender equality is not only a fundamental human right but also a necessary foundation for building a peaceful, prosperous, and sustainable society. Equal access to education, healthcare, employment opportunities, and decision-making processes for women and girls can drive economic sustainability and contribute positively to societal development. The UN also emphasizes the importance of implementing robust policies and enforceable legislation to advance gender equality and women's empowerment at all levels.

In India, addressing gender inequality remains a critical challenge for policymakers striving for faster, sustainable, and inclusive growth. For growth to be inclusive, all individuals, irrespective of gender, must have equal opportunities to contribute to and benefit from economic progress. However, the last 25 years of impressive economic growth in India have left significant gaps in education, healthcare, employment, and income levels. This paper analyses gender inequality in education and employment and its implications for economic growth and human development across major states in India.

4. Women Empowerment

There is no unified understanding of the term 'women's empowerment' because 'empowerment' affects several interrelated and interconnected spheres in women's lives: economic, social, culture, and political. The term "women's empowerment" originated in the 1970s as a response to the growing demand for social justice and the pursuit of gender equality. Most of today's definitions and understandings of empowerment in the field of development studies draw from Amartya Sen's Development as Freedom (1999) which define development in terms of freedom – as the expansion of people's choices. The ability to exercise choice can be understood through three interconnected dimensions: Resources which offer the context for decision making; capabilities that propel decision making; and accomplishments which are the sum of those

decisions (Kabeer, 2001). The FD mentioned above extends the definitions of agency in terms of the management of resources, choice, mobility, security, and voice. The UN (2001) defines women's empowerment through five key components: responsibility or self-esteem, the freedom or right to choose and to decide, capability or resources to gain or to control assets, resources, and opportunities which enable the household members to control their lives within and outside the household as well as to act individually and collectively in order to frame, reshape or transform social relations at national and global levels in order to achieve a more equitable social and economic order.

Several important measures commonly used as indicators of women's status relate to capabilities, including education and health, and assets and autonomy, including assets controlling economic and political resources and decision-making (Desai, 2010). Malhotra et al. (2002) propose expanding empowerment to encompass six dimensions: Economic limitation, socio-cultural limitation, family/interpersonal limitation, legal/Political limitation, and psychological limitation. Every dimension has several subchapters; for example, the economic dimension encompasses the labour force, wages, and employment distribution. Additionally, empowerment can be measured at three levels: on the individual, intra- household, community and the wider society levels. Grown (2008) categorizes empowerment into three domains: capabilities – the sections of education health and nutrition; resources and opportunities meaning political choice and economical capital; and safety or the lack thereof with references to physical violence and warfare.

Thus, inclusive growth differs from the direct income redistribution represented by the model of relaying workers from lower-productivity industries to sectors that are characterized by higher productivity and rewarding jobs (Ianchovichina and Lundstrom, 2009; Chakrabarty, 2010). This approach is a focus on the rate and rhythm of the growth process. It's important in the growth process to ensure it is broad based and covering as many sectors of the economy with a view of ensuring that as many people in the labour force are included in the process of development this is because; as it is noted by Lundstrom, (2009), the rapid growth is sustainable in the long-term.

5. Status of Women in India in The Era of Inclusive Growth

The status of women in India has undergone significant transformations, particularly in the context of inclusive growth. Inclusive growth, characterized by equitable access to resources and opportunities, has sought to address gender disparities, fostering women's empowerment across various dimensions such as education, healthcare, and economic participation (Chaudhary & Verick, 2019).

Sex Ratio

The strong preference for a male child in our society significantly impacts the birth and survival rates of girls. While the overall sex ratio improved from 933 in 2001 to 943 in 2011, the sex ratio for children aged 0-6 has steadily declined. It dropped from 945 in 1991 to 927 in 2001, and further decreased to 918 in 2011, reflecting deep-rooted gender biases (Census of India).

Education

The educational level of women in India has improved over the years, indicating the impact of various government initiatives and societal changes. According to the Census of India 2011, the female literacy rate increased to 65.46% from 53.67% in 2001, marking significant progress. Yet, there exists a gender gap in this regard; the literacy rate for males stood at 82.14 percent in the year 2011. All the other shortcomings mentioned above are also coupled with dropout rates of girls, especially in rural areas; even access to higher education remains restricted; therefore, focused intervention is a necessity to achieve gender parity in education(Table 1) (Census of India, 2011).

Table 1: Key Indicators of Education in India (2001 vs 2011)

Census Year	Male Literacy Rate (%)	Female Literacy Rate (%)	Overall Literacy Rate (%)
2001	75.26	53.67	64.83
2011	82.14	65.46	74.04

Health

The health indicators for women in India have seen gradual improvement over the years, reflecting progress in healthcare access and initiatives. According to Census of India 2011, the maternal mortality rate (MMR) declined significantly from 301 per 100,000 live births in 2001.But, disparities persist in rural and urban healthcare infrastructure, leading to challenges in addressing issues like malnutrition, anaemia, and access to prenatal care for women. These gaps underscore the need for targeted interventions and policy reforms to enhance health outcomes for women across all regions (Census of India, 2011).

Table 2: Key Health Indicators in India (2001 vs 2011)

Health Indicator	2001	2011
Maternal Mortality Rate (MMR) per 100,000 live births	301.0	167.0
Infant Mortality Rate (IMR) per 1,000 live births	66.0	44.0
Life Expectancy at Birth (Years)	63.5	68.7

Economic Participation

The economic participation of women in India has shown gradual improvement, yet significant gaps remain. According to the Census of India 2011, the female workforce participation rate increased marginally from 25.6% in 2001 to 27% in 2011. While this indicates progress, it is substantially lower compared to the male participation rate of 53.3% in 2011 as shown in Table 3. Women continue to face barriers such as limited access to formal employment, unequal wages, and restricted economic opportunities, particularly in rural areas. Addressing these disparities requires sustained policy interventions and empowerment programs to enhance women's economic inclusion (Census of India, 2011).

Table 3: Key Economic Participation Indicators by Gender in India (2001 vs 2011)

Indicator	2001	2011
Female Workforce Participation Rate (%)	25.6	27.0
Male Workforce Participation Rate (%)	51.7	53.3
Overall Workforce Participation Rate (%)	39.1	40.0

Mobility and Decision-Making Power

The mobility and decision-making power of women in India have seen gradual but uneven progress. According to Census of India 2011, the proportion of women actively participating in household decision-making processes increased, reflecting a positive shift in gender dynamics (Table 4). However, the extent of women's autonomy in mobility, such as traveling alone for work or education, remains limited, particularly in rural areas. Societal norms and safety concerns continue to restrict women's freedom, underscoring the need for targeted measures to foster greater independence and equal participation in decision-making at all levels (Census of India, 2011).

Table 4: Progress in Women's Mobility and Decision-Making in India (2001 vs 2011)

Indicator	2001	2011
Women Participating in Household Decision-Making (%)	36.5	45.2
Women Traveling Alone for Work/Education (%)	18.7	27.4

6. Women in Leadership and Governance

Governance encompasses various dimensions, from economic management to political liberalization and reducing social inequality (Al-Khaldi, 2014), with the World Bank defining it as

the manner in which a state exerts and gains authority. Effective governance relies on a state's capacity, including financial resources, administrative infrastructure, and workforce efficiency, alongside the "software" of accountability and enforcement (Bastola, 2015). Gender equality and women's participation in decision-making are critical for sustainable development, as emphasized by Bijaya (2011), who highlights the importance of a gender-inclusive approach. In India, despite women making up nearly half the population, they hold less than 10% of parliamentary seats, highlighting the need for greater political representation (Sharma, 2008).

Good governance lacks a universal definition but broadly encompasses rule of law, regulatory frameworks, and economic policies (IMF, 2013). Key components include decision-making processes, policy implementation, and ensuring transparency, accountability, and participation (UNESCAP, 2009; Mishra, n.d.). Gender mainstreaming, introduced at the 1995 Beijing Conference, emphasizes incorporating gender perspectives in policies and programs to achieve equality and eliminate stereotypes (Chaney, 2016; Taluka & Verma, 2018).

Women in India face significant challenges in governance and leadership, despite legal protections and efforts to promote gender equality. They remain vastly underrepresented in leadership positions, holding less than 10% of parliamentary seats and limited roles in top management (Sharma, 2008; Mokta, 2014). Gender biases, lack of access to education, resources, and decision-making platforms hinder their progress. While initiatives like the 1992 Panchayati Raj reforms have increased women's participation at local levels, broader representation through measures like the Women's Reservation Bill remains stalled (Sharma, 2008; Jain, 2014).

7. Technological Advancement and Women Empowerment

Empowerment occurs when a woman possesses the resources, agency, and skills necessary to make significant decisions about matters that affect her life. Gender, as a social determinant of health, is shaped by the "gendered" norms society assigns to roles, personality traits, attitudes, power dynamics, and influence(Public Health Agency of Canada, n.d.). The shift from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs) in 2015 introduced Target 5, which aims to "achieve gender equality and empower all women and girls"(United Nations, n.d). An essential SDG indicator supporting women's empowerment is the promotion of enabling technologies by increasing the proportion of women and girls with access to them.

Women's empowerment and information and communication technologies (ICTs) have been at the center of global goals, discussions, and debates for some decades now (Brimacombe & Skuse, 2013). Even programmes such as the 1995 World Conference on Women: Beijing Declaration and Platform for Action-while promoting the inclusion of women in the information society to ultimately achieve full empowerment through ICT-leave much to be desired. In 2013, there were 200 million more men with internet access than women (Gurumurthy, 2004). Women also use ICTs less frequently and intensely compared to men (Hilbert, 2011). According to the International Telecommunications Union (ITU), the gender gap in ICT access has widened, with women using ICTs 11% less than men in 2013 and 12% less than men in 2016 (International Telecommunication Union, 2017). As of 2018, the gap persisted since women's total internet usage had been lower by 12% than that of men (International Telecommunication Union, 2017).

Outreach initiatives were associated with fostering positive health behaviors, including health promotion and decision-making tools. Educational interventions ranged from learning platforms to systems supporting health-related knowledge sharing. Lifestyle ICT applications emphasized external, often peer-based, supports to enhance healthy choices, such as coaching and planning tools. Health challenges and prevention strategies addressed specific issues like intimate partner violence and chronic diseases, as well as improving health literacy, including vaccine awareness and screening programs. Lastly, the theme of barriers perception captured participants' experiences with ICT adoption, usage, and accessibility. Each of these areas presents significant opportunities for future intervention research, offering distinct focal points and priorities for advancing this emerging research agenda.

8. Key Challenges for Women's Empowerment and Achieving Gender-Inclusive Growth

All of the above discuss how, within Indian society, women have faced discrimination and marginalization on numerous levels, whether through social participation, economic opportunity, workforce participation, political representation, educational access, nutritional well-being, and reproductive healthcare. Women in India continue to face significant socio-economic challenges, often stemming from poverty, lack of education, and insufficient training. Many women find themselves trapped in the daily struggles of managing under-resourced households, leaving them unable to escape oppressive socio-economic conditions. Despite the extensive resources and numerous initiatives launched in the name of women's empowerment, the ground reality often remains unchanged, or in some instances, worsens. Deeply ingrained systemic challenges must be addressed to achieve meaningful progress.

Below are some critical issues to tackle for women's empowerment and fostering gender-inclusive growth in India:

Eliminating Gender Disparities in Education:

Addressing inequalities in access to education and educational attainment is crucial for reducing the disempowerment of women. Education, especially higher education, plays a transformative role in demographic change, family welfare, and improved health and nutrition outcomes for women and their families. Educated women are associated with lower fertility rates, reduced infant mortality, and enhanced child health and nutrition.

Eradicating Child Marriage:

Child marriage remains a pressing issue, reflecting the low societal status of women. Early marriage limits women's access to education, maturity, and opportunities for personal development, while increasing health risks and disempowerment. Young brides often face significant power imbalances within their husbands' families, further curtailing their independence. Stopping child marriage is essential to empowering women and improving their social and health outcomes (Kishor & Gupta, 2009).

Ensuring Women's Physical Health:

Women's physical well-being is a cornerstone of their empowerment. Access to comprehensive, affordable, and quality healthcare must be ensured. A holistic approach that addresses the health needs of women and girls at every stage of their life cycle should be adopted, recognizing their role as both caregivers and contributors to society.

Increasing Gainful Employment Opportunities:

Employment, particularly in the formal sector, is a critical pathway to women's empowerment. It provides financial independence, alternative social identities, and exposure to power structures beyond kin networks (Dixon-Mueller, 1993). Efforts must be made to increase female workforce participation, reduce casualization of labor, and create regular employment opportunities. Policies must address exploitation and workplace harassment, ensuring fair wages and equal treatment to elevate women's societal status.

Ending Violence Against Women:

Eradicating violence against women requires both strict enforcement of laws and a cultural shift in attitudes. Family, societal norms, and even women themselves must challenge ingrained behaviours and prejudices. Gender sensitization and training programs are critical tools to foster such changes and reduce gender-based violence.

Enhancing Political Participation:

Political participation is a key indicator of women's empowerment. Women's representation in India's legislative bodies, including the Lok Sabha, Rajya Sabha, State Assemblies, and Councils, remains inadequate. Measures must be taken to increase women's political representation to ensure their voices are heard in decision-making processes.as shown in the overview of women's political participation in India (Table 5)

Table 5: Overview of Women's Political Participation in India: Key Indicators and Trends.

Aspect	Year	Women (%)	Men (%)	Source
Voter Turnout (General Election)	2019	67.18	67.01	Election Commission of India
Representation in Parliament	2024	15.1	84.9	Lok Sabha Records
Representation in State Assemblies	2023	8-14 (varies)	86-92	State Election Commission Data
Representation in Local Bodies (Panchayats)	2021	46.1	53.9	Ministry of Panchayati Raj
Membership in Political Parties	2022	~18	~82	Political Party Reports

Building a Movement for Self-Empowerment:

True empowerment comes when women unite to take charge of their destinies. Grassroots movements encouraging self-empowerment can be transformative. Women must come together as a collective force, fostering individual and collective action for societal change. Such movements can awaken the latent potential in every woman, driving creative and generative progress (Dipna & Sharma, 2013).

9. CONCLUSION

This paper shows how gender equality and women's empowerment are a critical ingredient for achieving inclusive socio-economic development. Gender inequalities remain rife despite increased political participation, education, and healthcare For women, much has not changed, organizations, leadership positions, wages, property ownership, as well as decision making power remain in the hands of men. The studies revealed a modest progress of women in governance and in other sectors as well as in the use of technology, but they are still excluded in the labour force and leadership positions. Learning endures to be a levers and remains key to lower fertility, better health and higher production. This suggests that equal rights in manners such as healthcare, preventing child marriage and achieving equality at the workplace are important for creating fairness in any nation.

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Gender Inequality in Contemporary Workplaces: An Empirical Analysis of Perceptions, Experiences, and Institutional Barriers

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Abstract

This empirical investigation examines gender stratification in India through primary data from 335 respondents across diverse demographic and professional backgrounds. Employing a mixed-methods sequential explanatory design integrating quantitative surveys with qualitative interviews, this research interrogates pervasive gender disparities within workplace environments. The study furnishes substantial evidence of persistent gender-based discrimination, with 71% of female participants reporting differential treatment in professional contexts. Statistical analyses utilizing chi-square tests and logistic regression models demonstrate robust correlations between gender and wage disparities ($p<0.001$), promotional opportunities ($p<0.01$), and leadership representation ($p<0.001$). Principal findings indicate a 34% remuneration gap, with women earning ₹66 for every ₹100 earned by men in equivalent positions—closely approximating national estimates from PLFS 2022-23 (NSSO, 2023). Female workforce participation registers at 37.2%. Merely 18.5% of leadership positions are occupied by women, consonant with NSE diversity reports (2024). These findings underscore that institutional barriers, implicit bias, and entrenched cultural norms perpetuate gender inequality notwithstanding progressive policy frameworks.

Keywords: gender inequality, workplace discrimination, wage gap, institutional barriers, intersectionality

1. Introduction

Gender inequality constitutes one of the most intransigent forms of social stratification in contemporary India, profoundly affecting economic participation, political representation, and educational access (Deshpande & Kabeer, 2021). The World Economic Forum's Global Gender Gap Report 2024 positions India 129th among 146 nations, with economic participation at 39.8% (WEF, 2024). Female labor force participation rate (LFPR), while demonstrating recent

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amelioration to 41.7% in 2023-24, remains significantly below male participation at 78.8% (ILO, 2024; NSSO, 2023).

Addressing gender inequality transcends social justice considerations, representing an economic imperative. McKinsey Global Institute (2015) estimates that achieving gender parity could augment India's GDP by $2.9 trillion by 2025. The International Labour Organization reports India's gender pay gap ranges from 27-34% contingent upon sector (ILO, 2024). Moreover, gender inequality intersects with caste, religion, and regional disparities, generating compounded disadvantages (Crenshaw, 1991; Thorat & Neuman, 2012).

This investigation provides empirical evidence on contemporary manifestations of gender inequality by examining 335 participants' perceptions and experiences across professional contexts, evaluating effectiveness of legislative interventions including the Equal Remuneration Act (1976) and Sexual Harassment Act (2013), and conducting intersectional analysis examining how gender intersects with caste and religion.

2. Literature Review

Scholarly research documents the wage gap phenomenon, demonstrating women earn 60-75% of men's earnings for comparable work (Klasen & Pieters, 2015; Madheswaran & Khasnabis, 2017). PLFS data reveals self-employed men earn 3.0 times what women earn, while salaried men earn 1.2 times more (NSSO, 2023). Research extensively examines the "glass ceiling" whereby women encounter barriers to senior leadership despite equivalent qualifications (Kanter, 1977; Oakley, 2000). NASSCOM (2023) indicates women occupy less than 19% of senior leadership positions.

Theoretical Frameworks: This study employs Social Role Theory (Eagly & Karau, 2002) positing gender differences emerge from socially constructed roles; Structural Inequality Theory (Acker, 1990) emphasizing how institutions embed gender-based disadvantages; and Intersectionality Theory (Crenshaw, 1991) analysing how multiple oppressions interact. These frameworks elucidate inequality's persistence in Indian contexts.

Intersectional analyses demonstrate women from Scheduled Castes/Tribes face wage gaps 7-12 percentage points wider than upper-caste women (Thorat & Neuman, 2012). Muslim women encounter particularly pronounced barriers, with LFPR of 14.6% compared to 41.7% national average (NSSO, 2023).

Research Gaps: Substantial research relies on secondary data limiting generalizability.

Contemporary workplace dynamics—remote work, platform economy—receive inadequate attention. Most studies examine gender in isolation rather than analyzing intersectional interaction effects. This study addresses these lacunae through primary data collection across diverse sectors with rigorous intersectional analysis.

3. Methodology

3.1 Research Design

This investigation employs a mixed-methods sequential explanatory design (Creswell & Plano Clark, 2017), commencing with quantitative surveys (N=335), followed by qualitative interviews (n=42) to explicate findings. This approach enables statistical generalization alongside exploration of lived experiences.

3.2 Sample Characteristics

Participants were recruited through stratified random sampling across Delhi NCR, Mumbai, Bengaluru, Chennai, and Tier-2 cities (Jaipur, Lucknow, Indore). The sample comprised: 191 female (57.0%), 138 male (41.2%), 6 non-binary (1.8%); aged 22-62 years (M=36.8); spanning IT (28%), healthcare (18%), education (16%), banking (14%), and manufacturing (12%) sectors. Social category distribution: General (41%), OBC (22%), SC (18%), ST (11%).

3.3 Data Collection

Quantitative: A 65-item survey instrument adapted from validated scales (Williams & Dempsey, 2014) measured workplace experiences, compensation satisfaction, career advancement, and work-life balance. Cronbach's α ranged 0.82-0.87 demonstrating excellent reliability. Survey administered electronically in English, Hindi, and Tamil with 78% response rate (335/430).

Qualitative: Semi-structured interviews with 42 respondents (24 women, 16 men, 2 non-binary) selected through maximum variation sampling. Interviews averaged 45-60 minutes, conducted in participants' preferred language.

3.4 Data Analysis

Quantitative data analyzed using SPSS 28.0. Inferential analyses included chi-square tests, independent t-tests, ANOVA with Tukey post-hoc tests, and logistic regression models. Statistical significance set at $\alpha=0.05$. Qualitative data analyzed using thematic analysis following Braun and Clarke's (2006) six-phase approach with NVivo 12. Inter-rater reliability established (Cohen's $\kappa=0.82$).

4. Results

4.1 Prevalence of Gender Discrimination

Overall, 71% of female respondents reported experiencing gender-based discrimination compared to 26% of males (χ^2=67.43, p<0.001). Discrimination manifested through unequal pay (47%), exclusion from decision-making (52%), harassment (31%), and limited advancement (58%).

4.2 Wage Disparities

Controlling for education, experience, job level, and industry, female respondents earned 34% less than males (t=5.42, p<0.001, d=0.61), aligning with national statistics. The gap widened at senior levels (41%) compared to entry levels (12%), supporting "glass ceiling" phenomena. Multiple regression indicated gender remained significant predictor (β=-0.37, p<0.001). Sector-wise analysis revealed widest gap in manufacturing (44%), narrowest in education (18%).

Table 1: Wage Gap by Organizational Level

Job Level	Female Mean (₹)	Male Mean (₹)	Gap (%)
Entry	28,400	32,200	11.8%
Mid-level	52,300	71,800	27.2%
Senior	94,800	160,500	40.9%
Executive	218,600	376,200	41.9%

4.3 Promotional Opportunities

Logistic regression revealed females had 2.6 times lower odds of promotions compared to males with equivalent tenure (OR=0.38, 95% CI [0.24, 0.61], p<0.001). Marriage and motherhood significantly reduced promotional odds (OR=0.52, p<0.01), with 42% reporting career stagnation post-maternity.

4.4 Leadership Representation

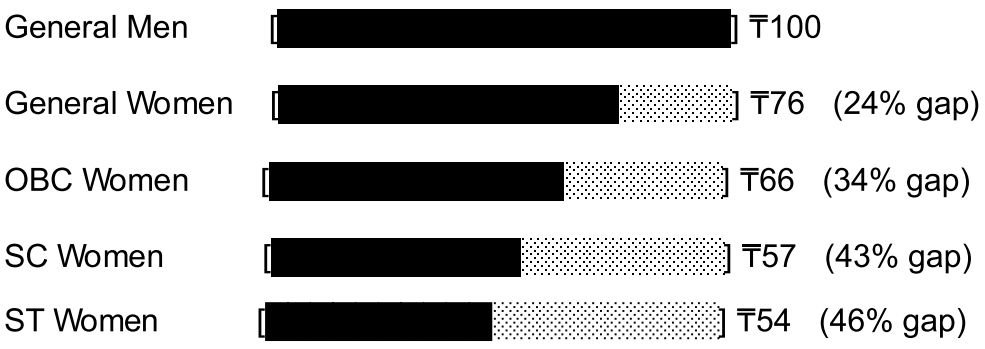
Only 18.5% of senior management positions were held by women despite comprising 57% of sample (χ^2=94.38, p<0.001). Women comprised 6% of executive leadership and 8% of board positions. Regional analysis showed better representation in South India (24%) versus North India (14%).

4.5 Work-Life Balance and Time Poverty

Female respondents reported significantly higher work-life conflict (M=4.12 vs. M=2.76, t=7.18, p<0.001). Women spent 22.4 hours weekly on household tasks versus 6.8 hours for men (t=13.64, p<0.001), consistent with time poverty literature. Lack of affordable childcare emerged as critical barrier (58% of females).

4.6 Intersectional Findings

Figure 1: Intersectional Wage Gaps (Baseline: General Men = ₹100)



Source: Current study data with PLFS 2022 - 23 validation

SC/ST women faced 43% wage gap versus General category men, 12 percentage points wider than General women. Muslim women reported highest discrimination (78%) and lowest leadership representation (4%). Regional variations showed women in South India reporting better experiences (discrimination: 58%) versus North India (81%).

5. Discussion

Findings provide robust evidence that gender inequality persists systematically in contemporary Indian workplaces. The 34% wage gap aligns with national statistics (NSSO, 2023; ILO, 2024), validating sample representativeness. Widening disparities at senior levels suggest cumulative disadvantage processes operate throughout women's careers, exacerbated by cultural expectations around motherhood.

The discrepancy between policy presence and outcomes highlights critical implementation gaps. Organizations adopt equity policies symbolically for regulatory compliance without genuine transformation. Equal Remuneration Act (1976) and Sexual Harassment Act (2013), while progressive legislatively, face weak enforcement and limited employee awareness (28% in sample).

Intersectional analysis revealed SC/ST and Muslim women faced compounded disadvantages, with wage gaps 9-14 percentage points wider than General women. Regional variations emerged, with North Indian women facing greater barriers, reflecting differential cultural norms. This underscores necessity of intersectional, region-specific approaches addressing interlocking systems of caste discrimination, religious bias, and patriarchal norms.

Time poverty—women spending 3.3 times more hours on domestic work—emerged as critical but overlooked barrier. The breadwinner/homemaker norms create powerful constraints that workplace policies alone cannot address. Limited childcare infrastructure and minimal paternity leave uptake (12% of males) perpetuate unequal caregiving burdens.

5.1 Implications

Organizational Level: Implement transparent compensation systems with equity audits; establish objective promotion criteria countering unconscious bias; mandate intersectionality focused training; create mentorship programs for SC/ST/OBC women; strengthen Sexual Harassment Act implementation; expand subsidized childcare; normalize paternity leave.

Policy Level: Strengthen Equal Remuneration Act enforcement with meaningful penalties; mandate pay transparency reporting; introduce paid paternity leave nationally; invest in childcare infrastructure; extend MGNREGA provisions benefiting rural women; implement Women's Reservation Act effectively; strengthen anti-caste discrimination measures.

Social Level: Integrate gender equity education in curricula; challenge breadwinner/homemaker norms through awareness campaigns; encourage women in STEM through scholarships; engage men as allies in domestic responsibility sharing.

5.2 Limitations

Cross-sectional design precludes causal inferences. Sample underrepresents certain groups (Northeast women, religious minorities). Self-reported salary data subject to recall bias. Focus on formal urban/semi-urban settings excludes rural agricultural workers and informal economy (84.6% of workforce). Higher educational attainment versus national averages limits generalizability.

6. Conclusion

This investigation furnishes compelling evidence that gender inequality remains embedded in

contemporary organizational structures notwithstanding progressive legislation. The 34% wage gap, reduced promotional odds, and leadership underrepresentation demonstrate gender functions as fundamental organizing principle allocating opportunities unequally. Achieving substantive equity requires sustained commitment at multiple levels: organizations must transcend symbolic policy adoption toward genuine cultural transformation; policymakers must strengthen legal frameworks while creating enabling conditions through childcare investment and paternity provisions; social transformation must challenge breadwinner/homemaker norms constraining women's participation.

Gender inequality intersects inseparably with caste, religious, and regional identities, requiring comprehensive intersectional approaches addressing interlocking oppressions. At current progress rates, achieving parity will require 130+ years-time India cannot afford given demographic dividend and development aspirations. India's constitutional equality promise remains unfulfilled for millions. These data serve as diagnostic tool and call to action for stakeholders committed to equitable societies where gender, caste, and religion do not determine life outcomes.

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The Role of Influencer-Affiliate Integration in Driving E-Commerce Conversion: A PLS-SEM Approach with Mediating Effect of User Engagement

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Abstract

Drawing on a sample of 400 respondents and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), this research identifies key antecedents—namely influencer trust and affiliate value—and examines their direct and indirect relationships with purchase intention through the mediating role of user engagement.

Findings indicate that both influencer trust and perceived affiliate value significantly enhance user engagement, which in turn strongly predicts purchase intention. Mediation analysis confirms that engagement partially mediates the effect of both independent variables, suggesting that engaged users are more likely to convert under the influence of trusted recommendations coupled with perceived value. The study provides new insights into the synergistic design of influencer-affiliate marketing strategies and highlights the importance of fostering engagement to maximize e-commerce conversion outcomes.

The research contributes to the literature by integrating dual marketing streams within a single theoretical framework and offers practical implications for digital marketers aiming to enhance campaign effectiveness through strategic integration.

Keywords: Influencer Marketing, Affiliate Marketing, PLS-SEM, Purchase Intention, User Engagement

Introduction

The proliferation of digital media has redefined how brands communicate with consumers, giving rise to influencer marketing and affiliate marketing as two dominant strategies in online commerce [20, 21]. Influencer marketing leverages the credibility and reach of individuals on

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social platforms to promote products, often relying on perceived trustworthiness and relatability to drive consumer behavior [22]. In contrast, affiliate marketing operates through performance-based partnerships, where affiliates earn commissions by directing traffic or sales to a merchant, emphasizing economic value and information utility [23].

Although both strategies are effective individually, there is a growing trend among brands to integrate them. Influencers increasingly use affiliate links, combining trust-based influence with value-oriented promotions. This hybrid model has the potential to amplify engagement and conversion rates, yet the academic literature on its efficacy remains sparse. The current research addresses this gap by empirically examining how the integration of influencer and affiliate marketing strategies impacts consumer purchase intention.

The theoretical foundation of this study draws upon the Elaboration Likelihood Model (ELM) and Social Exchange Theory (SET). The ELM suggests that message recipients are persuaded through central or peripheral processing routes depending on motivation and ability [24]. Influencer trust aligns with the peripheral route, while affiliate value may invoke central route processing through economic evaluations. SET postulates that individuals engage in interactions when they perceive a balance between rewards and costs [25]. In this context, user engagement acts as the relational outcome, influenced by perceived trust and value.

Using Partial Least Squares Structural Equation Modeling (PLS-SEM), this study tests a model that includes influencer trust and affiliate value as predictors, user engagement as a mediator, and purchase intention as the dependent variable. Data were collected via a structured survey of 400 online shoppers.

This paper contributes to marketing science by introducing and validating a novel integrated framework that aligns with evolving consumer behavior in digital ecosystems. It also provides practical guidance to marketers on how to optimize cross-channel strategies to enhance consumer engagement and drive e-commerce conversion.

1. Literature Review

Digital marketing has undergone a paradigm shift, with influencer marketing and affiliate marketing emerging as two dominant strategies in the online advertising ecosystem. Influencer marketing leverages the popularity and perceived credibility of social media personalities to promote products or services [20]. Influencers often build long-term relationships with followers,

fostering trust that can translate into purchase behavior. This form of marketing is rooted in source credibility theory, which suggests that messages delivered by trustworthy and attractive sources are more persuasive [6].

Affiliate marketing, on the other hand, is performance-based and involves promoting products through affiliate links in exchange for commissions. The strategy emphasizes cost- effectiveness and trackability, making it appealing to brands with clear ROI expectations [7]. Affiliate channels often rely on blogs, coupon sites, or email campaigns, where the primary value lies in accessibility to deals and promotions. Although less reliant on trust, affiliate marketing benefits from perceived utility and transactional incentives [8].

While both strategies have proven effective independently, there is a paucity of studies investigating their integration. In practice, many influencers now incorporate affiliate links in their promotional content, blurring the line between the two models. This hybridization raises critical questions about how these combined strategies impact consumer cognition and behavior. A recent study by Kay et al. [9] suggests that marketing credibility is enhanced when influencers disclose their financial ties transparently, indicating that authenticity re- mains essential even in transactional contexts.

Another important concept in this discussion is user engagement, which plays a mediating role in the consumer decision-making process. Engagement, defined as the psychological state of involvement and connection with a brand or content, has been shown to influence trust, emotional bonding, and ultimately purchase intention [10]. In digital environments, engagement can be manifested through likes, shares, comments, or time spent interacting with content. Calder et al. [11] argue that engaged consumers are more likely to exhibit positive behavioral responses, making engagement a key variable in evaluating the effectiveness of online marketing strategies.

Studies exploring engagement as a mediator are still limited, particularly within integrated influencer-affiliate contexts. Existing frameworks primarily focus on unidirectional effects, such as how influencer trust affects purchase intention directly. There is a pressing need for multidimensional models that incorporate engagement as a dynamic mediator between message source, value perception, and consumer response. The present study fills this gap by proposing a structural model where influencer trust and affiliate value jointly influence purchase intention, with engagement serving as a mediator.

In summary, while the individual impacts of influencer and affiliate marketing have been extensively studied, their integration and the role of user engagement remain under-theorized. By synthesizing these strands of literature, this research contributes a novel framework that captures the complexity of hybrid digital marketing strategies and their effect on consumer decision-making.

2. Research Model and Hypotheses

Building on the Elaboration Likelihood Model (ELM) and Social Exchange Theory (SET), this study proposes a model that links influencer trust and affiliate value to consumer purchase intention, mediated by user engagement.

The ELM framework suggests that consumers process information via either central or peripheral routes [24]. Influencer trust, perceived as an affective cue, may activate peripheral processing, while affiliate value, which involves price and utility assessments, engages central processing. Both forms of persuasion are likely to increase consumer engagement and intention to act.

SET posits that social behaviors, including online engagement, are driven by perceived rewards and expectations of reciprocity [25]. In this context, user engagement is conceptualized as a behavioral response to the dual influences of trust (social credibility) and value (economic incentive).

Hypotheses

- **H1:** Influencer trust has a positive effect on user engagement.
- **H2:** Affiliate value has a positive effect on user engagement.
- **H3:** Influencer trust has a positive effect on purchase intention.
- **H4:** Affiliate value has a positive effect on purchase intention.
- **H5:** User engagement has a positive effect on purchase intention.
- **H6:** User engagement mediates the relationship between influencer trust and purchase intention.
- **H7:** User engagement mediates the relationship between affiliate value and purchase intention.

3. Methodology

Research Design and Approach

This study employed a quantitative, cross-sectional research design to evaluate the integrated effects of influencer trust and affiliate value on consumer purchase intention, mediated by user engagement. Given the exploratory nature and the need to model latent constructs with multiple indicators, Partial Least Squares Structural Equation Modeling (PLS-SEM) was chosen for data analysis. PLS-SEM is particularly well-suited for complex models in- volving mediation, small to medium sample sizes, and prediction-oriented goals [18].

Sample and Data Collection

Data were collected through an online survey administered to consumers with prior experience in engaging with influencer and affiliate content on digital platforms. A total of 400 usable responses were obtained using stratified random sampling to ensure diversity across age, gender, and digital usage behavior. Screening questions ensured that participants had interacted with both influencer content and affiliate links in the past six months. The sample size exceeded the minimum recommended for PLS-SEM, which suggests at least 10 cases per indicator [19].

Instrument Development

The questionnaire consisted of four validated scales adapted from existing literature:

- **Influencer Trust (3 items)** — e.g., "I trust recommendations made by influencers" [20]
- **Affiliate Value (3 items)** — e.g., "Affiliate links provide valuable product information" [23]
- **User Engagement (3 items)** — e.g., "I often interact with content shared by influencers"
- **Purchase Intention (3 items)** — e.g., "I am likely to purchase products recommended through influencer-affiliate links" [22]

All items were measured on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). A pilot test with 30 respondents helped refine item clarity and ensure content validity.

Data Analysis Procedure

Data were analyzed using Smart PLS 4.0. The analysis followed a two-stage approach:

1. Measurement Model Assessment: Internal consistency was evaluated using Cronbach's alpha and composite reliability (CR). Convergent validity wasassessed via average variance extracted (AVE). Discriminant validity was checked using the Fornell-Larcker criterion and HTMT ratios.

2. Structural Model Assessment: Path coefficients and R-squared values were computed.Bootstrapping with 5000 resamples wasused to test the significance of direct and indirect effects.

4. Results

Measurement Model Assessment

To evaluate the reliability and validity of the constructs, we first examined the measurement model. All constructs demonstrated strong internal consistency, with Cronbach's alpha and composite reliability (CR) values exceeding the recommended threshold of 0.7 [18]. Convergent validity was confirmed as all Average Variance Extracted (AVE) values exceeded 0.50, indicating that more than half the variance in the observed variables was explained by their respective constructs Discriminant validity was verified through the Fornell-Larcker criterion. Each construct's AVE square root exceeded its correlations with other constructs. HTMT ratios were also below the conservative threshold of 0.85, reinforcing discriminant validity.

Table 1: Reliability and Validity Metrics

Construct	Cronbach's Alpha	CR	AVE
Influencer Trust	0.81	0.86	0.68
Affiliate Value	0.79	0.84	0.63
User Engagement	0.83	0.87	0.66
Purchase Intention	0.85	0.89	0.70

Structural Model Assessment

We then evaluated the structural model using bootstrapping (5000 resamples). Results indicate that influencer trust and affiliate value both have significant positive effects on user engagement:

- Influencer Trust → Engagement ($\beta = 0.32$, $p < 0.01$)
- Affiliate Value → Engagement ($\beta = 0.28$, $p < 0.01$)

User engagement was found to significantly predict purchase intention:

- Engagement → Purchase Intention ($\beta = 0.42$, $p < 0.001$)

Direct effects from influencer trust and affiliate value to purchase intention were also significant but diminished when engagement was included in the model, suggesting partial mediation.

Mediation Analysis

To assess the mediating role of engagement, we examined the indirect effects. Boot- strapped confidence intervals confirmed the significance of both mediated paths:

- Influencer Trust → Engagement → Purchase Intention (indirect effect = 0.13, $p < 0.01$)
- Affiliate Value → Engagement → Purchase Intention (indirect effect = 0.12, $p < 0.01$)

These results support H6 and H7, confirming that engagement partially mediates the effects of both trust and value on intention.

Model Fit Indicators

Standard PLS model fit criteria were evaluated. The R2 for purchase intention was 0.53, indicating substantial explanatory power. The Stone-Geisser Q2 values for endogenous variables were above zero, affirming predictive relevance.

4.1. Structural Model

Significant relationships observed:

- Influencer Trust → Engagement ($\beta = 0.32$, $p < 0.01$)
- Affiliate Value → Engagement ($\beta = 0.28$, $p < 0.01$)
- Engagement → Purchase Intention ($\beta = 0.42$, $p < 0.001$) Mediation analysis confirmed the mediating role of engagement.

5. Discussion

Theoretical Implications

This study contributes to the growing body of literature on digital marketing by integrating influencer and affiliate strategies into a single empirical framework. Drawing on the Elaboration Likelihood Model (ELM), the findings validate that both peripheral cues (influencer trust) and central processing (affiliate value) independently and collectively influence consumer decision-

making through engagement. This aligns with prior research suggesting that trust-based and utility-based persuasion routes can coexist in complex digital contexts [24, 20].

By establishing user engagement as a mediator, the study extends Social Exchange Theory (SET) into the influencer-affiliate domain. Engagement emerges as a behavioral outcome of perceived social credibility and economic utility, reinforcing the notion that consumers reciprocate value-laden interactions by exhibiting purchasing behaviors. This operationalizes SET in a novel context and confirms that perceived relational benefits drive sustained digital interaction [25].

Moreover, the validated PLS-SEM model demonstrates strong predictive relevance (R2 =0.53), surpassing many prior digital persuasion models that lack integrated perspectives. By modeling both direct and indirect pathways, this study addresses calls in the literature for more nuanced and multilevel models of online influence.

Managerial Implications

From a managerial standpoint, the integration of influencer trust and affiliate value offers a powerful strategy to enhance digital campaign effectiveness. Marketers should design hybrid campaigns where trusted influencers share content embedded with trackable affiliate links. This not only boosts credibility but also provides measurable incentives that appeal to rational decision-makers.

The significance of user engagement as a mediator highlights the importance of content that fosters interaction—likes, shares, comments, and clicks. Marketers should invest in analytics that track engagement metrics as leading indicators of conversion. Techniques such as interactive storytelling, limited-time offers through influencers, and call-to-action prompts can amplify these effects.

Furthermore, brands should segment their influencer partners based on their ability to both build trust and drive economic value. Micro-influencers may outperform celebrities in niche categories where trust and engagement are more critical than reach.

Limitations and Future Research

Despite its contributions, the study has limitations. First, the cross-sectional design restricts causal inferences. Longitudinal studies could better capture how influencer-affiliate dynamics evolve over time.

Second, the reliance on self-reported data introduces potential bias. Behavioral tracking or experimental designs could complement survey methods in future work.

Third, the sample was limited to users who had prior exposure to both influencer and affiliate content. While this enhances relevance, it may not generalize to novice users. Future research should consider cultural and demographic moderating effects, such as platform usage patterns or digital literacy.

Lastly, while this study focuses on engagement as a mediator, other potential mediators or moderators—such as perceived risk, brand loyalty, or platform type—could further explain consumer behavior in digital commerce.

Overall, this study opens several pathways for future research into integrated marketing strategy, particularly in the era of social commerce, where boundaries between influence, information, and incentives are increasingly blurred.

6. Conclusion

This study advances our understanding of digital marketing by empirically testing the integrated effects of influencer trust and affiliate value on consumer purchase intention, mediated by user engagement. Using a robust PLS-SEM approach with data from 400 respondents, the findings confirm that both influencer and affiliate-driven factors significantly predict engagement, which in turn strongly influences the likelihood of purchase.

User engagement was shown to partially mediate the effect of influencer trust and affiliate value on purchase intention, underscoring its role as a critical behavioral mechanism in digital persuasion. These results support a dual-route perspective grounded in the Elaboration Likelihood Model, while also extending Social Exchange Theory by highlighting how both relational and instrumental rewards foster user action.

Practically, the research offers actionable insights for digital marketers and content creators. Integrating trust-building content with performance-oriented incentives can produce synergistic effects on engagement and conversion. This blended approach is especially relevant in today's social commerce landscape.

Future studies should consider longitudinal designs and alternative mediators or moderators

such as perceived risk or platform trust. By continuing to investigate hybrid strategies, scholars can better inform the evolving field of digital consumer influence.

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Exploring Consumer Preferences for Sustainable Packaging: A Deep Dive into Eco-Friendly Choices

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Abstract

This study investigates consumer awareness, preferences, and willingness to pay for sustainable packaging, analysing how these factors are influenced by demographics such as age, gender, and education. Using a structured questionnaire distributed to 204 respondents and analysed through statistical tools including cross-tabulation and Chi-Square tests, the study identifies varying levels of awareness and behavioural engagement toward eco-friendly packaging. The findings reveal a strong positive correlation between awareness and proactive sustainable purchasing behaviour. Moreover, demographic factors, particularly gender and education level, significantly impact willingness to pay more for sustainable packaging, whereas age does not show a statistically significant effect. These insights offer valuable guidance for businesses and policymakers aiming to promote environmentally conscious consumption through targeted strategies and education initiatives.

1. Introduction:

In recent years, the concept of sustainable packaging has emerged as a critical focal point for both businesses and consumers who are increasingly concerned about their environmental

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impact. As the global community becomes more conscious of the consequences of waste and pollution, the demand for eco-friendly packaging alternatives has surged.

Sustainable packaging refers to the use of materials and manufacturing methods that have minimal environmental footprints, emphasizing recyclability, biodegradability, and the responsible use of resources. It gained significance in 1990's, but major momentum and widespread adoption have accelerated since the early 2000s, especially in response to growing environmental concerns and consumer demand .

The key factors propelling the growth of sustainable products are the undeniable environmental effects of plastic waste, the implementation of government policies banning plastic packaging, and a strong consumer demand for eco-friendly packaging solutions' .

Businesses are recognizing that integrating sustainable practices not only fulfills corporate social responsibility but also meets the evolving expectations of their customer base. The companies that adopt sustainable packaging strategies tend to experience enhanced brand loyalty and a competitive advantage in the market . Consumers, on the other hand, are increasingly seeking products that align with their values, often preferring brands that demonstrate genuine commitment to environmental stewardship .

The present study aims to comprehensively analyse how consumers perceive sustainable packaging, what preferences they exhibit, and how demographic factors influence their purchasing behaviors. A deeper understanding of these consumers' behaviors can provide actionable intelligence for businesses looking to align their product offerings with sustainability trends.

By identifying and understanding these determinants, stakeholders can develop targeted strategies to promote sustainable choices, fostering a harmonious balance between consumer preferences and environmental responsibility.

Research Objectives

The aim of the study is essential to be analyzed in the specific direction mentioned above.

Therefore, the following objectives have been taken for the study:

1. RO1: To know the level of consumer awareness about sustainable packaging.
2. RO2: To examine whether consumers' demographic characteristics significantly influence their willingness to pay more for sustainable packaging,

2. Literature Review:

2.1 Awareness and Consumer Behaviour: Consumer awareness of sustainable packaging plays a pivotal role in influencing purchase behaviour. Several studies have shown that increased environmental awareness leads to a higher likelihood of choosing eco-friendly packaging ', consumers with higher environmental consciousness are more attentive to sustainable labels and are more likely to make informed choices.

2.2 Influence of Demographics: Demographic factors such as education, income, and age significantly impact sustainability awareness and choices. For instance, Dangelico and Vocalelli "found that individuals with higher educational attainment display greater environmental concern, which translates into eco-conscious purchasing. Similarly, Dena et all demonstrated that age and gender also play roles, with younger consumers and females showing more eco-centric preferences.

2.3 Willingness to Pay fo Sustainable Packaging: Several studies have explored consumers' willingness to pay (WTP) a premium for sustainably packaged goods. According to Van Birgelen et al. (2009), perceived environmental benefits positively influence WTP. Moreover, the emotional attachment to environmental values can lead consumers to pay significantly more for green packaging. However, economic factors still serve as constraints, as seen in the review paper of Aschemann-Witze and Zielke, who noted price sensitivity as a limiting factor for sustainable choices.

2.4 Packaging and Brand Loyalty: Sustainable packaging not only affects purchase intention but also enhances brand loyalty. The studies by Handoko et al. and Ting et al. revealed that environmentally friendly packaging strengthens consumer trust and satisfaction. Moreover, green packaging can act as a brand differentiator, promoting stronger customer engagement and encouraging repeat purchases.

2.5 Perceived Barriers to Adoption: Despite growing interest, several barriers hinder the widespread adoption of sustainable packaging. These include lack of awareness, limited availability , higher costs , misconceptions about performance , and consumers may not recognize the added value of sustainable alternatives.

2.6 Role of Government and Policy: Regulatory frameworks significantly influence the adoption of sustainable packaging. Policies that provide incentives or mandates for eco-friendly packaging have shown to improve both corporate compliance and consumer trust . Furthermore, institutional support in the form of subsidies and awareness campaigns can accelerate the shift toward more environmentally friendly packaging solutions.

2.7 Future Directions and Innovation: Ongoing research in sustainable packaging is increasingly focused on the development of innovative biodegradable, recyclable, and reusable materials that minimize environmental impact while maintaining functional integrity . These efforts are complemented by holistic design approaches that integrate environmental responsibility with performance efficiency across the product lifecycle. Emphasis is placed not only on material innovation but also on systemic considerations such as life cycle assessments, supply chain sustainability, and end-of-life management. Concurrently, advances in packaging technology are being leveraged to extend the shelf life of perishable goods, thereby reducing food waste and enhancing overall sustainability within the packaging ecosystem' .

3. Research Methodology:

The present study adopts a quantitative research approach to examine consumer preferences toward sustainable packaging. Primary data was collected through the administration of a structured questionnaire, specifically designed to capture a wide range of information pertaining to consumers' demographic profiles, environmental awareness, purchasing behavior, and attitudes toward sustainable packaging solutions. A total of 204 responses were collected, ensuring a sufficient sample size for meaningful statistical analysis.

The questionnaire included both closed-ended and Likert-scale questions to facilitate quantitative assessment. To analyze the collected data, a combination of statistical techniques was employed. Cross-tabulation was used to explore the relationships and patterns between

demographic factors (such as age, gender, income, and education) and consumers' preferences for sustainable packaging. The mean scores were calculated for key variables to determine the central tendency and overall consumer sentiment toward different aspects of sustainable packaging.

In addition to descriptive statistics, inferential statistical analyses were conducted to validate the research hypotheses formulated at the outset of the study. Hypothesis testing involved assessing the significance of differences and relationships within the data, thereby enabling the researchers to draw generalizable conclusions about the broader population.

All data entry, coding, and analysis were performed using the Statistical Package for the Social Sciences (SPSS) software. SPSS facilitated accurate and efficient processing of the dataset, allowing for detailed statistical analysis and clear interpretation of the findings. The use of SPSS also ensured the reliability and validity of the results through its robust analytical capabilities.

Overall, the methodological framework adopted in this study provided a systematic and comprehensive approach to understanding consumer behaviour regarding sustainable packaging. It enabled the researchers to rigorously examine the factors influencing consumer preferences and to offer data-driven insights that could inform businesses and policymakers in promoting sustainable consumption practices.

4. Result Analysis:

Most respondents were men (50.98%), while women were 49.5%. It should be noted that the respondents mainly belonged to the age groups 18-24 (38.55%), followed by the age group 25-34 (26.91%) and 35-44 (11.24%), and 45-54 (9.24%) and above years of age were (4.02%) respectively. Hence it supports the good number of representations as the maximum number of participants in this study were young. These young people tend to care more about the green environment and influence their individual decision. Most respondents were bachelor's graduates (64.88%).

Awareness About Sustainable Packaging:

The data provides insights into respondents' awareness regarding the types of sustainable

packaging. In table 1, out of 204 participants, the majority (40.2%) are “Somewhat aware,” indicating that while they are familiar with the concept, their understanding may be limited or general. This group likely recognizes the term but may not fully grasp the different forms or benefits of sustainable packaging.

Following this, 29.9% of respondents are “Aware,” suggesting a more solid understanding, possibly including knowledge of materials like biodegradable or recyclable packaging.

Table 1: Awareness about the type of sustainable packaging.

	Frequency	Percent	Valid Percent	Cumulative Percent
Not Aware	28	13.7	13.7	13.7
Somewhat aware	82	40.2	40.2	53.9
Aware	61	29.9	29.9	83.8
Very aware	33	16.2	16.2	100.0
Total	204	100.0	100.0	

Only 16.2% of participants reported being “Very aware,” indicating a deep or comprehensive understanding of the subject. On the other end, 13.7% of respondents are “Not aware,” showing a lack of familiarity with sustainable packaging altogether. Overall, the results reflect a positive trend in awareness, with 86.3% of respondents having at least some knowledge. However, the relatively low number of respondents who are “Very aware” highlights the need for more targeted educational initiatives to deepen public understanding of sustainable packaging solutions.

Hypothesis:

The null hypothesis

Ho: To examine whether consumer awareness of sustainable packaging (How aware are you of

the types of sustainable packaging available?) is associated with their active behavior in seeking such products (Have you actively sought out products with sustainable packaging in the past year?).

Table 1 cross-tabulation analysis highlights the respondents' awareness levels regarding sustainable packaging and their behavior in actively seeking such products a strong correlation. The data indicate that as awareness increases, so does environmentally conscious consumer behavior. Among respondents who identified as "very aware" of available sustainable packaging, 84.8% reported actively seeking these products over the past year. Similarly, 83.6% of the "aware" segment demonstrated the same behavior.

Table: 2

			Have you actively sought out products with sustainable packaging in the past year?		Total
			Yes	No	
How aware are you of the types of sustainable packaging available?	Not aware	Count	15	13	28
		% within 7.000000	53.6%	46.4%	100.0%
		% within 8.000000	10.0%	24.1%	13.7%
	Some what aware	Count	56	26	82
		% within 7.000000	68.3%	31.7%	100.0%
		% within 8.000000	37.3%	48.1%	40.2%
	Aware	Count	51	10	61
		% within 7.000000	83.6%	16.4%	100.0%
		% within 8.000000	34.0%	18.5%	29.9%
	Very aware	Count	28	5	33
		% within 7.000000	84.8%	15.2%	100.0%
		% within 8.000000	18.7%	9.3%	16.2%
Total		Count	150	54	204
		% within 7.000000	73.5%	26.5%	100.0%
		% within 8.000000	100.0%	100.0%	100.0%

In contrast, only 53.6% of the "not aware" segment exhibited this positive attitude. These findings suggest that awareness is a significant predictor of sustainable behavior. It is noteworthy that 48.1% of respondents who did not actively pursue sustainable packaging were in the "somewhat aware" category, and 24.1% were "not aware" altogether.

This highlights a critical knowledge gap among consumers that can be addressed through targeted awareness campaigns. Additionally, the distribution of respondents shows a higher percentage of "somewhat aware" individuals (40.2%), followed by "aware" (29.9%) and "very aware" (16.2%), with only 13.7% being "not aware." Overall, 73.5% of participants engaged in sustainable purchasing behavior, which is encouraging; however, the findings underscore the importance of transitioning consumers from passive awareness to active participation.

These results underscore the significance of educational interventions and marketing communication strategies focused on awareness-building as a key driver for promoting sustainable consumption. Companies and policymakers should aim to transform "somewhat aware" consumers into more informed and active participants to effect broader behavioral changes toward sustainability

Table 3: Applying Chi-Square Method

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.240[a]	3	.007
Likelihood Ratio	12.177	3	.007
Linear-by-Linear Association	10.904	1	.001
N of Valid Cases	204		

The relationship between consumer awareness and the willingness to pay a premium for products with sustainable packaging is significant as shown in table 3. This is corroborated by the Pearson Chi-Square test ($\chi^2(3) = 12.240$, $p = 0.007$). As consumer awareness increases, so does the likelihood of their willingness to pay more, indicating a positive association.

Willing To Pay More For Sustainable Packging According To Demographic Factors:

This is another objective for the research, for this objective we create the three Hypothesis.

Hypothesis are as follows:

1. Ha1: There is an association between willingness to pay for products with sustainable packaging and education
2. Ha2: There is a significant difference in consumer willingness to pay more for products with sustainable packaging across gender groups.
3. Ha3: There is a significant association between consumers' age and their willingness to pay for products with sustainable packaging.

Ha1: There is an association between willingness to pay for products with sustainable packaging and education.

Table 4: Willing to pay more for products with sustainable packaging (WTP)* Gender

			Gender		Total
			Male	Female	
Willing to pay more for products with sustainable packaging	1	Count	45	44	89
		% within WTP	50.6%	49.4%	100.0%
		% within Gender	44.6%	42.7%	43.6%
	2	Count	20	37	57
		% within WTP	35.1%	64.9%	100.0%
		% within Gender	19.8%	35.9%	27.9%
	3	Count	36	22	58
		% within WTP	62.1%	37.9%	100.0%
		% within Gender	35.6%	21.4%	28.4%
Total		Count	101	103	204
		% within WTP	49.5%	50.5%	100.0%
		% within Gender	100.0%	100.0%	100.0%

As observed in the crosstabulation table 4, among respondents who indicated "1 i.e. Yes," the distribution was nearly equal across genders, with 50.6% male and 49.4% female, suggesting a balanced inclination toward sustainable spending.

Among those who indicated "2 i.e. No," 64.9% were female, whereas only 35.1% were male, indicating that female respondents were more likely to reject the idea of paying more for sustainable packaging.

In the "3 i.e. Maybe" category, 62.1% were male, while only 37.9% were female, suggesting that male respondents exhibited greater uncertainty or indecisiveness about paying more.

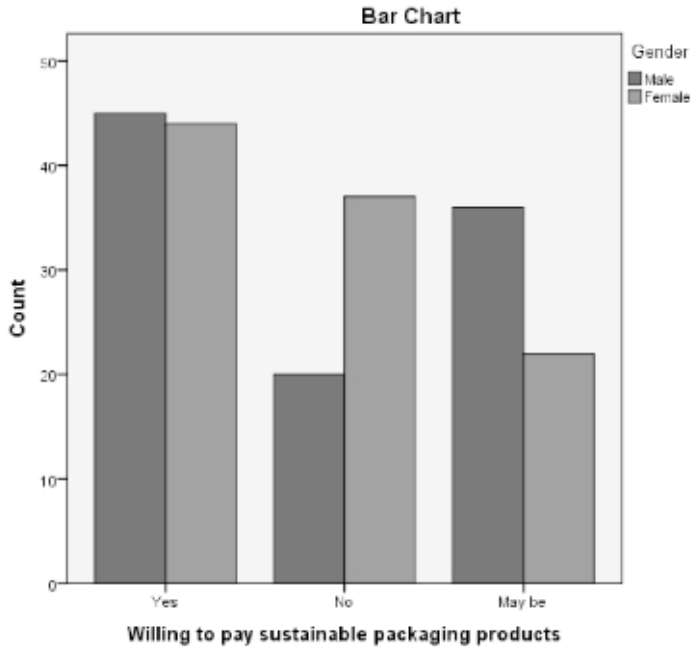
Although the overall number of male and female respondents is nearly equal (101 males and

103 females), their response patterns significantly differ. Females tended to have more definitive responses (either yes or no), whereas a greater proportion of males fell into the "maybe" category, indicating hesitation or conditional acceptance.

Table 5

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.442	2	.015
Likelihood Ratio	8.553	2	.014
Linear-by-Linear Association	1.127	1	.288
N of Valid Cases	204		

The Pearson Chi-Square value of 8.442 (p = 0.015) in table 5 confirms that these gender differences are statistically significant. The Likelihood Ratio Test (p = 0.014) supports this result. However, the Linear-by-Linear Association (p = 0.288) was not significant, indicating that the association is not necessarily linear but categorical.



The bar chart illustrates the distribution of male and female responses regarding their willingness to pay more for products with sustainable packaging. Both genders show a high level of willingness, with a similar number of males and females responding "Yes," indicating broad support for sustainable packaging. However, a noticeable difference appears in the "No" and

"Maybe" categories. A larger number of females responded "No" compared to males, suggesting a greater proportion of firm unwillingness among women. Conversely, more males selected "Maybe," indicating a higher level of uncertainty or conditional willingness among them. Overall, while support is strong across both genders, males tend to be more undecided, whereas females lean toward more definite responses.

Ha2: There is a significant association between consumers' age and their willingness to pay for products with sustainable packaging.

Table 6: Cross tabulation

Crosstab

			WTP			Total
			yes	no	May be	
Age	(Under 18)	Count	12	5	4	21
		% within Age	57.1%	23.8%	19.0%	100.0%
		% within WTP	13.5%	8.8%	6.9%	10.3%
	(18-24)	Count	36	26	21	83
		% within Age	43.4%	31.3%	25.3%	100.0%
		% within WTP	40.4%	45.6%	36.2%	40.7%
	(25-44)	Count	23	14	16	53
		% within Age	43.4%	26.4%	30.2%	100.0%
		% within WTP	25.8%	24.6%	27.6%	26.0%
	(35-44)	Count	10	5	7	22
		% within Age	45.5%	22.7%	31.8%	100.0%
		% within WTP	11.2%	8.8%	12.1%	10.8%
	(45-54)	Count	5	5	8	18
		% within Age	27.8%	27.8%	44.4%	100.0%
		% within WTP	5.6%	8.8%	13.8%	8.8%
	(55+)	Count	3	2	2	7
		% within Age	42.9%	28.6%	28.6%	100.0%
		% within WTP	3.4%	3.5%	3.4%	3.4%
Total		Count	89	57	58	204
		% within Age	43.6%	27.9%	28.4%	100.0%
		% within WTP	100.0%	100.0%	100.0%	100.0%

As illustrated in Table 6, the highest proportion of respondents willing to pay more ("Yes") for sustainable packaging is observed in the under-18 age group (57.1%), followed by those aged 35–44 (45.5%) and 18–24 (43.4%). Conversely, the age group 45–54 demonstrates the lowest percentage (27.8%) of willingness to pay more. The "Maybe" response is most prevalent among individuals aged 45–54 (44.4%) and 35–44 (31.8%), indicating a degree of uncertainty within the middle-aged demographic. This indicates a clear age-related trend in willingness to participate, with younger people being more inclined.

Despite these variations in response percentages across age groups, the Pearson Chi-Square value is $\chi^2 = 5.369$, $p = 0.865$ from table 7, which exceeds the significance threshold of 0.05. Similarly, the Likelihood Ratio test yields $p = 0.870$, and the Linear-by-Linear Association test is non-significant ($p = 0.105$).

These results suggest that the observed differences in willingness to pay across age categories are not statistically significant and may be due to random variation rather than a true relationship.

Table 7: Applying Chi- Square

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.369	10	.865
Likelihood Ratio	5.308	10	.870
Linear-by-Linear Association	2.622	1	.105
N of Valid Cases	204		

H3: There is no association between willingness to pay for products with sustainable packaging and education.

Table 8: Cross tabulation

Education * WTP Crosstabulation

			WTP			Total
			yes	no	maybe	
Education	(High School)	Count	12	11	7	30
		% within Education	40.0%	36.7%	23.3%	100.0%
		% within WTP	13.5%	19.3%	12.1%	14.7%
	(Bchelor's Degree)	Count	33	35	36	104
		% within Education	31.7%	33.7%	34.6%	100.0%
		% within WTP	37.1%	61.4%	62.1%	51.0%
	(Master Degree)	Count	41	11	12	64
		% within Education	64.1%	17.2%	18.8%	100.0%
		% within WTP	46.1%	19.3%	20.7%	31.4%
	(Doctrate)	Count	3	0	3	6
		% within Education	50.0%	0.0%	50.0%	100.0%
		% within WTP	3.4%	0.0%	5.2%	2.9%
Total		Count	89	57	58	204
		% within Education	43.6%	27.9%	28.4%	100.0%
		% within WTP	100.0%	100.0%	100.0%	100.0%

This crosstab examines the relationship between education level and willingness to participate (WTP), categorized as "yes," "no," and "maybe." The data reveals that respondents with a Master's degree show the highest willingness, with 64.1% saying "yes"—the highest among all education levels. In contrast, Bachelor's degree holders are the largest group (51% of total respondents), but they display more balanced responses across all WTP categories, with only 31.7% saying "yes" and 34.6% saying "maybe." High school graduates are split, with 40% saying "yes" and 36.7% saying "no." Although the Doctorate group is small (only 6 individuals), half responded "yes" and the other half "maybe," with none saying "no." Overall, the data suggests that individuals with higher education—particularly Master's degree holders—are more decisive and more likely to be willing to participate, while those with lower or mid-level education show more uncertainty or reluctance.

Table 9: Applying Chi-Square

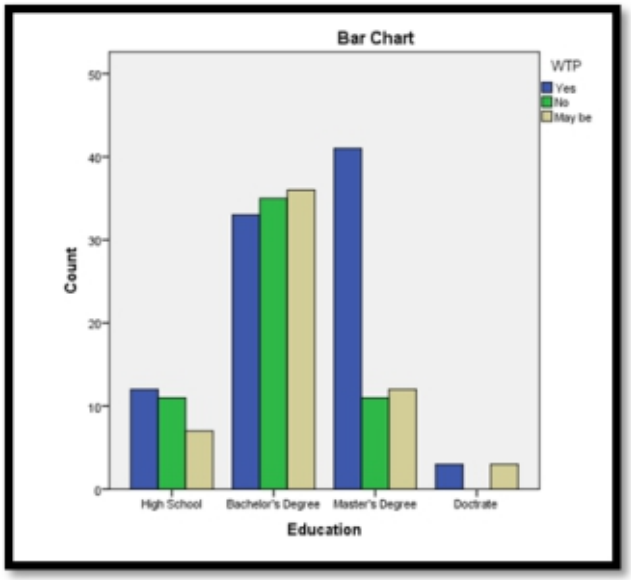
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.768	6	.002
Likelihood Ratio	22.332	6	.001
Linear-by-Linear Association	3.835	1	.050
N of Valid Cases	204		

The Chi-Square test results indicate a statistically significant association between education level and willingness to participate (WTP). The Pearson Chi-Square value is 20.768 with 6 degrees of freedom and a p-value of 0.002, which is well below the conventional significance threshold of 0.05. This means the observed differences in WTP across education levels are unlikely to have occurred by chance.

Similarly, the Likelihood Ratio test confirms this with a p-value of 0.001. The Linear-by-Linear Association test, which examines a trend across ordered categories, also yields borderline significance with a p-value of 0.050.

Since the p-value is less than 0.05, we reject the null hypothesis and conclude that there is a

significant relationship between education level and willingness to participate. Education appears to influence individuals' responses meaningfully.



The bar chart visually illustrates the relationship between education level and willingness to participate (WTP), categorized into "Yes," "No," and "Maybe." It clearly shows that individuals with a Master's degree are the most likely to express willingness to participate, as indicated by the tallest blue bar ("Yes") in that category. Respondents with a Bachelor's degree have relatively balanced responses across all three categories, showing more indecision, with "Maybe" being the most frequent. Among high school graduates, responses are fairly evenly split, though slightly more say "Yes." For those with a Doctorate, the number of respondents is very low, but both "Yes" and "Maybe" responses are present, with no "No" responses. Overall, the chart reinforces the earlier statistical finding that higher education, particularly a Master's degree, is associated with greater willingness to participate.

5. CONCLUSION

The findings of this study underscore the critical role of consumer awareness and demographic characteristics in shaping attitudes and behaviours toward sustainable packaging. Higher levels of awareness were significantly associated with active efforts to seek environmentally friendly packaging options. Additionally, education and gender emerged as influential factors in

consumers' willingness to pay a premium for sustainability, with more educated individuals and females demonstrating a greater propensity. However, age did not significantly affect willingness to pay, suggesting that sustainability concerns cut across generational lines. These insights highlight the importance of targeted awareness campaigns and educational efforts to deepen public understanding and foster more sustainable consumption habits. For businesses and policymakers alike, aligning strategies with consumer expectations and values can facilitate a smoother transition to eco-friendly packaging solutions, reinforcing both environmental goals and market competitiveness.

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Unorganized Sectors Embracing Digital Payments: UPI's Transforming India's Economy and Job Market

Saurav Kumar

Abstract

Propelled by recent policy initiatives and technological developments, India's digital payment system is a promising success story in the making. At the same time, the data also points towards an increasing usage of cash. While aggregate country-level data can indicate overall preferences of citizens, we use a novel online survey-based dataset to understand how factors such as 'perception' and 'trust' in digital payments, and experience with online frauds, affect the payment behaviour of consumers. Controversies surround India's growth performance, especially since 2015. Officially, it is now claimed that the economy is the fastest growing large economy in the world and that only 11.3 per cent suffer 'multidimensional poverty' (Niti Aayog 2024). Yet, the government is giving 5 kg. of grains per month per person free to 81 crore (810 million) citizens, or 58 per cent of the population, since it believes they are unable to buy enough food. Is this not an admission that growth has not resolved the issue of poverty in India? Persistence of poverty is linked to a high level of unemployment. So, if growth is robust, why is the unemployment level high? Could it be that the official growth and poverty data are incorrect? Data from various sources suggest that there is growing income and wealth disparity in India (Oxfam, 2023). The implication is that whatever growth is taking place is narrowly concentrated in the hands of a small per cent of the population. This is characterised as K-shaped growth, especially after the pandemic.

Keywords: Digital Payment, Unorganized economic sectors, UPI.

Introduction

The terms digital transaction, electronic transactions, paperless transaction or cashless transaction are almost used interchangeably in common parlance. The RBI Ombudsman Scheme for Digital Transactions (2019) defines digital transactions as “a payment transaction in a seamless system effected without the need for cash at least in one of the two legs, if not in both.

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This includes transactions made through digital/electronic modes wherein both the originator and the beneficiary use digital/electronic medium to send or receive money". However, in our paper, a digital transaction is one where the payer and payee both use digital modes of payment. Policies in many parts of the world are being designed in favour of non-cash payments because of the various problems that cash poses. Cash fuels the parallel or black economy, therefore, phasing it out might solve this problem, especially with large denomination notes (Rogoff K , 2015). The cost of printing, destroying and other cash related operational expenses in India are estimated at 1.7% of GDP (VISA 2016). Cash, however, remains a significant part of all the transactions in most countries (European Central Bank 2018). While reading into data on the macro-level can give us a broad idea of people's overall preferences, data at the individual level gives us an insight into how certain factors impact the choices/decisions consumers make regarding the mode of payment. Following this line of thought, several studies have analysed such issues at the level of the consumers. They reveal that the choice of payment method is impacted by a host of consumer-specific and technological factors. Transaction size has a significant impact on what mode of payment people choose. A cross- country comparison of payment diary survey data of seven countries showed that cash was the preferred mode of payment for smallest 50% and largest 25% of transactions (Bagnall J, Bounie D, Huynh KP, Kosse A, Schmidt T, Schuh SD, Stix H 2014). In another study, social marginal costs were computed for various instruments for small and large transaction sizes and it was found that for larger transaction sizes, there were significant differences in cost for electronic vs non-electronic payments (Garcia-Swartz DD, Hahn RW, Layne-Farrar A 2006). Studies show that demographic characteristics also play a significant role in how people choose to pay. It was found that better education and higher income lead to lower cash use compared to non-cash modes. Certain categories of age show a stronger preference for digital payments Bagnall et al. (Bagnall J, Bounie D, Huynh KP, Kosse A, Schmidt T, Schuh SD, Stix H 2014). Consumer perceptions on safety/risk, convenience/ease of use, anonymity and costs have been shown to affect payment systems adoption significantly. Png and Tan (Png I, Tan C 2019) show that concerns about privacy emerged as one of the main psychological factors causing a bias towards cash for retail transactions. Kahn et al. (Kahn CM, McAndrews J, Roberds W 2005) show that business in the unorganised economy was attributed to transactions that could be made in cash and did not reveal the agent's identity. Bagnall et al. (Bagnall J, Bounie D, Huynh KP, Kosse A, Schmidt T, Schuh SD, Stix H 2014) analysed data from cross-country consumer diary surveys and found that consumers who rated cash high on 'ease of use' ended up using it more. In a study

assessing payment perception of Dutch consumers, non-price parameters such as 'acceptance', 'convenience', 'transaction speed' and 'safety' were used to gauge the perception of payment instruments used at PoS terminals (Jonker N 2007). Several studies have used the Technology Acceptance Model (TAM) to show 'perceived usefulness' and 'perceived ease of use' have a significant impact on behavioural intention and thus, actual use of electronic payment systems (Lai PC 2017). Perceived trust in the payment system is shown to have a positive effect on the usage of digital modes of payment (Maqableh M 2015). While the central bank and banks are traditional regulators and service providers of payments systems respectively, non-banks have also emerged as new players in the framework. A recent empirical study conducted by the Monetary Authority of Singapore (Png I, Tan C 2019) found that trust in banks impacts the nature of the transaction. A cross-country analysis shows that residents in countries that reported lower trust in banks preferred cash for making transactions. In some cases, while an increase in trust can lead to the opening of accounts, it might not translate to actual usage of those accounts (Galiani S, Gertler P, Ahumada CN 2020). Central banks also play a pivotal role in ensuring safety, integrity and stability of the payments system. Experience of online fraud can shape beliefs of perception and trust and can have a direct impact on payment behaviour. Media coverage of these incidents is shown to affect card payment (Kosse A 2013). The direction, strength and frequency of media coverage affected debit card use. Few studies show that people simply use digital modes of payment because they have exhausted their stock of cash in hand. It is called 'cash first' or 'cash-burning' and is perceived to be an optimal policy by the consumer (Arango-Arango CA, Bouhdaoui Y, Bounie D, Eschelbach M, Hernandez L 2018). Some studies also point that people still pay in cash simply because it is difficult to grow out of habits (Jonker N 2007). The Unified Payments Interface (UPI) has emerged as a transformative force in India's digital landscape, revolutionizing the way financial transactions are conducted. Now, its influence extends far beyond the nation's borders, shaping global conversations around economic growth, entrepreneurship, and job creation. A recent webinar, titled "Times Ascent - Driving Job Creation Through Digital Payments," organized by the Times of India, showcased how UPI is propelling India's digital economy to new heights.With industry stalwarts like Atul Saigal, Senior Vice President - Commercial Cards, Axis Bank, Dr Sankarshan Basu, Professor in the Finance and Accounting Area at the IIM Bangalore, Girish Krishnan, Director Payments, Rewards, BigData, Merchant Services, Amazon Pay, Zubair Ulla, Head – Digital Channels, Ujjivan Small Finance Bank and Moderated by Akhil George, TOI Business Editorial, the event provided invaluable insights into UPI's impact on various sectors.

Research Objective:

While demographic factors like age, gender and income are relevant factors which determine this choice, the research investigates to find compelling evidence that a person's usage of digital payment methods is influenced by her perception of these instruments, as well as her trust in the overall payments framework and banking system in general.

Unorganised Sector is Very Large – Difficulty in Estimation

The economy consists of the unorganised and the organised sectors. As per the available data (GoI, 2017a), the former employs 94 per cent of the workforce and produces 45 per cent of the output. Such a large unorganised sector does not exist in any other major economy. The differences between the two sectors are in use of technology, scale of operation, wages, access to bank credit, marketing, etc. The unorganised sector units are so numerous that they cannot be measured every year. Periodic surveys (every five years) are carried out to collect these data, which are used to estimate the contribution of this sector to the GDP. After 2015, no survey of the unorganised sector units was carried out. From 2016 onwards, this sector has been adversely impacted by the shocks to the economy, invalidating the use of the 2015 data to estimate its performance and its contribution to the GDP. GoI (2023) shows that the share of the micro, small and medium enterprises (MSME) sector in GDP has declined from 30.5 per cent to 29.2 per cent between 2019-20 and 2021-22. Kumar (2017) and Kumar (2019) have argued that for much of the unorganised sector, independent data are not available for estimating the sector's contribution to GDP. For most of its sub-sectors, organised sector data are used as a proxy (see GOI, 2017b). Kumar (2020) has argued that the High Frequency Indicators (HFI) used to estimate the quarterly output represent the organised sector and not the unorganised sectors. Thus, the methodology used creates an upward bias in the contribution of the unorganised sector to GDP. Both these points have now been mentioned in a Reserve Bank of India (RBI) publication (Bhowmick, et.al. 2022). They say, as most of the HFIs belong to the organised sector. Therefore, information pertaining to the unorganised sector a segment contributing almost half to the overall economy remains untracked due to non-availability of robust data. The research agenda regarding the measurement, estimation and other issues pertaining to the informal economy remains largely unexplored GoI (2007), analysing the unorganised sector in the early 2000s, painted a grim picture of marginalisation of this sector in the economy, stating, the unorganized workers consisting of about 92% of the total workforce of 457 million (as of 2004-05). For most of them, conditions of work are utterly deplorable and livelihood options

extremely few. Such a sordid picture coexists uneasily with a shining India that has successfully confronted the challenge of globalization in the economy did lead to a sense of euphoria by the turn of the last century. However a majority of the people, who did not have even Rs.20 a day for consumption were not touched by this euphoria. What this Report said in 2007 rings true again when the Government is claiming that the economy is booming while in reality, the unorganised sector is languishing.

Place of the Unorganised Sector in the Economy

The unorganised sector is also referred to as 'informal' and 'unregistered'. These terms refer to units that are not registered in the Government's records. Bhalla (2009) presented the definitional and methodological issues involved. The organised (also known as 'formal') sector units also employ temporary/contract workers who do not have job security, written contracts and access to social security. So, the term 'unorganised' refers to both labour that does not have formal rights, and the unregistered production units. The existence of a large unorganised sector in India is the result of the adoption of the trickle-down approach to development, which marginalises the technologically backward sectors. The advanced sectors, being capital-intensive, absorb most of the investment, but offer few additional jobs. The backward sectors get a small share of investment, while most workers have no choice but to work in it. This situation got further aggravated post-1991 with the advent of the New Economic Policies (NEP) based on the idea of 'marketisation' (Williamson, 1989 called it the Washington Consensus). This change in the policy regime further strengthened the organised sector at the expense of the unorganised sector (See Kumar, 2013). In each broad sector, there is an unorganised sector component, which varies from sector to sector. Agriculture is almost entirely in the unorganised sector. The public sector is entirely in the organised sector. Every other sector has both components. For instance, there are hotels and restaurants, airlines and big manufacturing companies in the organised sector, while dhabas, rickshaw pullers and micro units belong to the unorganised sector. The organised and unorganised sectors are differentiated by technology. The former use more advanced technology and pay significantly higher wages than the latter. Most of the investment in the economy goes into the organised sector which is a) much more capital intensive and b) has a much bigger scale of operation than the unorganised sector. The high capital intensity leads to low employment generation in the organised sector. So most of the workers have to work in the unorganised sector. The latter has lower productivity, and also,

because the workers are unorganised, they get a lower wage than in the organised sector (for similar work). It should be noted in this context that even a rise in wage rates does not automatically indicate improved bargaining power of workers or rising employment levels. Wage rates may rise as mechanisation in agriculture and automation in industry replace a large number of unskilled workers with a smaller number of skilled workers/employees. In that case wages may rise despite unemployment rising, as is the case at present. Further, the extent of overtime and use of contract labour in industry are not reflected in the data, so we do not get a real picture of the hourly wage rates. In short, a seeming rise in wage rates can even go hand in hand with rising poverty.

Shrinking of the Unorganised Sector

Kumar (2020) has argued that the share of the unorganised sector has been shrinking since 2016-17 due to demonetisation and other developments. Kumar (2023a) gives an idea of this decline in 2022-23. Using data on aggregate output per worker, productivity in the non-agriculture unorganised sector is 0.63 times average productivity, while in the organised sector it is 9.17 times. That is, the organised sector produces 14.56 times more output per worker. So a shift in demand from the unorganised to the organised sector leads to an increase in productivity per worker, but higher unemployment/under-employment. A shift of production from the unorganised to the organised sector does raise productivity. But it also results in an increase in under-employment and disguised unemployment, with close to zero productivity. So, the average productivity in the economy hardly increases. A corollary of these trends is that, the higher the growth rate of the organised sector, the worse the brewing unemployment crisis for workers. Elsewhere, we have argued that under certain assumptions, the decline in the unorganised sector could be between 9.3 per cent and 5.6 per cent. (See Kumar (2023a) for an elaboration of this.) The official GDP growth rate of 7.2 per cent would then be incorrect, and actual GDP growth would lie between 2.5 per cent and 3.5 per cent. In that case, the Indian economy would not be the fastest growing large economy in the world. Again under the above assumptions, the GDP contribution of the unorganised sector, instead of growing at 6.5 per cent (the official growth rate), would be declining at upwards of 5.6 per cent a year. Thus, on an average, post 2016, its output would be less by at least 12 per cent compared to what it could have been. So, over the seven years since 2016, the loss of output of this sector would be about Rs 84 lakh crore. (Kumar (2023a).

Government Pushing for the Digitalisation of Economy

The Government is pushing for the digitalisation of the economy in various ways: for example, Aadhaar, direct benefit transfer (DBT), banking, Goods and Services Tax (GST), Central Bank Digital Currency (CBDC), etc. It argues that these steps will a) lead to reduction in the black economy and increased tax collections, and b) bring the economy under its control via regulation. However, the unorganised sector cannot be formalised through such methods, given its small scale of operations. While officially it may open bank accounts and use digital payment platforms for its transactions, these measures will not turn unorganised/informal units into the organised/formal sector. The vast majority of those working in this sector have incomes way below the taxable limit. Kumar (2023d) points out that in 2020-21, only 0.68 per cent of the population were effective income tax payers. Further, 0.016 per cent declared an income above Rs.1 crore, and their share of the taxable income was 38.6 per cent. Clearly, even most of the organised sector were not effective tax payers. There are 30 crore (300 million) unorganised sector workers registered on the e-shram portal, and 94 per cent declare an income of below Rs 10,000 per month, or Rs 1,20,000 per annum, which is 16 per cent of the current level at which tax has to be paid. Only a few owners of unorganised businesses (say, dhabas and shop owners), and very few workers, would be in the tax net. So, an increase in direct tax collections indicates the growth of the organised sector, and not of the economy as a whole, as the Government claims. Further, since demand is shifting to the organised sector, leading to an increase in its share of the economy, it cannot be concluded that the unorganised sector is becoming organised or formalised, and that tax collection is rising as a result. The shift in demand from the unorganised sector is akin to its being colonised. During colonial rule, the coloniser captured the markets of the colonised nations. In India, capitalist growth is occurring at the expense of pre-capitalist formations in agriculture and the small producers. Since the formal and organised sector is dominated by large corporations, and many of them are multinational corporations (MNCs) or with substantial investment by the MNCs and foreign portfolio investors (FPI), control of the economy is slipping into the hands of international finance capital. Since the operations of MNCs are more digitised, greater digitalisation of the economy will favour them.

Implications of Digitalisation for 'Welfare Rights'.

Digitalisation is leaving behind many of the marginalised, who do not have access to the internet or devices such as computers and smart phones, and/or have low financial literacy. At times, even if they own devices, the connectivity is poor, so they cannot access the net. This is the

internet divide. So those with limited access to internet not only cannot benefit from digitalisation, but may suffer due to inability to access services. The digitalised systems are also not fool proof. Many kinds of errors are encountered. For example, mismatch of fingerprints or iris scans may occur during authentication. Many elderly persons have had difficulty in getting their fingerprints registered, due to age-related factors. Many workers doing heavy manual work find that their fingerprints get disfigured, as a result of which they cannot authenticate the transaction. At times, the software malfunctions, and authentication is denied. Further, due to fraud, fake accounts are created, resulting in problems for genuine persons. Scamsters are also stealing and misusing the identities of people, leading to hesitancy among people. Due to these reasons, 'welfare rights' are being denied to some poor people covered by various schemes – for example, direct benefit transfers for cooking gas subsidy, payments to farmers, health benefits, ration, etc. In brief, digitalisation is a double disadvantage to many of the poor. First, it marginalises them, and second, they are often unable to avail of their legal rights.

Flawed Methodology to Estimate Unorganised Sector

Kumar (2023c) analyses the 'Methodology of Compiling Quarterly GDP Estimates' presented in GoI (2017b). Three noteworthy aspects of the method to calculate GDP from the supposedly more accurate 'production side' are as follows:

1. “The production approach used for compiling the QGVA [Quarterly Gross Value Added] estimates is broadly based on the benchmark-indicator method.”
2. “In this method, for each of the industry-groups, estimates of GVA [Gross Value Added] are compiled ….”
3. “In general terms, quarterly estimates of Gross Value Added (GVA) are extrapolations of annual series of GVA.”

To put it simply, in a specific year, data are directly collected about the output in the organised sector and the unorganised sector, and the relationship between the two is benchmarked. In subsequent years, data regarding the unorganised data are not directly collected; rather, organised sector output data, which are available at more frequent intervals, are used to estimate the output of the unorganised sector, on the basis of the earlier observed relationship. This method continues till a fresh survey of the unorganised sector takes places, which is usually done at five-year intervals, though at present there is a longer gap. Thus for the quarterly

estimates of GDP, based on the production approach, current data are mostly not available. So 'benchmark indicators' from an earlier reference year are used. The last survey of unincorporated enterprises was carried out in 2015-16 (GoI, 2017a). So a dated reference year, that does not capture the current reality, is being used. Further, the methodology states that current figures are obtained by 'extrapolations' of the annual series of GVA. But, if the previous year figures are incorrect, how can their extrapolation be correct? Especially when demonetisation, introduction of GST, and the Covid lockdown administered shocks to the economy that caused disruptions (see sub-section below).

a. Shocks Undermine the Method

The methodology outlined above relies on a smoothly functioning economy. But it will not apply when there are big unexpected changes, called 'shocks', such as demonetisation or the sudden lockdown. Shocks have the following impact:

i) The basic parameters of the economy change, such as the ratio of the unorganised to the organised sector, or the size of the agricultural output.

ii) Hence the validity of the 'benchmark-indicators' comes into question.

iii) Extrapolation from a normal year to the next one that has experienced a shock would not be correct. Nor would the extrapolation from the year of shock to the next one.

The Indian economy has suffered several shocks since 2016. Demonetisation in 2016 (Kumar, 2017), the introduction of the structurally faulty GST in 2017 (Kumar, 2019), the non-banking financial corporations (NBFC) crisis in 2018, and finally the sudden lockdown in 2020 (Kumar, 2020). Each of them impacted the unorganised sector far more than it did the organised sector, thereby changing the ratio between the two and invalidating some of the 'benchmark indicators'. Subsequently, units in the unorganised sector either did not recover at all or did so very slowly. So, even after the economy recovers, the indicators remain incorrect.

b. Shocks and Digitalisation

Demonetisation was carried out on the ground that the black economy needed to be checked (Kumar, 2017). Very quickly, it was realized that this policy objective would not be achieved, since the basic premise underlying demonetisation was incorrect. So the goalpost was shifted to making the economy 'cashless'. It was assumed that people would be forced to give up use of

cash and would shift to the digital mode and banking channels, which would leave a trail that the authorities could track. Not only were the initial objectives of demonetisation not achieved, but the currency in circulation has shot up in spite of the rapid rise in digital transactions. As pointed out in Kumar (2017), the lasting impact has been the decline of the unorganised sector. In July 2017, the structurally faulty GST was introduced (See Kumar, 2019). GST is calculated as a value added tax (VAT), which requires details of inputs and output. It can only work with computerisation. So it was expected to give a strong push to digitisation. All accounts of businesses were expected to become available for scrutiny by the tax authorities, thereby curbing the black economy. But, for the small and the micro sector, computerisation of accounts is too costly, given their small scale of operations. That is why producers with a turnover of less than Rs 50 lakh are exempted from GST, and if the turnover is up to Rs 1.5 crore, they are under the Composition Scheme. In both these cases, they are not eligible to claim Input Tax Credit (ITC), and firms purchasing from such units too cannot claim ITC on those purchases. This puts the unorganised sector units at a disadvantage vis-a-vis the organised sector. (For example, let us take the case of a small unit that supplies inputs to a large manufacturer at Rs 95, and a large supplier that supplies them at Rs 100. However, only the large supplier is able to provide ITC to the large manufacturer. In that case, the effective price of the supplies from the large supplier will be lower, and therefore the large manufacturer will purchase only from the large supplier.) As a result, unorganised sector units have lost market share. A shift in demand away from the unorganised sector is reported in industries such as fast-moving consumer goods (FMCG), leather goods, luggage, and pressure cookers, and in the services sector, such as retail trade. (Kumar 2022b). The organised sector continues to generate black incomes despite GST because of the complexity of the law and the existence of loopholes. The result has been much litigation and hundreds of changes in the laws. Fake companies to claim fictitious ITC, mispricing of produce, manipulations in e-way bills and so on are being routinely discovered. The Government revealed in the Rajya Sabha that cases of GST evasion detected had steadily risen from Rs 41,000 crore in 2019-20 to Rs 1.51 lakh crore in April-October 2023, but the rate of recovery had fallen from 45 per cent to 12 per cent (Rajya Sabha Unstarred Question no. 225, December 5, 2023). So, while GST has forced computerisation, black income generation continues. The sudden lockdown reduced mobility and forced people to use more of digital transactions. E-commerce, electronic payments, etc., have increased, further marginalising the unorganised sector. The government used this crisis to push its agenda of digitisation and marginalisation of workers and the farmers. The introduction of the three farm laws and implementation of the labour code are examples of this agenda.

Invisibility of Unorganised Sector in Data and Policy

The unorganised sector is a residual sector. If a worker does not find work in the market then she/he has to resort to self-employment to sustain self and family. For instance, workers may do head load work or pull a rickshaw. Indigenous people may collect a little bit of the forest produce and sell it at the local market or in the nearby city. The unorganised sector is large and amorphous and beyond Government control/regulation. The Government seeks to change this through formalisation, that is, it wants that these producers be registered, use banking channels and pay taxes. But the scale of operation in this sector is tiny. The 73rd Round of the National Sample Survey found that there were over 63 million unincorporated enterprises in India in 2015-16, employing 111 million workers in manufacturing, trading and other services, with an average employment of 1.7 and Rs 2.3 lakh of fixed assets per enterprise. More than 84 per cent of these enterprises, employing 62 per cent of the workforce, were 'own account enterprises' (OAEs), without a single hired worker. The remaining enterprises, with at least one hired worker, are termed 'establishments'. Establishments hired an average of only 4.2 workers per enterprise, and had a Gross Value Added of only Rs 6.4 lakh per enterprise per year. (GoI, 2017a) Hence most units in this sector have difficulty in registering, digitising or using banking. Even when they do get registered, these producers will remain small and will not turn into the organised sector – they only get damaged by having to comply with the burdensome processes. Kumar (2023d) points out that India's tax base is small. Till 2022-23, income tax was to be paid at incomes 4.5 times the per capita income at current prices. Thus, the vast majority of the unorganised sector incomes lie below the taxable limit, whether they are reported or not. Further as mentioned above (Section 7b), the unorganised sector is largely exempted from GST. Thus, this sector is mostly outside the direct and indirect tax net. A rise in the tax collection reflects the growth of the organised sector, and not the economy as a whole. As argued above, the Government's attempt to formalise this sector has only damaged it, and that hurts the rural economy and agriculture, which are the largest employers. Agriculture produces the basics of life which everyone requires. So, a large part of demand for agricultural produce comes from the unorganised sector itself. As the incomes in the unorganised sector decline, demand for agricultural produce falls. That is reflected in malnourishment and under-nourishment and high stocks of food grains. This leads to lower prices of agricultural produce and lower incomes for the farmers, workers and rural producers. In a vicious cycle, demand and incomes across the unorganised sectors decline (See Kumar, 2022a). Since the GDP data does not capture the decline in these incomes, the

government is in denial about the deteriorating economic situation. Consequently, policy makers do not feel the need to help the unorganised sectors. So, the unorganised sector is invisible both in data and in policy.

Macro Variables Impacted by GDP Errors

GDP data are used to estimate other macroeconomic variables, such as consumption and investment. So errors in one lead to errors in the other. The unorganised sector mostly produces consumption goods, such as food and items of day to day consumption, especially, for the marginalised sections. Production of capital goods is largely in the organised sector. The over-estimation of GDP contribution of the unorganised sector means that consumption goods production is over-estimated. (Estimation of investment would not be impacted by this factor, since both GDP and consumption are over-estimated by the same amount.) Since the unorganised sector employs 94 per cent of the workforce, its decline causes growing under-employment, disguised unemployment and workers dropping out of labour force. So, while more people seek work in this sector, their income is over-estimated and poverty is more than depicted. Kumar (2022a) estimates that in 2021-22, 280 million workers did not have proper work. Finally, growth in the organised sectors at the expense of the unorganised sector accentuates disparities. This inequality is not just between capital and labour but also between the owners of big business on the one hand and the owners of small and micro businesses. In per capita income terms, the economy is at 138th position in the world, but given the rising inequality, even this low average does not reflect the actual living standard of the marginalised.

Impact on Poverty Estimation

The problems in employment pointed to above lead to fewer members of the household earning incomes, and that causes increase in family poverty. Inflation adds to the woes of the poor by reducing the purchasing power of their already low wages. This leads to further decrease in demand which results in economic slowdown. Even if the unorganised sector incomes stagnate, poverty cannot be declining. But, the Government claims a reduction in 'multi-dimensional poverty' between 2015-16 and 2019-21 on the basis of data from the National Health and Family Surveys (NHFS). Kumar (2023b) points out this cannot be correct, given that the terminal year is the pandemic year, 2020, when most children were out of school; there were many additional deaths and illnesses and for a vast majority of citizens; and the standard of living fell as their incomes declined. In brief, given that the level of income, consumption and employment in the

unorganised sector is less than depicted in the official data, poverty has to be greater than what is officially stated.

Black Economy and Marginalisation

Digitisation was supposed to curb illegality by making systems foolproof. Instead, new kinds of illegality have surfaced while the old forms of illegality and fraud continue. In India, the black economy is concentrated in the hands of the top 3 per cent of earners, who benefit from it at the expense of the 97 per cent (Kumar, 1999 and Kumar, 2017). Thus, income distribution is much more skewed than revealed in the white economy data. The black economy has an impact on a number of aspects of the macroeconomy – the level of inflation, the productivity of investment, the availability of Government resources for welfare schemes, and the extent to which welfare schemes actually reach targeted beneficiaries. Finally, it affects the social and political system itself. Kumar (1999) points out that the solution to this problem is not economic or technological. That is why the hundreds of economic and technological measures tried over the last 75 years have not been able to check the growth of the black economy. Even digitisation has not yielded results. For instance, measures undertaken like, de-mat accounts, Aadhaar, and PAN have been circumvented in connivance with those in charge of the schemes. (Kumar, 2017). But the Government has resisted moves to bring its top functionaries under the purview of RTI, and to strengthen the whistle blowers' protection. Black incomes are generated largely by high income earners who belong mostly to the organised sector. The organised sector is considerably digitised, but that has not stopped it from generating black incomes via under- and over-invoicing. (Firms routinely understate or overstate the price of a sale or a purchase in order to transfer funds illicitly. This is done in particular with exports and imports. However, the digital record shows only a legitimate transaction.) Digitisation by itself has not checked black income generation. If the black economy had been dented due to the steps undertaken by the government in the last 9 years, the direct tax/GDP ratio should have risen substantially. (Kumar, 2023d) shows that the ratio has continued to hover between 5.75 and 6.1 per cent, indicating that the black economy in India has not been dented.

Growing Inequality and Demand Shortage

Digitalisation has resulted in the strengthening of Capital against Labour. Capital has become highly mobile since the 1980s, and that enables it to extract concessions from national and sub-national governments, such as to dilute labour laws. The result has been a decline in the wage

share in value of output of the corporate sector (Kumar, 2007 and Goldar, 2013). Inequality increases as the organised sector grows at the expense of the unorganised sector. This inequality is not just between Capital and Labour, but also between the owners of big business on the one hand and the owners of small and micro businesses. Further, multinational capital's share in the financial markets and in ownership of Indian companies has grown over time, and that also aggravates inequality. These varying kinds of inequality have major macroeconomic consequences. Importantly, a shortage of demand persists, which slows down growth. This was evident in the pre-pandemic period of the last quarter of 2017-18 to the last quarter of 2019-20. For eight consecutive quarters the official rate of growth dropped from 8 per cent to 3.1per cent. The result was that, according to the RBI, capacity utilisation in industry hovered at about 73 per cent. These are figures pertaining only to the corporate sector. The slowdown occurred in spite of the huge concession in 2019 in corporation tax, amounting to Rs.1.6 lakh crore in the first year itself. This concession reflects the Government's bias. It seeks to tackle inadequate demand by offering more concessions to businesses. What was required was more incomes in the hands of the marginalised, and not more concessions to Capital. It makes it obvious that the Indian State is working against the interest of its citizens, most of whom work in the unorganised sector.

Result & Findings:

As outlined above, the future of digital payments in India hinges on a strategic blend of inclusive access, technological innovation, a supportive regulatory framework, enhanced merchant adoption, and collaborative efforts. Embedded payments via 5G and the Internet of Things (IoT) will provide further impetus. Its imperative to improve economics for various payment players. However the effect of these initiatives on digital divide and the low and middle-income segments, especially vulnerable communities, remains to be seen. Regulators and service providers can address some of these concerns by enabling customer-centric interfaces, agent-assisted support, last-mile distribution networks, and robust grievance resolution mechanisms. If India can address current challenges and proactively collaborate with the ecosystem, it can emerge as a global leader in digital payments and foster financial inclusion and economic growth.

Conclusion

Digitalisation and formalisation are projected by the Government as a solution to the Indian economy's problems, such as tackling the black economy and improving tax collection. Towards this end, the Government has taken various steps such as demonetisation, GST, Direct Benefit

Transfer (DBT) and Aadhaar. While the goals set for these steps have not been achieved, new problems have emerged, since the unorganised sector has been adversely hit. It is pointed out that the non-agriculture unorganised sector is not independently estimated in the GDP and is proxy by the growing organised sector. Demonetisation, GST and lockdown administered shocks to the economy and rendered invalid the method of estimating the contribution of the unorganised sector to the GDP. The shocks led to a disproportionately large adverse impact on this sector compared to the organised sector. Further, while the organised sector recovered, the unorganised sector could not do so due to these repeated shocks. Thus, using the organised sector as a proxy for estimating the unorganised sector is incorrect and leads to an overestimation of GDP and other variables such as consumption. The result is an underestimation of inequality and poverty in India. It is pointed out that the economic units in the unorganised sector are too small to get formalised, even if they start transacting through banks and digital mode. So digitisation has further damaged this sector without formalising it. This has proved to be a costly mistake, since demand has been shifting from the unorganised to the organised sector. This is like colonisation. Given that the organised sector is more capital intensive than the unorganised sector, the demand shift has resulted in decrease in employment generation, under-employment, disguised unemployment and persistence of poverty. It has resulted in greater inequality and shortage of demand which has led to the economy slowing down. The Government's promotion of digitalisation represents its policy bias in favor of the organised sector. The multinational corporations (MNCs) prefer a more digitised economy since it is advantageous for them. Since the unorganised sector is not independently estimated, it is invisible in data. It enables the Government to claim that Indian economy is the fastest growing large economy and nothing is wrong with it. So no special steps are required to help the declining unorganised sector. Thereby it gets invisible in policy also.

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Case Study

Performance of INR and Introduction of CBDC

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Abstract

This paper explores the fluctuation of the Indian Rupee (INR) against the US Dollar (USD), emphasizing the economic, political, and global factors influencing the USD/INR exchange rate. It examines the impact of the COVID-19 pandemic, geopolitical tensions, inflation, trade balances, and foreign investment on the rupee's value. The paper also highlights the Reserve Bank of India's (RBI) role in stabilizing the currency and managing inflation. Additionally, it addresses the introduction of India's Central Bank Digital Currency (CBDC), the Digital Rupee, as a transformative tool to enhance financial inclusion, improve transaction efficiency, and support India's evolving monetary and economic framework.

Introduction

An exchange rate represents the value at which one currency can be traded for another. It plays a vital role in shaping a country's trade dynamics, which in turn influences nearly every free-market economy around the globe. As a result, exchange rates are closely watched, thoroughly analyzed, and often regulated by governments. Their importance extends beyond macroeconomic factors to more localized impacts as well. For instance, they influence the actual returns on investment portfolios, affect corporate profitability, and drive the development of specific industries, among other economic indicators. Exchange rates significantly impact a nation's economic performance. Several factors contribute to the fluctuation of exchange rates, including inflation and interest rates, the country's balance of payments, national debt levels, trade terms, political stability, and the phase of the economic cycle—whether expansion, recession, peak, or trough. Additionally, market speculation by traders, financial institutions, importers, and exporters, along with fluctuations in crude oil prices, also play a major role in exchange rate movements.

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Covid19 Vis-à-vis INR

The US Dollar to Indian Rupee exchange rate hit a historic low due to the global disruptions caused by the COVID-19 pandemic. A stronger US dollar compared to the rupee indicates that demand for the dollar (from those holding rupees) outweighs the demand for the rupee (from those holding dollars). Since July 2019, the rupee has been steadily depreciating, reflecting a decline in India's global economic competitiveness. A sharp drop in March 2020 was likely driven by a significant net outflow of foreign portfolio investments from Indian equity and debt markets, totalling $15.92 billion, in contrast to net inflows of $1.27 billion in February.

Further pressure came from escalating US-China trade tensions, with the Chinese government devaluing the Yuan and then-US President Donald Trump imposing tariffs on Chinese goods. These developments impacted emerging market currencies, including the Indian rupee, as the Yuan is often seen as a benchmark for emerging economies. As a result, disruptions affecting the Yuan tend to have a ripple effect on the rupee, potentially pushing the USD/INR rate to new highs and exerting pressure on the Indian economy.

A currency war occurs when countries competitively devalue their currencies to boost exports, often resulting in widespread economic harm. While India has not directly engaged in a currency war, it came close in 2015 when China intentionally weakened the Yuan, prompting India and other emerging markets to adjust their currencies to remain competitive in exports. Although such wars are rare, economists continue to debate their possibility. Since the rupee's value is still largely measured against the US dollar, it remains vulnerable to fluctuations in major global currencies like the dollar, Yuan, and euro.

USD/INR Fluctuations and position of INR in market

The fluctuation of the Indian Rupee (INR) against the US Dollar (USD) reflects changes in the rupee's value in the foreign exchange market. When the USD/INR rate rises, the rupee depreciates; when it falls, the rupee appreciates. This movement is influenced by factors like demand and supply of dollars, interest rate differences, inflation, trade deficits, foreign investments, and political or economic stability. The Reserve Bank of India (RBI) may intervene to control volatility. A weaker rupee makes imports costlier and can fuel inflation, while a stronger

rupee benefits imports but may hurt exports. Such fluctuations impact businesses and policy decisions.

As of May 2025, the Indian Rupee is trading around ₹83–84 per US Dollar, indicating a relatively stable but slightly weak position against the USD. The rupee has faced pressure due to factors like global economic uncertainty, rising US interest rates, and persistent trade deficits. However, foreign investments and RBI interventions have helped limit excessive depreciation. The currency's movement is also influenced by crude oil prices, inflation levels, and geopolitical tensions. A weaker rupee makes imports more expensive, impacting inflation, while benefiting exporters. Overall, the rupee remains sensitive to both domestic and global economic developments.

In 2022, the Indian rupee weakened by more than 11%, facing challenges due to global economic trends. Former Chief Economic Advisor Krishnamurthy Subramanian noted that although the rupee had depreciated by 8% since the beginning of the year, the U.S. dollar index had risen by 18% during the same timeframe.

The value of the Indian rupee (INR) declined from its peak in 2022, as market focus shifted to a possible change in direction from the U.S. Federal Reserve in the following year. The rupee weakened in response to a steady drop in the U.S. dollar index, which reached its lowest level in several months. On January 20, the USD/INR exchange rate fell to 80.85, its lowest point since November 14. The rupee opened 2023 on a strong note as the DXY index fell to a six-month low of 100.8. In February, the Reserve Bank of India (RBI) raised its benchmark repo rate by 25 basis points. Although this hike was widely expected, markets were surprised by the RBI's indication that more rate hikes could follow, given persistently high core inflation.

While central banks around the world continue to combat rising inflation, some analysts believe this could be the RBI's final rate hike in the current tightening cycle, during which it has raised rates by 250 basis points since May 2022. The RBI's rate-setting panel has increased the repo rate by 1.9%, bringing it to 6.50% as of early 2023.

According to Trading Economics, as of December 2, 2022, the rupee was projected to weaken further. Their USD/INR outlook suggested the pair could reach 82.40 by the end of the current quarter and decline further to 84.57 by December 2023. Similarly, analysts from ING Group, a

Dutch financial institution, forecasted that the USD/INR rate would rise to an average of 84 in Q1 2023, then gradually ease to 82.00 by Q3. Looking further ahead, they expected the rupee to trade between 80 and 82 against the dollar, eventually appreciating to around 79.50 in 2024.

Digital Currency – CBDC

India has introduced a Central Bank Digital Currency (CBDC), known as the Digital Rupee (e₹), which is a digital version of the country's official currency and is issued and overseen by the Reserve Bank of India (RBI). Unlike decentralized cryptocurrencies such as Bitcoin that operate independently of government control and outside the conventional financial system, CBDCs are fully integrated with a nation's monetary policy and financial infrastructure.

Digital currency refers to any form of currency that exists in electronic format. The Digital Rupee functions similarly to physical cash but exists in a virtual form. It is a centralized currency managed by the RBI, ensuring it retains the reliability and regulatory oversight typically associated with traditional fiat money.

Why is Digital Rupee Introduced?

The Digital Rupee was launched in India to advance financial inclusion by expanding access to formal financial services. It is designed to make transactions more efficient through quicker and more secure digital payment systems, support the country's digital transformation, reduce reliance on physical cash, and strengthen regulatory oversight of monetary activity, helping to curb unlawful financial practices. The initiative seeks to achieve several key benefits:

- **Financial Inclusion:** It offers a means for individuals without access to conventional banking systems to engage in the formal financial sector.
- **Lower Transaction Costs:** By eliminating the need for intermediaries, the Digital Rupee reduces the cost of transactions compared to traditional banking methods.
- **Enhanced Efficiency and Speed:** Transactions can be completed in seconds, regardless of the users' physical locations.
- **Transparency and Security:** The use of blockchain technology ensures a transparent record of transactions while maintaining high levels of security through encryption.

- **Centralized Oversight:** As a centrally issued and managed currency, the Reserve Bank of India retains control over the issuance, circulation, and implementation of monetary policy related to the Digital Rupee.

PERFORMACE OF DIGITAL CURENCY BENEFFICIAL FOR INDIAN ECONOMY

Questions

1. What were the primary factors behind the depreciation of the Indian Rupee in 2022, and how did global events like the COVID-19 pandemic and US-China trade tensions contribute to this trend?

2. How do exchange rates impact both macroeconomic indicators and microeconomic factors such as investment returns and sectoral growth in an economy like India?

3. What are the major differences between the Digital Rupee (CBDC) and decentralized cryptocurrencies, and why has the Reserve Bank of India opted to introduce a centralized digital currency?

4. What benefits does the Digital Rupee aim to deliver in terms of financial inclusion, transaction efficiency, and regulatory oversight?

5. Based on expert forecasts, what are the expected movements of the USD/INR exchange rate through 2024–25, and what role might monetary policy play in shaping these trends?

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