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Editorial



The rapid convergence of technological innovation and sustainability is redefining the foundations of modern management. In an era marked by digital transformation, environmental challenges, evolving stakeholder expectations, and economic uncertainty, organizations are increasingly required to rethink traditional approaches to value creation and growth. Recognizing this imperative, the International Conference on “Reimagining Management for a Tech-Driven Sustainable Future,” jointly organized by Monti International Institute of Management Studies and Multimedia University (MMU), Malaysia, on 16 April 2026, provided a dynamic platform for academics, practitioners, and industry leaders to deliberate on the evolving role of management in shaping a sustainable future.

A key insight emerging from the conference was that effective management in the twenty-first century must extend beyond operational efficiency and profitability to embrace innovation, sustainability, and social responsibility. Advances in technologies such as artificial intelligence, big data analytics, blockchain, the Internet of Things (IoT), and automation are transforming organizational processes, enabling better decision-making, enhanced productivity, and more sustainable resource utilization. At the same time, these developments present new challenges related to ethical governance, workforce adaptation, data privacy, and inclusive growth, underscoring the need for responsible and forward-looking management practices.

The conference discussions highlighted how technology and sustainability are influencing every major business function. Strategic management increasingly depends on data-driven insights and digital capabilities to foster innovation and resilience. Financial management is integrating sustainability metrics and ESG considerations into decision-making processes. Operations and supply chain management are leveraging smart technologies to improve efficiency, transparency, and circularity, while marketing is evolving through digital engagement and purpose-driven value propositions. Organizations that successfully align technological advancement with ethical and sustainable principles will be better positioned to create long-term value and contribute to societal progress.

This special issue of the Monti Journal of Business and Innovation brings together scholarly contributions that explore the intersections of management, technology, and sustainability. The articles presented herein offer valuable insights, empirical evidence, and practical perspectives that advance understanding of how organizations can navigate a rapidly changing world. It is hoped that this collection will inspire further research and innovative managerial practices that contribute to building a more sustainable, resilient, and technology-enabled future.

Dr. Subin Thomas
Chief Editor

Exploring the Relationship between Green HRM and Green Behavior among IT Employees: A Structural Equation Modeling Analysis

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ABSTRACT

The article investigates the impact of green human resource management (GHRM) practices on spontaneous and task-oriented green behaviors of the workers in India's information technology (IT) industry based on the Ability–Motivation–Opportunity (AMO) theory and social identity theory. The effect of green training, teamwork, rewards and compensation, employee participation, discipline management and performance management are examined in this paper. Data were gathered on a survey questionnaire administered to IT professionals which provided 307 usable responses out of a sample of 650 and were analyzed using structural equation modelling (SEM) in AMOS. The findings indicate that Sustainability-Oriented Performance Assessment, employee involvement, rewards and remunerations, training influence task-oriented and voluntary green behavior positively, while green discipline management influences voluntary green behavior only, and Sustainable Team Collaboration has no influence on both aspects.

Keywords: Ability–Motivation–Opportunity (AMO) Theory, Employee Green Behavior (EGB), Green Human Resource Management (GHRM), Green Training, Information Technology (IT) Industry, Social Identity Theory, Structural Equation Modelling (SEM)

Introduction

Sustainability has received increased international attention since the UN's Sustainable Development Goals, and organizations have responded by incorporating environmental, social, and economic considerations into operations (Hawken et al., 2013; Elkington, 2018). It has elevated the significance of Green HRM (GHRM), which encourages environmentally conscious employee behavior (Mishra et al., 2014a; Zhang et al., 2019). While past studies focused on GHRM's impact on organizational performance, few have looked at its impact on green behavior at the individual level, particularly in India's Information Technology (IT) sector—a large energy consumer and emitter (Jenkin et al., 2011; Ojo & Raman, 2019). Moreover, research aggregates GHRM as one construct without examining how specific practices affect task-based relative to voluntary green behaviors (Zhu et al., 2021).

Filling up the gap in research which has been established, the present research investigates the effects of some of the Green HRM (GHRM) practices on workers' green behaviors in the IT sector of India using the Ability–Motivation–Opportunity (AMO) theory and social identity theory. This research examines the effects of six various GHRM practices—training and development, performance management, employee discipline management, rewards and compensation, teamwork, and employee involvement—on job-related and voluntary green behaviors. This research contributes by presenting a theoretical framework for individual-level responses to GHRM and contributing to the limited sector-specific research applying AMO and social identity theories in the Indian IT market.

Literature Review

Under heightened environmental pressures, organizations have been setting ecological objectives in line with business

objectives, incorporating environmental management into their operations (Renwick et al., 2008). As organizational systems and processes are greatly reliant on human resources, environmental management is greatly interwoven with human resource management, building the concept of green human resource management (GHRM) (Jabbour et al., 2010; Mishra et al., 2014). GHRM encompasses HRM practices that contribute to environmental sustainability through green recruitment, training, performance appraisal, and reward (Aboramadan, 2022; Saeed et al., 2019; Kramar, 2014). Researchers have come up with a number of frames of classifying GHRM practices—like recruitment, training, remuneration, performance appraisal, and employee participation (Renwick et al., 2013; Tang et al., 2017); staffing, training, motivation, and maintenance (Shah, 2019); or recruitment, training, and discipline management (Nisar et al., 2021). According to the available literature, the current study is emphasized on six required practices: training and development (T), performance management (PM), employee discipline management (EDM), rewards and compensation (RC), teamwork (TW), and employee involvement (EI) (Fig. 1).

Employee green behaviour (EGB) is the term for employee behaviours that green the working environment (Norton et al., 2015). They encompass behaviours such as conserving energy, reducing waste, and recycling (Blok et al., 2015). EGB becomes the essence of improving the environmental performance of an organization (Chaudhary, 2020) and is generally referred to as two: task-related behaviours, which are part of job tasks, and voluntary behaviours, which surpass formal requirements (Norton et al., 2015; Lamm et al., 2013). This article synthesizes social identity theory and AMO theory to predict green behaviour in employees. AMO posits ability, motivation, and opportunity control behaviour (Appelbaum et al., 2000), while social identity theory asserts employees identify with

organisations that increase their self-esteem (Hogg & Abrams, 1988). Green HRM enhances reputation, increasing employee identification and eco-actions.

Green HRM practices strongly influence employees' green behaviour (EGB) by aligning with the AMO theory (Appelbaum et al., 2000) and social identity theory (Hogg & Abrams, 1988), encouraging workers to implement environmentally friendly actions both in their professional and personal lives (Gilal et al., 2019; Cincera & Krajhanzl, 2013). Empirical evidence across industries confirms which GHRM has a positive influence on green practice and environmental responsibility (Dumont et al., 2017; Saeed et al., 2019; Kim et al., 2019; Zhang et al., 2019; Chaudhary, 2020). Empirical studies focusing on the Indian IT sector are scarce, and more studies need to be conducted (Ren et al., 2018).

Hypothesis Development

Sustainability-Oriented Employee Training

Sustainability-Oriented Employee Training provide employees with the needed knowledge and skills to tackle environmental issues and support sustainability (Jabbour, 2011a; Zoogah, 2011). This improves their environmental consciousness, promotes pro-environmental behavior, and builds capability in such domains as waste minimization and energy saving. According to the Ability-Motivation-Opportunity (AMO) theory, green training reinforces the "ability" aspect, allowing the employee to participate better in green practices (Appelbaum et al., 2000). Research has revealed positive correlations between green training and environmental citizenship behavior (Pinzone et al., 2019), workplace green behavior (Zhang et al., 2019), and environmental commitment (Pham et al., 2019; Luu, 2018).

H1a: Sustainability-Oriented Employee Training positively influence voluntary employee green behavior.

H2a: Sustainability-Oriented Employee Training positively influence task-related employee green behavior.

Sustainability-Oriented Performance Assessment (GPM) is assessing employees in terms of the contribution they make to environmental objectives, thus assisting in aligning individual behavior with the sustainability goals of the organization (Jabbour & Santos, 2008). GPM encourages environmentally friendly activities through focused performance measures, appraisals, and incentives. Based on the "Motivation" aspect of the AMO theory, GPM establishes ecologically aware targets that encourage employees to participate in task-oriented and discretionary green behaviors (Appelbaum et al., 2000). Empirical evidence is in its favor—Pinzone et al. (2016) established a positive and strong connection between GPM and organizational citizenship behavior, and Dumont et al. (2017) emphasized its effect on both environmental behavior that is task-related and voluntary.

H1b: Sustainability-Oriented Performance Assessment has a positive effect on voluntary employee green behavior.

H2b: Sustainability-Oriented Performance Assessment has a positive effect on task-related employee green behavior.

Green Workplace Behavioral Governance ensures workers comply with environmental policies and standards, thus facilitating organizational sustainability objectives (Wehrmeyer, 1996). With standardized disciplinary policies coupled with environmental goals, the organization motivates workers to self-regulate and adopt green behavior (Arulrajah et al., 2015). This is consistent with the control dimension of having green conduct at the workplace. In support, Nisar et al. (2021) discovered a positive relationship between green discipline and employee green behaviors in wider GHRM practices.

H1c: Green Workplace Behavioral

Governance has a positive impact on voluntary employee green behavior.

H2c: Green Workplace Behavioral Governance has a positive effect on task-related employee green behavior.

Green teams are employee units established to tackle environmental concerns in the workplace, aiding in the adoption of green practices and establishing a culture for sustainability (Jabbour, 2011b). With leadership and training support, they enhance employee engagement in environmentally friendly behavior (Teixeira et al., 2012; Amrutha & Geetha, 2020).

H1d: Sustainable Team Collaboration has a positive impact on voluntary EGB.

H2d: Sustainable Team Collaboration has a positive impact on task-related EGB.

Green reward and compensation systems employ monetary and non-monetary rewards (such as praise or recognition) to encourage employees towards sustainability objectives (Jabbour et al., 2013; Renwick et al., 2008). Consistent with the Motivation (M) dimension of the AMO theory, these systems enhance both in-role and extra-role environmentally friendly behaviors (Dumont et al., 2017; Pham et al., 2019).

H1e: Green Performance-Linked Benefits has a positive effect on voluntary EGB.

H2e: Green Performance-Linked Benefits positively influences task-related EGB.

Sustainable Employee Engagement (EI) offers employees a chance to engage in environmental decision-making, raise concerns, and suggest solutions, thus increasing their environmental responsibility and capabilities (Chaudhary, 2020). Besides empowering employees (Jabbour & Santos, 2008), it fosters green intrapreneurship that inspires sustainability practices (Mandip et al., 2012). Consistent with the AMO theory, green EI increases employees' ability (A) and opportunity (O) to make contributions toward environmental objectives. Empirical data attest to a robust relationship between green EI and pro-environmental actions (Pinzone et al., 2019).

H1f: Green employee engagement has a positive effect on Voluntary Employee Green Behavior (EGB).

H2f: Green employee engagement has a positive effect on Task-related Employee Green Behavior (EGB).

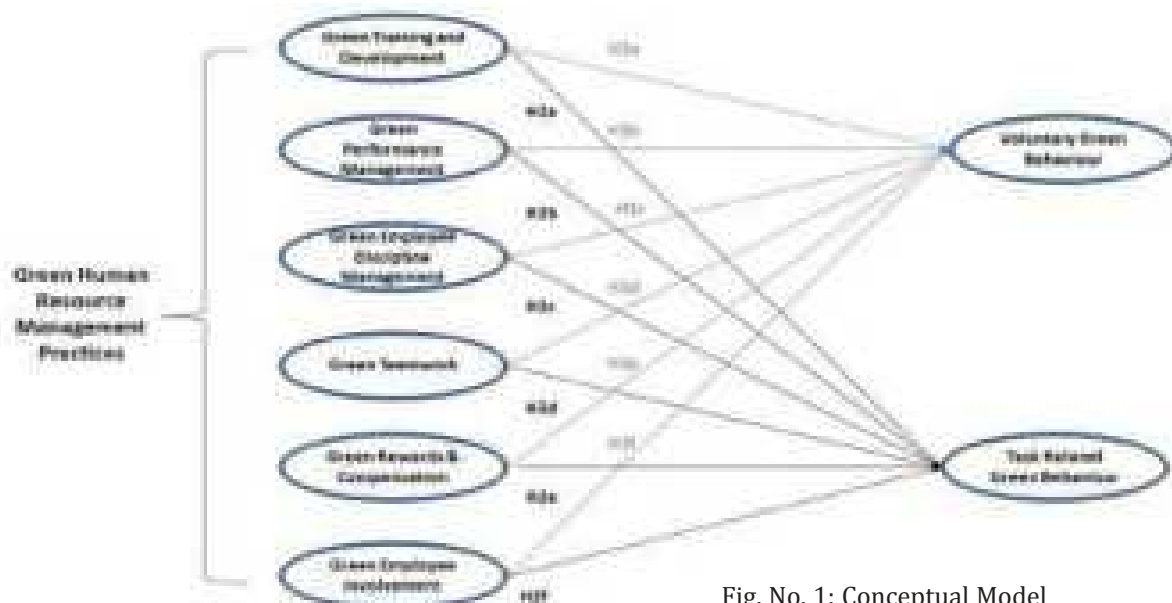


Fig. No. 1: Conceptual Model

Methodology

The paper focused on how GHRM practices affected the eco-friendly behavior among employees in IT Sector with the help of systematic questionnaire. The questionnaire has been categorized in to 2 classifications, the first classification was based on the demographics and the second was categorized based on six green practices such as green training, teamwork, rewards and compensation, performance management, employee involvement and discipline by means of four items for each practice. The questionnaire was developed in Likert scale format from 1 to 5 with strongly disagree to strongly agree. A 3-item scale was used as a measurement scale for EGB for task-contingent and voluntary. The items for the questionnaire were drawn from existing, validated scales (Fornell & Larcker, 1981) and fine-tuned on the basis of suggestions from scholars as well as industry practitioners to achieve content validity. Finalization of the instrument was preceded by a pilot test involving 40 IT professionals. Data were obtained through convenience and purposive sampling from workers employed with leading Indian IT companies like Infosys, Wipro, TCS, HCL, and Tech Mahindra. Of 650 questionnaires sent out, 330 were returned, and 307 usable responses were processed. Cronbach's alpha used in order to measure reliability of the data. As per (Gefen et al., 2000), to test the relationships of the variables as well as the

requirements of the sample size of minimum 10 respondents per item was analysed using Structural Equation Modeling (SEM) and AMOS 23.0.

Analysis & Results

To examine the association under one framework, the variables are associated using the common technique SEM. SEM measures the validity and reliability of the variables under study along with the combination of CFA analysis and Multiple regression analysis. The components of the SEM consist of measurement and structural model. According to Doloi et al. (2011), the correlation between the observed indicators and latent variables are measured using SEM and for the determination of the direction as well as the strength of association between the latent variables, the application of structural model was made. Using AMOS 23, CFA analysis as well as the validity and reliability measurements were assessed. Also, the model consists of 6 latent factors such as RC, EDM, PM, EI, T, VGB, and TRB. It was measures using the observed indicators of 30 (RC4-TRB2) with the factor items of about 3 or 4. Before the analysis using the SEM, CFA cross-validate the individual factor loadings and thus construct relationships were confirmed. In order to test the sufficiency of the model for measurement as a primary assessment, the guidelines were employed using Fornell and Larcker (1981) and Ifinedo (2006).

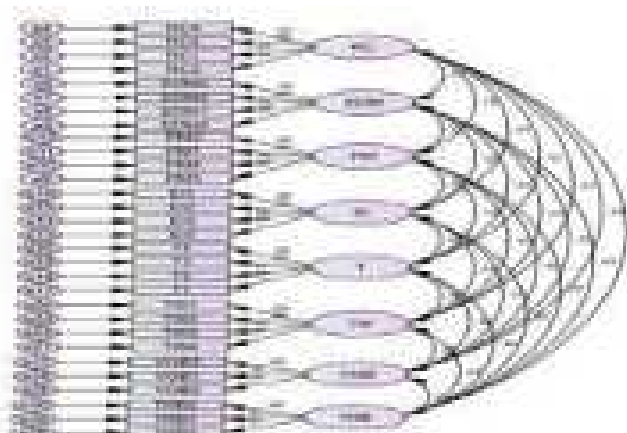


Fig No. 2: Measurement Model

Model fit was evaluated using established indices, which are NFI, GFI, TLI, CFI, RMSEA, CMIN/df, and SRMR (Hair et al., 2010). Cut-offs within acceptable ranges are CMIN/df < 3, SRMR and RMSEA < 0.08, and GFI, CFI, and TLI ≥ 0.90 , using traditional criteria (Gefen & Straub, 2000; Hu & Bentler, 1998; Ullman, 2001). The eight-factor Green Workplace Behavioral Governance, Sustainability-Oriented Performance Assessment, green rewards and compensation, green training, Sustainable Team Collaboration, Sustainable Employee Engagement, task-related green behavior, and voluntary green behavior measurement model provided a good fit, CMIN/df = 1.003, GFI = 0.926, CFI = 1, TLI = 1, SRMR = 0.06, and RMSEA = 0.03. These findings verify that the suggested model represents the data very well, satisfying widely accepted standards (Bentler, 1990).

Table No.1: Model Summary

Model Fit Indices	Limits	References	Value Obtained
P	Insignificant	Bagozzi and Yi (1988)	0.475
CMIN (Chi- Square/df)	<5	< 2 to 5 (Ullman, 2001), (Schumacker & Lomax, 2004)	1.003
GFI	>0.90	Hair et al (2010)	0.926
CFI	>0.90	Bentler (1990)	1
TLI	>0.90	Bentler (1990)	1
SRMR	>0.90	Hu & Bentler (1998)	0.06
RMSEA	>0.90	Hu & Bentler (1998)	0.03

Source: Authors' Compilation

Discriminant validity examines to what degree a construct is distinguishable from other constructs (Hair et al., 2010). For this research, Fornell and Larcker (1981) criterion was used by checking the square root of average variance extracted of each construct against its inter-construct correlations, as reported in Table 2. The results verified discriminant validity, and it has been determined that all the latent constructs are distinctively different from each other.

Table No. 2: Fornell and Larcker Criterion

	TRB	VGB	TW	T	EI	PM	EDM	RC
TRB	0.916							
VGB	0.234	0.925						
TW	0.237	0.254	0.943					
T	0.357	0.296	0.285	0.883				
EI	0.365	0.328	0.311	0.281	0.914			
PM	0.26	0.298	0.16	0.142	0.282	0.93		
EDM	0.294	0.331	0.248	0.318	0.324	0.223	0.884	
RC	0.353	0.292	0.219	0.321	0.329	0.186	0.219	0.922

Source: Authors' Compilation

Convergent validity assesses the degree to which measures of a construct are able to explain its variance (Hair et al., 2010). In this research, factor loadings were standardized to 0.75 to 0.95, higher than Hair et al.'s (2010) recommended 0.50 and thus demonstrated that the indicators successfully capture their respective latent constructs. Reliability test also provided support for the quality of measurement, with Cronbach's alpha above over 0.70 (Nunnally & Bernstein, 1994) and composite reliability from 0.982 to 0.991, which is above the cutoff point of 0.70 (Hair et al., 2010). The average variance extracted (AVE) ranges were above 0.50 (Fornell & Larcker, 1981), showing that the scales have sufficient convergent validity.

Table No. 3: Reliability and Factor Loadings

Item	Loading	Alpha	Composite Reliability	Average Variance Extracted
TW2	0.946	0.980	0.993	0.889
TW3	0.944			
TW1	0.943			
TW4	0.940			
RC4	0.928	0.972	0.989	0.851
RC1	0.927			
RC2	0.921			
RC3	0.915			
EI1	0.923	0.977	0.989	0.836
EI2	0.920			
EI3	0.908			
EI4	0.906			
PM4	0.939	0.966	0.991	0.866
PM3	0.938			
PM1	0.931			
PM2	0.915			
T4	0.917	0.944	0.987	0.780
T3	0.893			
T2	0.867			
T1	0.857			
EDM1	0.894	0.939	0.984	0.782
EDM4	0.884			
EDM2	0.882			
EDM3	0.877			

VGB1	0.929	0.978	0.982	0.856
VGB2	0.926			
VGB3	0.921			
TRB3	0.920	0.975	0.980	0.839
TRB2	0.914			
TRB1	0.913			

Source: Authors' Compilation

A structural model is a statistical device employed to study the connections between unobserved or unseen factors (latent variables) and the correlations among these and observed measures (observed variables), enabling researchers to test intricate hypotheses concerning cause-and-effect relations (Bollen, 1989). In Structural Equation Modeling (SEM), two models are employed: the measurement model, which relates observed variables to latent variables, and the structural model, which examines the relations between the latent variables themselves (Kline, 2015). These relations are quantified using regression equations and are commonly depicted with path diagrams representing the direction and power of the connections (Byrne, 2016; Hooper et al., 2012). In the present study, SEM was employed to examine the hypotheses and test the research model that has been proposed. Model fit indices presented in Table 5 indicate that the structural model is fairly acceptable, and hypothesis testing can proceed further.

Table No. 5: Model Fit

Model Fit Indices ¹	Limits	References	Value Obtained
P	Insignificant	Bagozzi and Yi (1988)	0.489
CMIN (Chi-Square/df)	< 5	<2 to 5 (Ullman, 2001), (Schumacker & Lomax, 2004)	1.00
GFI	>0.90	Hair et al (2010)	0.926
CFI	>0.90	Bentler (1990)	1.00
TLI	>0.90	Bentler (1990)	1.00
RMR	<0.80	Hu and Bentler (1998)	0.006
RMSEA	<0.80	Hu and Bentler (1998)	0.001

Source: Authors' Compilation

Hypothesis	Structural relationship	Estimate	S.E.	P Value	Result
Green Training positively influences voluntary EGB	VGB <--- T	0.121	0.059	0.042	Supported
Green Training positively influences task related EGB	TRB <--- T	0.221	0.068	0.001	Supported
Sustainability-Oriented Performance Assessment positively influences Voluntary EGB	VGB <--- PM	0.167	0.053	0.002	Supported
Sustainability-Oriented Performance Assessment positively influences Task related EGB	TRB <--- PM	0.136	0.061	0.025	Supported
Green Workplace Behavioral Governance positively influences Voluntary EGB	VGB <--- EDM	0.168	0.059	0.005	Supported
Green Workplace Behavioral Governance positively influences Task related EGB	TRB <--- EDM	0.117	0.068	0.084	Not supported
Sustainable Team Collaboration positively influences Voluntary EGB	VGB <--- TW	0.072	0.047	0.128	Not supported
Sustainable Team Collaboration positively influences Task related EGB	TRB <--- TW	0.044	0.054	0.410	Not supported
Green Performance-Linked Benefits positively influences Voluntary EGB	VGB <--- RC	0.12	0.054	0.028	Supported
Green Performance-Linked Benefits positively influences Task related EGB	TRB <--- RC	0.201	0.062	0.001	Supported
Sustainable Employee Engagement positively influences Voluntary EGB	VGB <--- EI	0.122	0.059	0.037	Supported
Sustainable Employee Engagement positively influences Task related EGB	TRB <--- EI	0.197	0.067	0.003	Supported

Source: Authors' Compilation

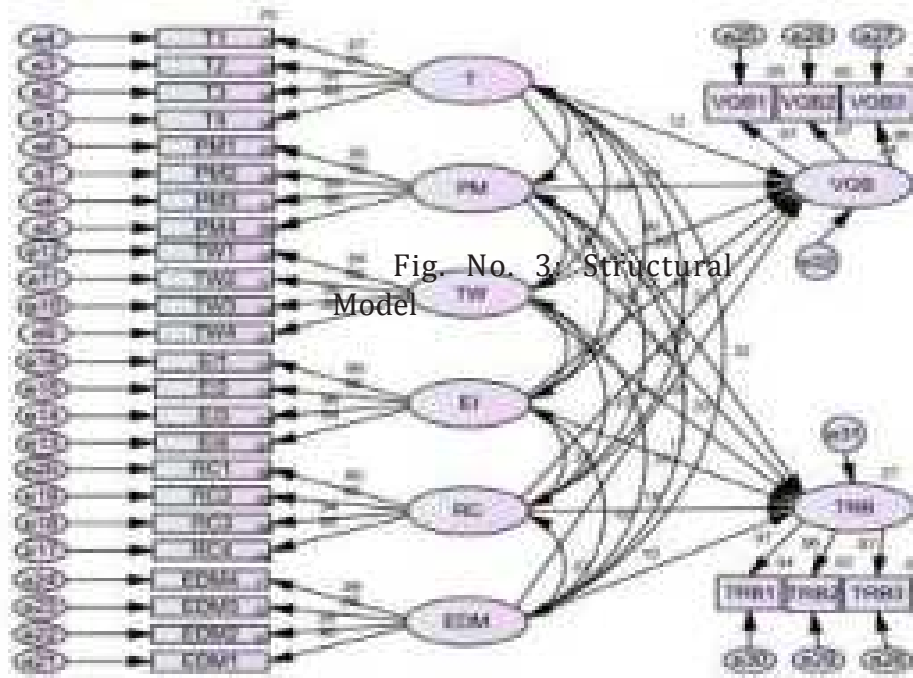


Fig. No. 3: Structural Model

Findings and Discussions

The empirical evidence verifies that EGB is affected by Green Human Resource Management (GHRM) practices—namely green training, reward and compensation, performance management, and employee participation—to task-oriented and voluntary aspects of employee green behavior. These results align with the Ability–Motivation–Opportunity (AMO) model (Appelbaum et al., 2000) and Social Identity Theory (Tajfel & Turner, 1986), which hold that when organisations develop employee capabilities, offer suitable incentives, and satisfy a sense of belonging, green behaviour is likely to occur. Interestingly, green discipline only influenced voluntary EGB, suggesting that disciplinary procedures can promote a sense of moral duty but not routine task accomplishment. Conversely, Sustainable Team Collaboration had no appreciable impact on either type of EGB, indicating that teamwork, without strategic leadership and facilitative culture, is possibly inadequate to initiate long-lasting behavioral change (Daily et al., 2012; Renwick et al., 2013).

Practically, the findings are of significant implication for HR practitioners and sustainability leaders. Within the Indian IT sector, establishing the practice of GHRM within HR strategies can contribute to establishing an organisational culture of sustainability. Organisations need to make investments in green training programs and align rewards and performance assessments with environmental objectives to enhance worker motivation and responsibility (Jabbour & Santos, 2008). The limited role of green discipline and teamwork reflects the need for culturally adaptive strategies and stronger involvement by leadership in promoting environment values. In such regard, the company must view GHRM as more than an operational mechanism but as a strategic tool to embed sustainability into organisational identity and employee engagement (Jackson et al., 2011).

Conclusion & Scope for Further Studies

The present study contributes to the existing body of literature on the link between Green HRM practices and green employee behavior in the Indian IT sector. The study is

limited by a single-industry focus cross-sectional design study. Future studies would be best advised to enhance generalizability by sampling multiple industries such as manufacturing, hospitality, and automotive. The application of longitudinal designs may actually measure change over time, while application of probability sampling can actually make the data more representative (Renwick et al., 2013; Cooper & Schindler, 2014). The application of moderating or mediating variables such as organisational identification or employee satisfaction can perhaps capture more sensitively how Green HRM influences green behaviour that is voluntary and task-oriented (Paille et al., 2014; Jackson et al., 2011).

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Digital Transformation in Banking and its Role in Advancing Sustainable Investment Practices

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ABSTRACT

Digital transformation has emerged as a defining force in contemporary banking, reshaping not only service delivery mechanisms but also the foundations of investment decision-making. This paper explores the role of digital transformation in advancing sustainable investment practices within the banking sector. It examines how the adoption of digital technologies such as financial technology platforms, big data analytics, and digital risk assessment tools enhances responsible investment by strengthening transparency, operational efficiency, and evidence-based decision-making. The study highlights how digital systems enable banks to more effectively incorporate environmental, social, and governance (ESG) criteria into investment strategies, thereby aligning financial performance with broader sustainability objectives. In addition, the study also included the opinions and analysis about digital transformation and sustainable investment practices from the youths in Ernakulam District and about 409 responses were considered and examined through SPSS. Employing a review-based analytical approach, the paper identifies key opportunities arising from digital transformation, including improved monitoring of sustainability performance and expanded access to sustainable investment products. It also addresses persistent challenges related to data reliability, regulatory responsiveness, and the ethical deployment of digital technologies. The study concludes that digital transformation, when guided by responsible banking principles, plays a critical role in reinforcing sustainable investment practices and supporting long-term economic and social development.

Keywords: Banking sector, Data analytics, Digital transformation, ESG integration, Financial technology, Responsible banking, Sustainable investment

Introduction

The banking sector has undergone significant transformation over the past decade, driven largely by rapid advancements in digital technologies. Digital transformation in banking extends beyond the automation of routine operations and customer services; it increasingly influences core financial functions such as risk assessment, capital allocation, and investment decision-making. Technologies such as financial technology (fintech) platforms, big data analytics, artificial intelligence, and digital risk management systems have reshaped how banks collect, process, and utilize information. As a result, banks are now better positioned to make informed and timely investment decisions in an increasingly complex and data-driven financial environment (BIS, 2021). At the same time, growing global concerns related to climate change, social inequality, and corporate accountability have intensified the focus on sustainable investment practices. Sustainable investment emphasizes the integration of environmental, social, and governance (ESG) factors into financial decision-making, with the aim of achieving long-term value creation alongside positive societal outcomes. Banks play a critical role in this transition, as they act as key intermediaries in channelling capital toward sustainable economic activities. International initiatives and regulatory frameworks increasingly encourage financial institutions to adopt responsible banking principles and support sustainability-oriented investments (UNEP FI, 2019).

Digital transformation has emerged as a key enabler in advancing sustainable investment practices within the banking sector. Digital tools allow banks to enhance transparency, improve the quality of ESG-related data, and strengthen the monitoring of sustainability performance across investment portfolios. Advanced analytics and digital risk assessment systems enable more systematic evaluation of

non-financial risks, supporting evidence-based integration of ESG criteria into investment strategies. Furthermore, digital platforms have expanded access to sustainable investment products, making responsible investment opportunities more visible and accessible to a broader range of investors (OECD, 2020). Despite these advantages, the use of digital technologies in sustainable investment is not without challenges. Issues related to data reliability, lack of standardized ESG metrics, regulatory adaptation, and ethical concerns surrounding the use of advanced technologies continue to pose constraints. In this context, there is a need for a comprehensive examination of how digital transformation influences sustainable investment practices in banking, as well as the opportunities and limitations associated with its adoption. This study seeks to address this gap by analysing the role of digital transformation in promoting responsible and sustainable investment practices within the banking sector.

The study holds considerable significance for academia, banking practitioners, and policymakers. Academically, it fills a critical gap by exploring the intersection of digital transformation and sustainable investment—two domains that have often been studied independently. By examining how digital technologies such as fintech platforms, big data analytics, and AI enhance ESG integration and investment decision-making, the study contributes to the development of theories related to digital finance, responsible banking, and sustainable investment frameworks. It also provides a foundation for further empirical and qualitative research on the role of technology in promoting sustainability in the financial sector.

For banking institutions, the study offers practical insights into leveraging digital systems to improve operational efficiency, transparency, and evidence-based decision-making. It highlights how technology can support

systematic ESG evaluation, real-time monitoring, and the expansion of sustainable financial products, such as green bonds and ESG-linked loans. At the same time, it draws attention to challenges including ESG data quality, ethical use of AI, cybersecurity risks, and regulatory compliance guiding banks in designing effective governance structures, risk management strategies, and ethical frameworks for sustainable investment practices.

From a policy and regulatory perspective, the study underscores the need for standardized ESG reporting, regulatory alignment, and oversight frameworks to ensure that digital transformation supports sustainable finance effectively. By integrating technological adoption with sustainability objectives, the study emphasizes that digital transformation is not merely a technical upgrade but a strategic enabler of responsible investment, long-term value creation, and alignment with global sustainability goals, including the United Nations Sustainable Development Goals (SDGs). Finally, the study has broader societal and environmental implications, as it illustrates how banks, through technology-driven ESG investments, can contribute to climate action, social development, and corporate accountability. It encourages financial institutions to adopt innovative and sustainable practices, which can positively impact communities, investors, and the environment, thus reinforcing the role of banking as a catalyst for sustainable economic development.

Although the literature provides substantial insights into digital transformation and sustainable investment independently, there is a lack of integrated research examining how digital technologies directly influence the adoption and effectiveness of sustainable investment practices within banks. Most studies focus on fintech efficiency, AI adoption, or ESG integration separately, without exploring their combined role in shaping responsible investment strategies. Furthermore, limited

attention has been given to challenges such as ESG data quality, ethical use of technology, and regulatory responsiveness, which may moderate the effectiveness of digital transformation in advancing sustainability. This gap underlines the need for a study that systematically investigates the relationship between digital transformation and sustainable investment practices in the banking sector. Hence, the following research objectives were considered.

RQ1: Whether digital transformation influence in advancing sustainable investment decision making practices in the banking sector and how digital technologies, support the integration of ESG factors into banking investment strategies.

RQ2: To identify the key opportunities and challenges in using digital systems for responsible banking investments.

Review of Literature

Innovation has long been recognized as a critical driver of economic and financial system development. Schumpeter (1934) emphasized that technological change reshapes industries and institutions, creating new economic structures and opportunities. In the banking context, digital innovations, such as fintech platforms and AI tools, are central to transforming investment decision-making and operational efficiency (Arner, Barberis, & Buckley, 2017; Vives, 2019). These studies collectively underscore that technology is not merely a tool but a strategic enabler that alters how financial intermediation occurs, influencing both service delivery and core investment functions. Alongside technological advancement, sustainable investment has gained significant attention in recent years. Porter and Kramer (2011) introduced the concept of shared value, highlighting that firms integrating social and environmental considerations into their strategies can achieve long-term economic benefits. Empirical research supports this view; Busch, Bauer, and Orlitzky (2016) and Friede,

Busch, and Bassen (2015) demonstrated that ESG integration reduces financial risk and is positively linked to firm performance. Dorfleitner et al. (2015) similarly noted that ESG scoring provides meaningful non-financial insights that aid in responsible investment decisions, highlighting the growing importance of ESG metrics in shaping investment strategies.

Digital finance ecosystems have emerged as critical enablers of both efficiency and sustainability in banking. Studies by Gomber et al. (2018) and BIS (2021) indicate that digital tools and platforms improve risk management, operational efficiency, and financial inclusion, while PwC (2021) and Verhoef et al. (2021) argue that successful digital transformation requires both technological adoption and organizational alignment, including cultural and strategic adaptation. At the same time, Chen et al. (2019) found that big data analytics significantly enhance investment accuracy and evidence-based decision-making, while Zetzsche et al. (2020) cautioned that ethical governance frameworks are essential to prevent misuse of AI in finance. The intersection of digital transformation and sustainable investment is particularly significant. OECD (2020) and UNEP FI (2019) highlight how digital technologies strengthen ESG integration, transparency, and monitoring mechanisms, enabling banks to embed sustainability into core strategies. La Torre et al. (2020) demonstrate that banks play a pivotal role in advancing Sustainable Development Goals (SDGs) by linking capital allocation to sustainability objectives, while Cao et al. (2021) and Tang & Zhang (2020) show that fintech innovations accelerate green finance initiatives, such as green bonds, thereby expanding access to sustainable investment products.

Despite these advancements, challenges remain in operationalizing ESG-driven investments. Berg, Kölbel, and Rigobon (2022) pointed out that ESG data divergence and a lack of standardization create reliability issues.

Amel-Zadeh and Serafeim (2018), Eccles and Klimenko (2019), and Goldstein et al. (2019) noted that investors increasingly demand ESG information, but inconsistent disclosure and reporting practices hinder informed decisionmaking. KPMG (2020) emphasized that digital ESG reporting improves transparency but requires careful implementation to ensure data accuracy. Similarly, Demekas et al. (2020) highlighted the importance of regulatory clarity to facilitate ESG adoption and strengthen sustainable investment frameworks. In synthesis, the literature establishes that digital transformation in banking enhances operational efficiency, transparency, and decision-making, while sustainable investment practices grounded in ESG principles promote long-term value and risk mitigation. However, existing research primarily examines these domains in isolation. Few studies systematically analyze the integrated impact of digital transformation on sustainable investment practices, particularly in terms of ESG data reliability, regulatory adaptation, and ethical governance. Addressing these intersections is crucial for advancing responsible banking and supporting long-term economic and social development.

The banking sector is rapidly adopting digital technologies that are reshaping investment decision-making processes and improving efficiency and risk management. At the same time, increasing emphasis on sustainable investment requires banks to integrate environmental, social, and governance (ESG) considerations into their investment strategies. While digital transformation and sustainable investment have both gained prominence, existing studies largely examine these areas separately. There is limited research on how digital transformation directly supports sustainable investment practices in banks, particularly in terms of ESG integration, transparency, and monitoring. Additionally, challenges related to data reliability, regulatory adaptation, and ethical use of digital technologies remain insufficiently explored.

This highlights the need for a focused study that examines the role of digital transformation in advancing sustainable investment practices within the banking sector.

Role of Digital Transformation in Shaping Sustainable Investment Decisions in Banks

The review reveals that digital transformation enables banks to adopt advanced data analytics, artificial intelligence, and fintech platforms to process complex financial and ESG-related information. This enhances the quality and reliability of sustainable investment decisions by supporting evidence-based evaluation rather than intuition-driven judgment (Chen et al., 2019; Vives, 2019). Digital technologies facilitate the systematic incorporation of environmental, social, and governance criteria into investment appraisal processes. Automated ESG screening and digital risk assessment tools allow banks to evaluate long-term sustainability risks more effectively alongside financial returns (Busch et al., 2016; Friede et al., 2015). Digital reporting systems and real-time monitoring tools strengthen transparency by enabling continuous tracking of ESG performance across investment portfolios. This supports improved disclosure practices and enhances investor confidence in sustainability-oriented banking decisions (OECD, 2020; Goldstein et al., 2019).

Digital transformation has contributed to the growth and accessibility of sustainable financial products, including green bonds and ESG-linked instruments. Fintech-enabled platforms improve product visibility and distribution, encouraging broader participation in sustainable investment markets (Tang & Zhang, 2020; Cao et al., 2021). Despite these advancements, the effectiveness of digital transformation is constrained by challenges related to ESG data reliability, lack of standardized metrics, and regulatory uncertainty. Divergence in ESG ratings and ethical concerns related to AI-based decision systems remain critical issues (Berg et al., 2022;

Zetzsche et al., 2020). The findings suggest that digital transformation functions as a strategic enabler of sustainable investment decision-making rather than an independent driver. Its positive influence is maximized when supported by robust data governance, ethical frameworks, and regulatory alignment, consistent with responsible banking principles (UNEP FI, 2019; BIS, 2021).

Role of Digital Technologies in Integrating ESG Factors into Banking Investment Strategies

Digital technologies such as big data analytics and artificial intelligence enable banks to gather, process, and interpret large volumes of ESG-related data from diverse sources. This enhances the availability and quality of non-financial information used in investment strategy formulation (Chen et al., 2019; Berg et al., 2022). Digital risk assessment tools and algorithm-driven screening models support the consistent evaluation of environmental, social, and governance risks. These tools allow banks to integrate ESG considerations more formally into credit appraisal and investment selection processes (Busch et al., 2016; Friede et al., 2015). Digital reporting platforms facilitate improved ESG disclosure and monitoring, enabling banks to track sustainability performance across investment portfolios. Enhanced transparency supports regulatory compliance and improves stakeholder trust in responsible investment strategies (OECD, 2020; Goldstein et al., 2019).

By enabling continuous monitoring and data-driven evaluation, digital technologies help banks align investment strategies with broader sustainability goals, including climate risk mitigation and social responsibility commitments (UNEP FI, 2019; La Torre et al., 2020). Fintech platforms support the development and distribution of ESG-linked investment products such as green bonds and sustainability-linked loans. Digital innovation thus contributes to embedding ESG

considerations into mainstream banking investment strategies (Tang & Zhang, 2020; Cao et al., 2021). Despite these benefits, the effectiveness of digital technologies in ESG integration is constrained by issues such as lack of standardized ESG metrics, data reliability concerns, and regulatory uncertainty. These challenges necessitate robust governance frameworks and regulatory harmonization (Berg et al., 2022; Zetzsche et al., 2020). The findings indicate that digital technologies play a supportive and enabling role in integrating ESG factors into banking investment strategies. Their impact is most effective when combined with strong institutional commitment, ethical technology governance, and clear regulatory guidance.

Opportunities and Challenges in Using Digital Systems for Responsible Banking Investments

Opportunities

- **Enhanced Operational Efficiency:** Digital systems, including AI, machine learning, and automated investment platforms, streamline banking operations by reducing manual processes, errors, and time delays. Automation allows staff to focus on sustainability-oriented evaluation rather than routine tasks, improving efficiency in responsible investment decision-making (BIS, 2021; PwC, 2021).
- **Improved ESG Monitoring and Reporting:** Digital dashboards, data analytics, and reporting tools enable banks to continuously monitor ESG performance across investment portfolios. This real-time tracking enhances transparency, ensures adherence to responsible banking principles, and supports evidence-based reporting to regulators and stakeholders (OECD, 2020; KPMG, 2020).
- **Evidence-Based Investment Decisions:** Advanced analytics and big data tools allow banks to systematically integrate ESG risks and opportunities into investment appraisal. Predictive models help assess climate, social, and governance-related risks, ensuring that sustainability considerations are embedded alongside financial metrics (Chen et al., 2019; Arner et al., 2017).
- **Expansion of Sustainable Financial Products:** Fintech platforms and digital investment channels have facilitated the creation and wider distribution of sustainable financial products, such as green bonds, ESG-linked loans, and sustainability-focused funds. This improves access for investors and promotes the mainstream adoption of responsible banking practices (Cao et al., 2021; Tang & Zhang, 2020).
- **Risk Reduction and Portfolio Resilience:** Digital tools enable banks to model longterm ESG risks, including climate exposure, regulatory compliance issues, and reputational risks. Systematic assessment of these risks contributes to more resilient investment portfolios and reduces potential financial losses from sustainability-related factors (Bae et al., 2021; Goldstein et al., 2019).
- **Cost Reduction and Scalability:** Automation reduces operational costs associated with ESG evaluation, while digital systems allow scalability across multiple investment portfolios or banking units. This makes sustainable investing more economically viable and easier to implement at scale (PwC, 2021; Gomber et al., 2018).
- **Enhanced Stakeholder Engagement:** Digital communication platforms improve interaction with investors, clients, and regulators, providing transparency about ESG integration strategies and responsible investment practices. This strengthens trust and accountability in the banking sector (UNEP FI, 2019; Eccles & Klimenko, 2019).

Challenges

- **Data Quality and Standardization Issues:** ESG data often suffers from inconsistencies, gaps, and lack of comparability across sources. This limits the reliability of AI and analytics tools and can result in flawed investment decisions if not addressed through standardization and verification mechanisms (Berg et al., 2022; Friede et al., 2015).
- **Regulatory and Compliance Complexity:** Rapidly evolving ESG regulations and reporting standards require banks to continually adapt digital systems. Ensuring compliance across jurisdictions can be resource-intensive and may slow the adoption of new digital tools for responsible investment (Demekas et al., 2020; UNEP FI, 2019).
- **Ethical and Governance Concerns:** AI and algorithm-driven investment decisions may introduce bias or lack transparency. Ethical considerations, including fairness, accountability, and responsible use of ESG data, require robust governance frameworks to prevent misuse (Zetsche et al., 2020; Verhoef et al., 2021).
- **Cybersecurity and Data Privacy Risks:** Increased reliance on digital systems exposes banks to cyber threats, including data breaches or manipulation of sensitive ESG information. This may compromise the reliability of investment decisions and stakeholder trust (Gomber et al., 2018; BIS, 2021).
- **Integration with Legacy Systems:** Many banks operate with older IT infrastructure. Integrating new digital ESG tools with legacy systems is often complex, leading to delays, inefficiencies, or incomplete adoption of responsible investment processes (PwC, 2021; Vives, 2019).
- **Cost and Resource Constraints:** Implementing sophisticated digital ESG systems requires significant investment in technology, skilled human resources, and training. Smaller banks or those with limited resources may face barriers to adoption (KPMG, 2020; La Torre et al., 2020).
- **Rapid Technological Change:** Fast-paced technological advancements can render existing digital systems obsolete, requiring continuous upgrades to maintain ESG integration, which may strain financial and operational capacity (Verhoef et al., 2021; Zetsche et al., 2020). Digital systems provide substantial opportunities to enhance responsible banking investments by improving operational efficiency, ESG monitoring, evidence-based decision making, and product accessibility. At the same time, challenges such as data reliability, regulatory complexity, ethical governance, and cybersecurity risks moderate these benefits. To maximize the positive impact of digital transformation, banks must adopt integrated strategies that combine reliable ESG data, robust governance, regulatory compliance, and continuous technological upgrades. Thus, from the above reviews on past studies, the hypothesis considered for the study include:

H1: Digital transformation creates a significant influence in advancing sustainable investment decision making practices in the banking sector and digital technologies support the integration of ESG factors into banking investment strategies.

Methodology of the Study

The study adopts a qualitative, review-based analytical methodology. Secondary data forms the primary source of information and is collected from peer-reviewed journals, academic books, conference proceedings, reports published by international financial institutions, regulatory bodies, and reputable

consulting organizations. Relevant literature is identified through systematic searches of academic databases and institutional publications using keywords related to digital transformation, banking, sustainable investment, and ESG integration. The study also includes primary data information which consists of assessing the digital transformation on sustainable investment practices. The study included the primary source of information by collecting the data from the youths in Ernakulam Districts with regard to their opinion on digital transformation and sustainable investment practices. A total of 409 responses were considered for the analysis after eliminating the irrelevant data using SPSS. The variable which are independent are measured through the factors such as Perceived Usefulness (PU) and Perceived Ease of Use (PE) with 4 items each developed by Davis et al. (1989), Security measures & Trust was measured with 5 items from Viswanath Venkatesh et al. (2003), Adoption of Technology with 4 items from Rogers (2003), Digital Service Quality consists of 4 items which were taken from Parasuraman et al., (2005). Sustainable Investment Practices consists of 5 items (Andreas Hoepner et al., 2019).

The collected literature is critically reviewed and thematically analyzed to identify

key patterns, relationships, and insights related to the role of digital transformation in sustainable investment practices. The analysis focuses on synthesizing findings across studies to understand how digital technologies influence investment decision-making, enhance ESG integration, and address sustainability-related challenges in the banking sector. Based on this synthesis, the study develops a structured understanding of opportunities, constraints, and future research directions, thereby contributing to the existing body of knowledge on responsible and sustainable banking.

Data Analysis and Findings

Table 1 indicates that Cronbach's Alpha for the 26 items used in this study is 0.963, and this is a measure of excellent internal consistency. The high reliability of this measure of data is a guarantee that the items used for measuring Perceived Usefulness (PU), Perceived Ease of Use (PE), Security measures & Trust (ST), Adoption of Technology (AT), Digital Service Quality (DQ), Sustainable Investment Practices (SP) always measure the right constructs. According to Hair et al. (2010), if Cronbach's Alpha is more than 0.7, it is acceptable, and if it is more than 0.9, it is excellent.

Table No. 1: Reliability Statistics

Cronbach's Alpha	N of Items
.963	26

Source: Author's Compilation

Multiple regression analysis was employed to investigate the association between a single dependent variable and multiple independent variables, where every variable contributes to predicting the result (Hair et al., 2009). The model has excellent explanatory power since it has an R value of 0.891 and an R^2 of 0.795, indicating that 79.5% of the total variance of sustainable investment practices (SP) is explained (Cohen et al., 2003). Moreover, the ANOVA result of $F = 1579.532$ and $p < 0.001$ indicates that the model is statistically significant (Malhotra & Dash, 2010). It is also evident that all independent variables, such as Perceived Usefulness (PU), Perceived Ease of Use (PE), Security measures & Trust (ST), Adoption of Technology (AT),

Digital Service Quality (DQ) significantly and positively contribute to SP at $p < 0.001$, and the strongest influence is from Adoption of Technology (AT). This indicates that all independent dimensions considered in the study plays a vital role in influencing sustainable investment practices (Haytko & Matulich, 2010; Attia, 2014; Rahim et al., 2012). The findings confirm that digital transformation is a significant enabler for sustainable and responsible investment practices in banking, but its impact is contingent on careful governance, ethical oversight, and integration with institutional strategies. The use of digital platforms and algorithm-driven assessment models reduces subjective bias and promotes standardized sustainable investment decision-making across banking institutions. Such consistency improves internal governance and supports scalability in responsible investment practices (PwC, 2021; Verhoef et al., 2021)

Table No. 2: Multiple Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.891 ^a	.795	.794	.24583

a. Predictors: Digital Transformation

Table No. 3: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	95.458	1	95.458	1579.532	.000 ^b
Residual	24.657	408	.060		
Total	120.115	409			

a. Dependent Variable: Sustainable Investment Practices

b. Predictors: (Constant), Digital Transformation

Source: Author's Compilation

Table No. 4: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error				Lower Bound	Upper Bound
(Constant)	1.122	.071		15.873	.000	.983	1.261
Perceived Usefulness	.649	.024	.803	27.227	.000	.602	.696
Perceived Ease of Use	.644	.024	.803	27.241	.000	.598	.691
Security measures & Trust	.618	.024	.792	26.197	.000	.571	.664
Adoption of Technology	.832	.022	.883	38.010	.000	.789	.875
Digital Service Quality	.613	.034	.667	18.081	.000	.546	.679

a. Dependent Variable: Sustainable Investment Practices

Source: Author's Compilation

Findings

The study reveals that digital transformation plays a critical role in advancing sustainable investment practices in the banking sector. Digital tools such as AI, big data analytics, and fintech platforms enable evidence-based, data-driven investment decisions, improving both accuracy and operational efficiency (Chen et al., 2019; Vives, 2019). Banks are increasingly able to incorporate environmental, social, and

governance (ESG) factors into investment strategies using digital screening, predictive analytics, and automated evaluation systems, ensuring sustainability is considered alongside financial returns (Busch et al., 2016; Friede et al., 2015; Arner et al., 2017). Real-time dashboards, digital reporting, and monitoring platforms enhance ESG transparency and accountability, facilitating better communication with investors, regulators, and other stakeholders (OECD, 2020; Goldstein et al.,

2019; UNEP FI, 2019). Digital platforms enable banks to create and distribute ESG-linked financial products, including green bonds, sustainability-focused funds, and ESG loans, broadening investor access and promoting responsible investment practices (Tang & Zhang, 2020; Cao et al., 2021).

On the basis of the results of the study, it is evident that the reliability of the variables is strong. Moreover, the results have shown a strong correlation between the variables. The reliability of the variables is further justified by the results of the Cronbach Alpha test, where the value of Cronbach's Alpha is 0.963. It is evident from the results of the Cronbach Alpha test that the 26 variables have shown excellent results. It is also evident from the results of the Cronbach Alpha test that the results of the study have ensured the accurate measurement of the variables (Hair et al., 2010). The results of the multiple regression test have shown a strong correlation between the variables. The results of the multiple regression test have shown an R value of 0.891. Moreover, the results of the multiple regression test have shown an R² value of 0.795. It is evident from the results of the multiple regression test that 79.5% of the variance of sustainable investment practices (SP) is due to digital transformation. The results of the multiple regression test have shown the F value of 1579.532.

Digital systems provide cost savings, scalability, improved monitoring, and systematic risk management, collectively strengthening sustainable investment frameworks within banks (BIS, 2021; PwC, 2021; Gomber et al., 2018). Despite these opportunities, issues such as ESG data quality, lack of standardization, regulatory complexity, cybersecurity risks, and ethical concerns with AI limit the full potential of digital transformation in responsible investments (Berg et al., 2022; Zetzsche et al., 2020; KPMG, 2020). Maximizing the benefits of digital transformation requires combining technological adoption with robust governance,

ethical practices, standardized ESG metrics, and regulatory alignment (UNEP FI, 2019; Verhoef et al., 2021).

Conclusion

This study demonstrates that digital transformation is a pivotal driver in advancing sustainable investment practices within the banking sector. Digital technologies, including AI, big data analytics, fintech platforms, and automated ESG assessment tools, enhance decision-making, operational efficiency, transparency, and risk management. They also facilitate the systematic integration of environmental, social, and governance (ESG) factors into investment strategies, while enabling the development and wider distribution of sustainable financial products such as green bonds and ESG-linked loans. However, the study also identifies persistent challenges that moderate the effectiveness of digital transformation. Issues such as inconsistent ESG data, lack of standardization, regulatory complexity, cybersecurity risks, ethical concerns with AI, and integration challenges with legacy systems highlight the need for robust governance frameworks and strategic oversight. Banks can maximize the benefits of digital transformation by aligning technological adoption with institutional strategies, ethical guidelines, and regulatory compliance, thereby ensuring that sustainability considerations are embedded in core investment decisions.

In conclusion, while digital transformation offers substantial opportunities for promoting sustainable investment in banking, its impact is maximized when combined with governance, ethical oversight, and strategic alignment. This integrated approach can help banks contribute meaningfully to long-term economic, social, and environmental development while meeting growing investor and regulatory expectations.

Scope for Further Study

The study is primarily based on secondary data and existing literature, which limits the ability to capture real-time developments and institution-specific practices in digital transformation and sustainable investment. Since the research adopts a conceptual and review-based approach, it does not include primary data or empirical validation, which may restrict the generalizability of the findings to specific banking contexts. The study relies on published academic and institutional sources, which may reflect variations in ESG definitions, measurement standards, and reporting practices across regions and institutions. Additionally, the rapid pace of technological innovation and evolving regulatory frameworks in digital banking may render some findings time-sensitive. The study also does not undertake a comparative analysis across countries or banking models, which could provide deeper insights into contextual differences in digital adoption and sustainability practices.

The scope of the study is confined to examining the role of digital transformation in advancing sustainable investment practices within the banking sector. The study focuses on the adoption and application of digital technologies such as financial technology platforms, big data analytics, and digital risk assessment tools in banking investment decision-making. Particular attention is given to how these digital systems support the integration of environmental, social, and governance (ESG) factors into investment strategies and contribute to responsible banking practices. The study is conceptual and review-based in nature and does not involve primary data collection. It draws upon existing academic literature, policy documents, industry reports, and regulatory publications related to digital banking, sustainable finance, and ESG integration. The analysis is limited to understanding key trends, opportunities, and

challenges associated with digital transformation in banking and its implications for sustainable investment. The study does not focus on a specific country or bank, allowing for a broader analytical perspective, while acknowledging that institutional and regulatory contexts may vary across regions.

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The Evolving Landscape of Influencer Marketing in the Age of Micro and Nano Influencers with Reference to Malappuram District

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ABSTRACT

Influencer marketing has undergone a substantial transformation from celebrity-centered endorsements to community-driven digital influence led by micro and nano influencers. This transition is especially visible in semi-urban regions such as Malappuram district, where cultural alignment, linguistic familiarity, and interpersonal trust significantly shape consumer behavior. The present study investigates the effectiveness of micro and nano influencers in influencing purchase decisions within Malappuram district. Primary data were collected from 80 respondents using stratified random sampling. Analytical tools such as descriptive statistics and the Chi-square test were employed to examine the association between influencer category and consumer purchase decisions. The results indicate a statistically significant relationship between influencer type and purchase intention, with micro and nano influencers demonstrating stronger impact compared to celebrity influencers. The study concludes that influencer marketing in Malappuram is increasingly characterized by localized engagement, authenticity, and trust-based digital interactions.

Keywords: Consumer Trust, Digital Marketing, Influencer Marketing, Local Branding, Micro Influencers, Nano Influencers

Introduction

The rapid expansion of digital technologies has redefined marketing communication strategies worldwide. Social media platforms including Instagram, YouTube, and Facebook have empowered individuals to influence consumer perceptions and purchasing behavior. Traditionally, brands relied on celebrity endorsements and macro influencers to promote products. However, growing consumer skepticism toward paid promotional content has shifted attention toward smaller, more relatable influencers. In recent times, the concept of influencer marketing has witnessed a significant transformation, especially through the rise of micro and nano influencers as key influencers of consumer engagement. Unlike other influencers, micro and nano influencers have a relatively smaller yet highly engaged consumer base, thus facilitating a more personalized and effective means of communication, which is crucial for developing trust relationships with consumers (Freberg et al., 2011). In districts like Malappuram, where community bonds and regional identity play a significant role in social interactions, consumers tend to place greater trust in familiar digital personalities. Micro and nano influencers effectively utilize local language, cultural relevance, and close audience interaction to shape buying behavior. This study empirically explores this emerging trend using statistical analysis. It has been found that consumers view micro and nano influencers as more authentic and credible, thus making them even more effective influencers of consumer purchasing intentions (Djafarova & Rushworth, 2017). Such a transformation has been witnessed in culturally embedded areas like the Malappuram district, where regional content, linguistic compatibility, and community-centricity have a significant role to play in influencing consumer behaviors. By developing a highly engaged and micro-level relationship, micro and nano influencers have been able to establish a greater

influence over consumers, thus making their role even more vital for marketers. Hence, the research objectives included in the study mainly focused on:

RQ: Whether preference among consumers on various influence categories create an impact on the purchase decision considering the effectiveness of micro and nano influencers in Malappuram district.

Review of Literature

Existing literature suggests that smaller influencers often achieve higher engagement rates compared to celebrity endorsers. Source Credibility Theory posits that the persuasive power of a message depends on the communicator's perceived expertise and trustworthiness. Micro and nano influencers often appear more credible than celebrities because they are perceived as relatable and genuine. Brown and Hayes (2008) emphasized that influence is rooted in credibility rather than popularity. Freberg et al. (2011) highlighted the importance of perceived authenticity in shaping digital trust. According to Social Identity Theory, individuals are more likely to be influenced by those they perceive as belonging to their own social group. Local influencers in Malappuram reflect shared language, cultural practices, and lifestyle patterns, thereby strengthening identification and influence. Recent systematic reviews indicate that influencer marketing research frequently focuses on credibility, para-social interaction, and audience engagement as key determinants of effectiveness (Tanwar et al., 2021). Relationship Marketing emphasizes long-term engagement and trust-building between brands and consumers. Micro and nano influencers foster interactive and sustained relationships with their audiences, which enhances brand loyalty. Further empirical studies demonstrate that influencer communication credibility significantly enhances trust and impulse purchase behavior (Shamim & Azam, 2024). Modern consumers

increasingly resist overt advertising. Authentic communication characterized by transparency, honest product reviews, and realistic lifestyle representation enhances persuasion. Micro and nano influencers typically share balanced product experiences, maintain interactive communication and operate within smaller, community-based networks.

Despite growing global research, limited studies have examined influencer marketing effectiveness at the district level in Kerala, particularly in Malappuram. This study addresses this contextual research gap. In Malappuram's socio-cultural context, where trust networks strongly influence economic transactions, authenticity plays a crucial role in consumer decision-making. Hence the study considered to analyse the assumptions such as:

H1: There is a significant association between influencer category and consumer purchase decision.

Methodology of the Study

The study analyses how the different categories of influencers create an impact on the purchase decision of consumers. Due to the prominence of influencer categories, consumers focus on decision with regard to the purchase has changed a lot especially among youths. The targeted respondents in the study were based on the descriptive research design and also followed the stratified sampling technique considering age and occupation categories. The

study considered a total of 80 respondents from Malappuram district with the help of well organised questionnaire. The scales for measuring 'Influencer Category' was developed from (Freberg et al., 2011; Djafarova & Rushworth, 2017) and for 'Consumer Purchase Decision' from (Lou & Yuan, 2019; De Veirman et al., 2017). The analysis for the study included involves descriptive statistics as well as chi-square test and was examined with the help of SPSS Software.

Data analysis and findings

Table 1 shows the preferences for various categories of influencers by the respondents. It is noted that a majority of the respondents, i.e., 46%, prefer micro influencers, which shows their significant role in influencing the purchasing decision of consumers. It is also noted that 32% of the respondents prefer nano influencers, which shows their role in influencing the purchasing decision of consumers. On the other hand, only 15% of the respondents prefer celebrity influencers, which shows their declining role in marketing. It is also noted that 7% of the respondents do not get influenced by any type of influencers. It is concluded that consumers have a greater inclination towards micro and nano influencers compared to celebrity influencers. Thus, a combined 78% of respondents prefer micro and nano influencers, indicating dominance of localized influencers over celebrities.

Table No. 1: Preference for Influencer Category

Influencer Type	Number of Respondents	Percentage
Micro Influencers	37	46%
Nano Influencers	26	32%
Celebrity Influencers	12	15%
Not Influenced	5	7%
Total	80	100%

Source: Author's Compilation

As per table 2 which represented the influence of different types of influencers on consumers' purchase decisions. From the table, it is found that among micro and nano influencer followers, a major number of respondents, i.e., 45 out of 53, are influenced by influencers in their purchase decisions, whereas only 8 respondents are not. Hence, it is found that micro and nano influencers have a strong influence on consumers. In contrast, among celebrity influencer followers, only 7 respondents are influenced by influencers, whereas a higher number of respondents, i.e., 10, are not influenced by influencers. Moreover, among respondents who are generally not influenced by influencers, it is found that only 3 respondents are influenced by influencers, whereas 7 respondents are not influenced. Hence, from the above table, it is clearly represented that micro and nano influencers have a strong influence on consumers' purchase decisions compared to celebrity influencers. The data indicate that consumers who follow micro and nano influencers are more likely to make purchase decisions based on influencer recommendations compared to those who follow celebrity influencers. A higher proportion of micro/nano followers reported being influenced to buy, while celebrity followers demonstrated relatively lower purchase impact. This suggests that smaller, relatable influencers play a more effective role in shaping consumer buying decisions.

Table No. 2: Influence on Purchase Decision

Purchase Influence	Yes	No	Total
Micro/Nano Followers	45	8	53
Celebrity Followers	7	10	17
Not Influenced	3	7	10
Total	55	25	80

Source: Author's Compilation

Moreover, the results of the Chi-square test in table 3 and 4 showed a significant association between the influencer category and consumer purchase decision, $\chi^2 = 12.840$, $p < 0.05$. Since the p-value (.002) is less than the 5% significance level, the null hypothesis is rejected, indicating that the type of influencer significantly affects the consumer purchase decision. This is in line with previous studies, which showed that different types of influencers have different effects on consumers, depending on their credibility and relatability (De Veirman et al., 2017). Furthermore, the strength of the association, as measured by Phi value (.401) and Cramer's V, is moderate, which is in line with previous studies on the effectiveness of micro or nano-influencers in impacting consumers' purchase decision, as noted in the study by Lou & Yuan (2019). However, it is important to note that 33.3% of cells have expected counts less than 5. The results have shown a significant effect of influencer category on consumer purchase decisions. Hence, there is a statistically significant association between influencer category and consumer purchase decision. The Calculated Chi-square value = 12.84, Degrees of Freedom = (3-1) (2-1) = 2, Critical Value at 5% level with 5.991 indicated the rejection of null hypothesis and acceptance of alternative hypothesis.

Table No. 3: Influencer Category and Purchase Decision

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.840a	2	.002
Likelihood Ratio	12.102	2	.002
Linear-by-Linear Association	9.856	1	.002
N of Valid Cases	80		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .00.

Source: Author's Compilation

H0= No association between Influencer Category and Purchase Decision

H1= There is association between Influencer Category and Purchase Decision

Table No. 4: Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.401	.002
	Cramer's V	.401	.002
N of Valid Cases	80		

Source: Author's Compilation

Findings

The findings confirm that micro and nano influencers exert a significant impact on purchase behavior in Malappuram district. The results align with Source Credibility Theory, demonstrating that relatability and trust enhance persuasive effectiveness. Consumers in Malappuram display a strong preference for Malayalam-language content, realistic product demonstrations, and interactive engagement rather than celebrity glamour. The district reflects characteristics of a trust-centered digital ecosystem, where localized authenticity plays a decisive role.

This analysis reveals that a majority of the respondents have a strong preference for micro and nano influencers, with 46% preferring micro influencers and 32% preferring nano influencers. This reveals that consumers have a higher inclination towards micro and nano

influencers, who are more relatable and localized, as compared to celebrity influencers, who are preferred by only 15% of the respondents. Furthermore, a small percentage of the respondents, i.e., 7%, have not been influenced by any kind of influencer. This reveals the growing dominance of micro and nano influencers in the market. Moreover, the study reveals the impact of micro and nano influencers on consumer purchase decisions, which is higher than the impact created by celebrity influencers. This is because a majority of the micro/nano followers, i.e., 45 out of 53, have been found to be influenced, whereas the impact created by celebrity influencers is relatively lower, with only 7 out of 17 being affected. This implies that the consumer is more likely to trust and act based on the suggestions of an influencer who seems to be more genuine and relatable. Furthermore, the Chi-square test results reveal a statistically significant

relationship between influencer category and consumer purchase decision ($\chi^2 = 12.840$, $p < 0.05$). The rejection of the null hypothesis implies that the influencer category is of critical importance in influencing consumer buying behavior. The degree of association, as implied by the Phi and Cramer's V values (.401), implies a moderate relationship between the two variables.

Despite the limitation of expected cell counts being less than 5, the overall results clearly imply that the influencer category has a critical influence on consumer purchase decisions, with micro and nano influencers being more effective than celebrity influencers. The study provides actionable insights for marketers and local businesses such as collaborate primarily with micro and nano influencers, emphasize authenticity over follower count, develop long-term influencer relationships rather than one-time promotions. utilize localized Malayalam content strategies.

Conclusion

The findings of this study clearly demonstrate that influencer marketing in Malappuram district is increasingly shaped by credibility, relatability, and localized engagement rather than by celebrity status or large follower counts. The statistical analysis confirms a meaningful association between influencer category and consumer purchase decisions, indicating that the type of influencer significantly affects buying behavior. Micro and nano influencers emerged as the most impactful category, primarily because they maintain closer interaction with their audiences and communicate in culturally familiar ways. Their use of local language, realistic product experiences, and interactive engagement strengthens consumer trust and reduces skepticism toward promotional content. In contrast, celebrity influencers, despite their wider reach, appear to generate comparatively lower purchase influence within this regional context. The study concluded that consumers

have a stronger preference for micro and nano influencers as compared to celebrity influencers, which indicates a change in consumer behavior in favor of relatable and authentic information sources. The study also concluded that micro and nano influencers have a stronger influence on consumer buying behavior as compared to celebrity influencers, as a majority of the followers of these influencers reported being influenced by them, whereas celebrity influencers were relatively less effective in influencing consumer buying behavior. The results of the study were also confirmed by the Chi-square test, which showed a statistically significant association between influencer type and consumer purchase decision ($\chi^2 = 12.840$, $p < 0.05$). This shows the significance of influencer type in marketing campaigns, which is in line with the results of previous studies that showed the importance of relatability and credibility of influencers in effectively influencing consumer buying behavior (De Veirman et al., 2017; Lou & Yuan, 2019). The study highlights that in semi-urban districts like Malappuram, purchasing decisions are strongly influenced by community-based trust networks. Consumers respond more positively to influencers who reflect their lifestyle, values, and social identity. This indicates a shift from scale-driven marketing strategies to authenticity-driven approaches. Overall, the research establishes that micro and nano influencers function as trusted digital intermediaries between brands and consumers. For businesses operating in emerging markets, investing in localized, relationship-oriented influencer collaborations may yield stronger and more sustainable marketing outcomes than relying solely on celebrity endorsements.

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Determinants of Impulse Buying Behaviour in Social Commerce Platforms for Fashion Products

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ABSTRACT

The rapid expansion of social commerce platforms has significantly influenced consumer purchasing behavior, particularly in the fashion product segment. Social commerce integrates social networking features with online shopping environments, enabling consumers to interact, share information, and receive personalized recommendations. This study aims to examine the determinants of impulse buying behaviour in social commerce platforms for fashion products. Specifically, the research investigates the impact of personalized advertising, social interaction, and flow experience on consumers' impulse buying behaviour. The study adopts a quantitative research approach and collects primary data through a structured questionnaire administered to users of social commerce platforms. The research model considers personalized advertising, social interaction, and flow experience as independent variables, while impulse buying behaviour is treated as the dependent variable. In addition, the influence of demographic variables such as age, gender, and income level on impulse buying behaviour is also examined. The collected data is analyzed using statistical techniques including correlation analysis, regression analysis using JAMOV12.6.44. The findings are expected to provide insights into how social commerce features influence consumers' spontaneous purchasing decisions and offer practical implications for marketers in the fashion industry to design more effective digital marketing strategies.

Keywords: Consumer Purchasing Behavior, Personalized Advertising, Social Commerce, Social Interaction

Introduction

In the modern digital era, the rapid growth of the internet and the increasing penetration of smartphones have significantly transformed consumer behaviour and the retail landscape. Social media platforms have evolved beyond their primary function of communication and networking to become powerful tools for marketing and online shopping. This evolution has led to the emergence of social commerce, which combines social interaction with e-commerce activities, enabling consumers to discover, evaluate, and purchase products within the same platform. Popular platforms such as Instagram, YouTube, and Pinterest provide highly interactive and visually rich environments that attract users and influence their buying decisions through engaging content, influencer promotions, and targeted advertisements.

One of the most significant behavioural patterns observed in social commerce is impulse buying behaviour. Impulse buying refers to a spontaneous and unplanned decision to purchase a product without prior intention. Unlike traditional purchasing behaviour, which is often rational and need-based, impulse buying is driven by emotions, situational factors, and external stimuli. In social commerce platforms, consumers are continuously exposed to attractive product displays, limited-time offers, peer recommendations, and personalized suggestions, all of which can trigger immediate purchase decisions. The seamless integration of browsing and purchasing further reduces the time available for rational evaluation, thereby increasing the likelihood of impulsive actions.

Several factors contribute to impulse buying behaviour in social commerce environments.

Personalized advertising plays a crucial role by delivering tailored content based on

users' preferences, browsing history, and online behaviour, making product recommendations more relevant and appealing. Social interaction, including reviews, ratings, comments, and influencer endorsements, enhances trust and reduces uncertainty, encouraging consumers to make quick purchase decisions. Additionally, the concept of flow experience, which refers to a state of deep engagement and enjoyment while using a platform, significantly influences consumer behaviour by increasing the time spent browsing and the likelihood of encountering purchase triggers. These factors collectively create a stimulating environment that promotes impulse buying among users.

Therefore, the problem addressed in this study is the lack of comprehensive insight into the determinants of impulse buying behaviour in social commerce platforms. This study aims to bridge this gap by analyzing the influence of key variables and understanding how they contribute to spontaneous purchasing decisions. The findings of this research are expected to provide valuable implications for marketers in designing effective strategies and for consumers in becoming more aware of their buying behaviour in the evolving digital marketplace. Therefore, the research question mainly focuses on to analyze the effect of personalized advertising on impulse buying behavior and to examine the influence of social interaction as well as the flow experience on impulse buying behaviour.

Review of Literature

The theoretical framework of the present study is developed based on prior literature related to impulse buying behaviour in social commerce environments. Impulse buying behaviour, defined as a spontaneous and unplanned purchase decision, has been widely discussed in consumer behaviour studies. Rook (1987) explained that impulse buying is primarily driven by emotional triggers rather than rational evaluation, while Beatty and Ferrell (1998) further emphasized that

emotional states and situational factors significantly influence such spontaneous purchasing decisions. In the context of online environments, Verhagen and Van Dolen (2011) highlighted that enjoyment and engagement play a crucial role in encouraging impulse buying, indicating that consumers are more likely to make unplanned purchases when they find the browsing experience attractive and enjoyable. One of the major determinants of impulse buying identified in the literature is personalized advertising. Lina and Ahluwalia (2021) found that advertisements tailored to individual preferences significantly increase purchase intention by enhancing relevance and engagement. Similarly, Ghosh and Biswas (2023) observed that personalized recommendations and targeted content in social commerce platforms create continuous exposure to products, thereby increasing the likelihood of impulse buying. These findings indicate that personalization plays a critical role in influencing consumer decision-making in digital environments.

Another important construct is social interaction, which has been widely recognized as a key factor in social commerce. Zhang, Benyoucef and Zhao (2016) emphasized that consumer participation and interaction significantly enhance engagement and purchase intention. Supporting this, Ghosh and Biswas (2023) highlighted that features such as likes, comments, and peer recommendations build trust and encourage spontaneous purchases. Additionally, Gumay, Bangsawan and Pandjaitan (2024) explained that social presence in interactive environments increases emotional arousal and pleasure, which ultimately leads to impulsive buying behaviour. The concept of flow experience also plays a significant role in explaining impulse buying behaviour in social commerce platforms. Hoffman and Novak (2009) described flow as a state of deep engagement and immersion during online browsing, which increases the time spent on platforms and exposure to purchase stimuli.

Similarly, Huang (2016) found that flow experience significantly enhances consumer engagement and encourages impulse buying behaviour by creating an enjoyable browsing experience. These findings suggest that when consumers are fully immersed in online activities, they are more likely to make spontaneous purchase decisions. Overall, the literature indicates that impulse buying behaviour in social commerce is influenced by a combination of emotional, social, and experiential factors. Personalized advertising and social interaction act as external stimuli, while flow experience represents the internal psychological state that leads to impulse buying behaviour. Thus, the integration of these constructs, supported by previous studies, provides a strong theoretical framework for understanding how social commerce platforms influence consumer behaviour and encourage impulsive purchasing decisions. The concept of impulse buying behaviour has been widely explored in consumer behaviour literature, particularly with the emergence of online shopping and social commerce platforms. Early studies by Rook (1987) identified impulse buying as a spontaneous and emotionally driven purchase decision that occurs without prior planning. This perspective was further expanded by Beatty and Ferrell (1998), who emphasized the role of situational factors and emotional states in influencing impulse buying behaviour. With the growth of digital platforms, researchers have shifted their focus towards understanding how online environments and technological features contribute to such behaviour. In this regard, Verhagen and Van Dolen (2011) found that online store environments, particularly those that are visually appealing and easy to navigate, significantly enhance impulse buying tendencies by increasing consumer enjoyment and engagement.

In recent years, social commerce has emerged as a critical area of study, integrating social media features with e-commerce

functionalities. Zhang, Benyoucef and Zhao (2016) highlighted that social interaction plays a vital role in influencing consumer behaviour by enabling users to share opinions, reviews, and recommendations. These interactions create a sense of trust and reduce perceived risk, which encourages consumers to make quicker purchase decisions. Similarly, Hajli (2015) emphasized that social commerce constructs such as social support, community engagement, and information sharing significantly impact consumer trust and purchase intentions. These findings suggest that the interactive nature of social commerce platforms creates an environment that fosters impulsive buying behaviour. Another important dimension explored in earlier studies is the role of personalized advertising in influencing consumer decisions. Lina and Ahluwalia (2021) found that personalized advertisements tailored to individual preferences increase the relevance and effectiveness of marketing messages, thereby enhancing purchase intention. Supporting this, Ghosh and Biswas (2023) observed that targeted promotions and algorithm-based recommendations significantly influence impulse buying behaviour by continuously exposing consumers to relevant products. These studies indicate that personalization not only captures consumer attention but also creates a sense of immediacy, which encourages spontaneous purchasing decisions. The concept of flow experience has also been widely discussed as a key determinant of online consumer behaviour. Hoffman and Novak (2009) described flow as a state of deep involvement and enjoyment experienced during online browsing, which increases the time spent on digital platforms. This immersive experience enhances consumer engagement and makes them more susceptible to external stimuli such as advertisements and product recommendations. Similarly, Huang (2016) found that flow experience positively influences impulse buying behaviour by creating an enjoyable and distraction-free browsing

environment. These findings highlight the importance of user experience in shaping consumer behaviour in online settings. More recent studies have further explored the combined impact of social interaction, personalization, and engagement on impulse buying behaviour. Gumay, Bangsawan and Pandjaitan (2024) emphasized that social presence and interactive features in digital platforms enhance emotional responses and increase the likelihood of impulsive purchases. Additionally, Ghosh and Biswas (2023) concluded that the integration of personalized content, social influence, and engaging experiences creates a powerful environment that drives consumer behaviour in social commerce.

Overall, the review of earlier studies indicates that impulse buying behaviour in social commerce is influenced by a combination of emotional, social, and technological factors. While early research focused on traditional retail settings, recent studies have highlighted the significant role of digital platforms in shaping consumer behaviour. The findings consistently suggest that personalized advertising, social interaction, and flow experience are key determinants of impulse buying behaviour. These insights provide a strong foundation for the present study and highlight the need for further research to understand how these factors interact in the context of modern social commerce platforms. Hence the framed hypothesis involves:

H11: There is a significant impact of personalised advertising on impulse buying behaviour

H12: There is a significant impact of Social interaction on impulse buying behaviour

H13: There is a significant impact of Flow Experience on impulse buying behaviour

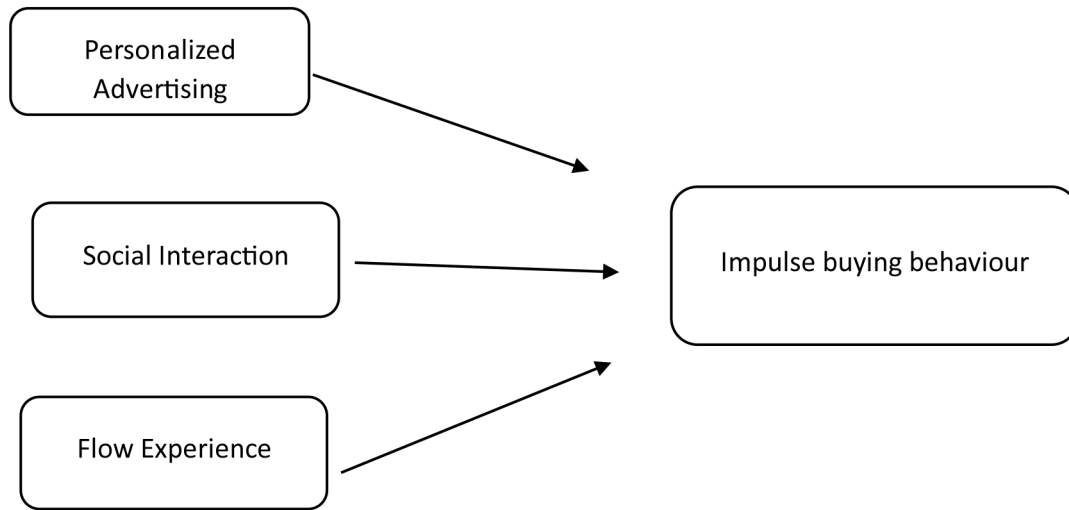


Fig No. 1: Research model

Methodology of the Study

The present study adopts a quantitative research approach to examine the factors influencing impulse buying behaviour in social commerce platforms. The research is descriptive in nature, as it aims to describe and analyze the relationship between personalized advertising, social interaction, flow experience, and impulse buying behaviour. The study is based on primary data, which was collected directly from respondents using a structured questionnaire. The questionnaire was designed to capture information related to demographic profile, social media usage, and perceptions regarding the key variables of the study. The sampling method used in this study is convenience sampling, as respondents were selected based on their accessibility and willingness to participate. A total of 250 respondents were included in the sample, primarily consisting of social media users who engage in online shopping activities. The target population mainly includes young consumers, as they are the most active users of social commerce platforms. The data collection instrument used was a structured questionnaire consisting of both demographic and scale-based questions.

The measurement of variables was carried out using a Likert scale, ranging from strongly disagree to strongly agree, to assess respondents' opinions on personalized advertising, social interaction, flow experience, and impulse buying behaviour. The questionnaire was distributed through online platforms to ensure ease of access and wider reach. For data analysis, statistical tools were applied using software JAMOV 2.6.44. Reliability analysis was conducted using Cronbach's Alpha to ensure the consistency of the measurement scale.

Data analysis and Results

The collected data was analysed using statistical software tools such as JAMOV and MS Excel. Descriptive statistics was used to summarize the characteristics of the sample and the variables of interest. Inferential statistics, such as correlation analysis, regression analysis was used to examine the relationships between variables and test hypotheses. From the Fig 2, it can be inferred that 44.4% of the respondents use social media platforms 3- 5 hours per day followed 2% uses more than 5 hours per day, 28.8% uses 1-3 hours per day, 3.6% uses less than 1 hours and 1.2% rarely use social media.

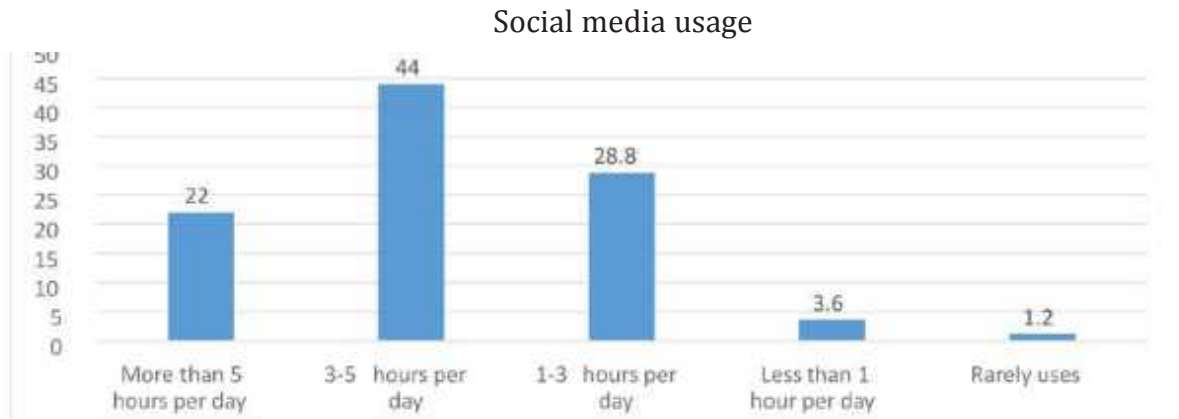


Fig No. 2: Distribution of respondents usege of social media platform

From the Fig 3, it can be inferred that 73.6% of respondents mostly used fashion category is clothing followed by 10.8% are into fashion accessories, 7.6% are into footwear 4.4% into sportswear and 3.2% into jewellery.

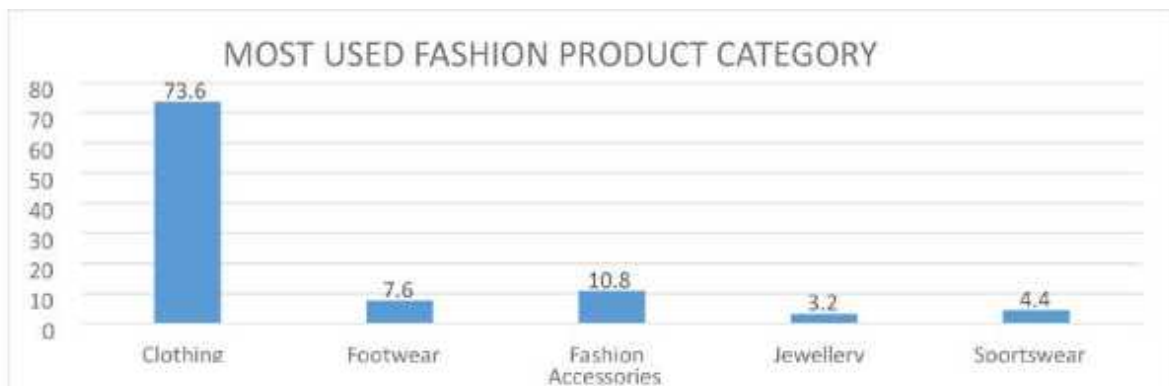


Fig No. 3: Distribution of respondents most used fashion product category

From the Fig4, can be inferred that 69.2% of respondents use Instagram followed by 18.8% use Pinterest, 6.4% use you tube, 3.2% uses Facebook and 2.4% use WhatsApp.

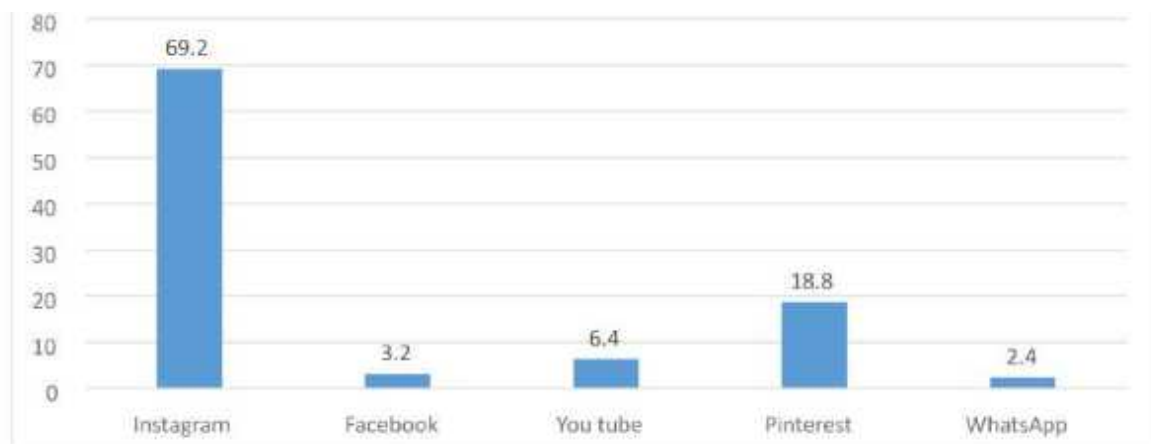


Fig No. 4: Distribution of respondents most used social media platform

Reliability is a statistical method that assess the consistency and stability of a measure of scale. A Cronbach's α value of 0.791 indicates a high level of internal consistency reliability for the scale being used. This suggests that the item in the questionnaire are closely related and consistently measure the same underlying construct.

Table No. 1: Scale Reliability Statistics

Reliability Analysis	
Cronbach's α	
Scale	0.791

Source- Primary data

Table 2 presents the descriptive statistics for the main variables based on a sample of 250 respondents with no missing data, indicating a complete and reliable dataset. The mean values range from 3.20 to 3.60, reflecting an overall positive perception among respondents. Social Interaction (M = 3.60) and Personalized Advertising (M = 3.57) have the highest mean scores, while Flow Experience (M = 3.25) and Impulse Buying Behaviour (M = 3.20) also show favorable responses. The median values are close to the means, and the mode is mostly 4.00, indicating a higher level of agreement. Low standard deviation values (0.629–0.822) suggest minimal variation and consistency in responses. The full-scale range (1–5) was utilized, capturing balanced responses. Overall, the data is consistent, reliable, and indicates positive perceptions toward all variables.

Table No. 2: Descriptives on major variables under study

	Personalised Advertising	Social Interaction	Flow Experience	Impulse Buying Behaviour
N	250	250	250	250
Missing	0	0	0	0
Mean	3.57	3.60	3.25	3.20
Median	3.60	3.60	3.20	3.20
Mode	4.00	4.00	4.00	3.00
Standard deviation	0.629	0.670	0.822	0.780
Variance	0.395	0.448	0.676	0.609
Minimum	1.40	1.20	1.00	1.00
Maximum	5.00	5.00	5.00	5.00

Source: Primary data

In this analysis 250 responses are considered to find the relationship and impact between the variables. Different analysis such as Correlation, Regression, Independent T-test and One-way ANOVA are being done. The correlation analysis examines the relationship between Personalised Advertising, Social Interaction, Flow Experience (independent variables) and Impulse Buying Behaviour (dependent variable). The results indicate that all independent variables have a positive and statistically significant relationship with impulse buying behaviour. Among the variables, Flow Experience shows the strongest correlation with Impulse Buying Behaviour ($r = 0.560$, $p < 0.001$), indicating that consumers who experience higher engagement and immersion are more likely to make impulsive purchases. Social Interaction ($r = 0.375$, $p < 0.001$) and Personalised Advertising ($r = 0.352$, $p < 0.001$) also demonstrate moderate positive relationships with impulse buying, suggesting that interactive platforms and tailored advertisements contribute to spontaneous purchasing decisions, though to a lesser extent than flow experience.

Table No. 3: Correlation Matrix

Correlation Matrix					
		Personalised Advertising	Social Interaction	Flow Experience	Impulse buying behaviour
Personalised Advertising	Pearson's r	—			
	df	—			
	p-value	—			
Social Interaction	Pearson's r	0.608	—		
	df	248	—		
	p-value	<.001	—		
Flow Experience	Pearson's r	0.569	0.503	—	
	df	248	248	—	
	p-value	<.001	<.001	—	
Impulse Buying behaviour	Pearson's r	0.352	0.375	0.560	—
	df	248	248	248	—
	p-value	<.001	<.001	<.001	—

Source: Primary data

The results of the regression analysis indicate that personalised advertising has a positive and statistically significant effect on impulse buying behaviour. Here the alternate hypothesis is accepted. The model shows a moderate relationship between the variables ($R = 0.352$), with personalised advertising explaining 12.4% of the variance in impulse buying behaviour ($R^2 = 0.124$), suggesting that other factors also contribute to this behaviour.

Table No. 4: Linear Regression between Personalised advertising and Impulse buying behaviour

Model Fit Measures				
Model	R	R ²		
1	0.352	0.124		
Note. Models estimated using sample size of N=250				
Model Coefficients – Impulse buying behaviour				
Predictor	Estimate	SE	t	p
Intercept	1.637	0.2674	6.12	<.001
Personalised Advertising	0.437	0.0738	5.92	<.001

Source: Primary data

Table No. 5: Linear Regression between Social interaction and Impulse buying behaviour

Model Fit Measures				
Model	R	R ²		
1	0.375	0.141		
Note. Models estimated using sample size of N=250				

Model Coefficients – Impulse Buying Behaviour				
Predictor	Estimate	SE	t	p
Intercept	1.625	0.2509	6.48	<.001
Social Interaction	0.437	0.0686	6.37	<.001

Source- Primary data

The results of the regression analysis indicate that Social Interaction has a positive and statistically significant effect on impulse buying behaviour. Here the alternate hypothesis is accepted. The model shows a moderate relationship between the variables ($R = 0.375$), with social interaction explaining 14.1% of the variance in impulse buying behaviour ($R^2 = 0.141$), suggesting that other factors also contribute to this behaviour. The coefficient for social interaction ($B = 0.437$, $p < .001$) indicates that an increase in social interaction leads to a corresponding increase in impulse buying behaviour.

Table No. 6: Linear Regression between Flow Experience and Impulse buying behaviour

Model Fit Measures				
Model	R	R ²		
1	0.560	0.313		
Note. Models estimated using sample size of N=250				
Model Coefficients – Impulse Buying behaviour				
Predictor	Estimate	SE	t	p
Intercept	1.471	0.1673	8.79	<.001
Flow Experience	0.531	0.0499	10.63	<.001

Source: Primary data

The results of the linear regression analysis indicate that flow experience has a strong, positive, and statistically significant effect on impulse buying behaviour. Here alternate hypothesis is accepted. The model shows a moderate to strong relationship between the variables ($R = 0.560$), with flow experience explaining 31.3% of the variance in impulse buying behaviour ($R^2 = 0.313$), suggesting a substantial level of explanatory power compared to other predictors. The coefficient for flow experience ($B = 0.531$, $p < .001$) indicates that an increase in flow experience leads to a corresponding increase in impulse buying behaviour. Overall, the findings suggest that flow experience is a significant and relatively strong predictor of impulse buying behaviour.

Findings and Suggestions

The findings of the present study provide significant insights into the factors influencing impulse buying behaviour in social commerce platforms. The results indicate that personalized advertising, social interaction, and flow experience all have a positive and significant impact on impulse buying behaviour, with flow experience emerging as the most influential

factor. These findings are consistent with existing literature, which suggests that consumer behaviour in online environments is largely driven by emotional and experiential factors rather than purely rational decision-making. Social interaction was also found to have a significant impact on impulse buying behaviour. Features such as reviews, ratings, comments, and influencer endorsements enhance trust and reduce perceived risk among consumers. The presence of social proof encourages individuals to make quicker decisions, often without extensive evaluation of alternatives. This finding reinforces the importance of peer influence in digital environments, where consumers rely heavily on the opinions and experiences of others. The interactive nature of social commerce platforms creates a sense of community, which further strengthens the impact of social influence on purchase decisions (Chen & Yao, 2018; Verhagen & van Dolen, 2011).

Personalized advertising, although slightly less influential compared to flow experience and social interaction, still plays a crucial role in shaping impulse buying behaviour. Tailored advertisements based on user preferences and browsing history increase the relevance and

attractiveness of products, capturing consumer attention effectively (Bleier & Eisenbeiss, 2015). This continuous exposure to customized content creates a sense of familiarity and urgency, which can lead to spontaneous purchase decisions. The findings suggest that personalization enhances the effectiveness of marketing strategies by aligning product offerings with consumer interests (Arora et al., 2008). Overall, the discussion highlights that impulse buying behaviour in social commerce is a result of the combined effect of engagement, social influence, and personalized content. These factors work together to create a compelling shopping environment that encourages consumers to make immediate purchase decisions (Zhang et al., 2018). The findings of this study offer several important practical implications for marketers, businesses, and social commerce platforms. Firstly, the significant impact of flow experience suggests that businesses should focus on enhancing user engagement by improving the overall design and functionality of their platforms. This includes creating visually appealing interfaces, ensuring smooth navigation, and incorporating interactive elements such as videos, reels, and live sessions. By providing an immersive browsing experience, businesses can increase the time spent by users on the platform and enhance the likelihood of impulse purchases.

Secondly, the role of social interaction highlights the importance of building a strong online community. Businesses should encourage user-generated content, reviews, and feedback to create a sense of trust and authenticity. Collaborating with influencers and brand ambassadors can further strengthen social proof and expand reach. Since consumers are highly influenced by peer opinions, maintaining positive customer engagement and responsiveness is essential for driving purchase decisions. Thirdly, the impact of personalized advertising indicates that businesses should leverage data analytics and advanced technologies to deliver targeted marketing

messages. By analyzing consumer behaviour, preferences, and purchase history, companies can create customized advertisements that resonate with individual users (Bleier & Eisenbeiss, 2015). Personalized recommendations not only improve customer experience but also increase the effectiveness of promotional strategies. However, it is important for businesses to balance personalization with ethical considerations and data privacy to maintain consumer trust. In conclusion, the practical implications of this study highlight the importance of creating an engaging, interactive, and personalized environment in social commerce platforms. By focusing on these aspects, businesses can effectively influence consumer behaviour and capitalize on the growing trend of impulse buying in the digital marketplace.

Conclusion

The study aimed to analyze the influence of personalized advertising, social interaction, and flow experience on impulse buying behaviour in social commerce platforms. The findings indicate that all three factors have a significant and positive impact on impulse buying, with flow experience emerging as the most influential factor. This highlights the importance of consumer engagement and immersive browsing experiences in driving spontaneous purchase decisions. Social interaction also plays a key role by building trust and influencing consumers through reviews, ratings, and peer recommendations. Personalized advertising enhances the relevance of marketing messages, thereby increasing the likelihood of impulse purchases. Overall, the study concludes that social commerce platforms create a highly engaging and interactive environment that encourages impulse buying behaviour. These findings provide valuable insights for businesses to design effective marketing strategies and enhance customer experience in the digital marketplace. In case consumers have access to an interesting and

comfortable browsing experience, they will be willing to spend more time on the social commerce sites, thus exposing themselves to various goods and promotions (Verhagen & van Dolen, 2011). In addition, user-generated content such as reviews and product recommendations make users feel safe and boost their intentions to purchase (Hajli, 2015). Personalised advertisements play a role in this process through providing products that align with the consumer's needs and interests, thereby making it easy and appealing for consumers to buy the products (Bleier & Eisenbeiss, 2015). Moreover, interactive elements incorporated into social commerce sites facilitate increased consumer engagement and interaction. Through the creation of positive experiences, consumers develop emotional ties with particular products or brands, hence prompting unplanned purchases (Akram et al., 2018). As a result of these findings, organisations need to ensure continuous innovation in technologies used in order to keep customers satisfied and interested. In essence, creating a personalised, interactive, and engaging shopping experience is critical for fostering impulse buying behaviour (Arora et al., 2008).

Scope for Future Research

Future research can incorporate additional variables such as trust, perceived risk, hedonic motivation, and website quality to gain a more comprehensive understanding of impulse buying behaviour. Moreover, longitudinal studies can be conducted to examine changes in consumer behaviour over time, while experimental designs can help establish causal relationships between variables. Researchers can also explore different product categories and compare consumer behaviour across various social media platforms. In addition, qualitative approaches such as interviews and focus groups can be used to gain deeper insights into consumer perceptions, emotions, and motivations in social commerce environments.

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UPI as a Catalyst for Digital Financial Inclusion: Evidence from Rural India

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ABSTRACT

The way people in India pay for goods and services has changed dramatically in the past decade, especially with the introduction of the Unified Payments Interface (UPI). While cities quickly embraced this cashless system, its influence in rural India is even more significant. For many villagers, shopkeepers, and small businesses, UPI has become more than just a payment tool it has opened doors to financial services that were once out of reach. This paper looks at how UPI is shaping everyday life in rural areas, from making small daily purchases easier to helping farmers and local traders receive payments instantly. At the same time, challenges remain: patchy internet, low digital awareness, and trust issues with online transactions still slow down adoption. Using real-life examples, survey responses, and secondary data, this study explores both the opportunities and the hurdles of going cashless in rural India. The findings show that UPI is not only reducing the dependence on cash but also helping bring rural communities closer to the formal financial system. The paper concludes with insights that could guide policymakers and other emerging economies in creating inclusive digital payment systems inspired by India's experience.

Keywords: Cashless economy, Digital awareness., Digital payments in India, Financial inclusion, Rural India, Unified Payments Interface (UPI)

Introduction

Over the past decade, the way people in India pay for even the smallest things has changed dramatically. From buying vegetables at the market to paying school fees, many transactions that once depended entirely on cash are now done through mobile phones. At the heart of this change is the Unified Payments Interface (UPI) a simple system that allows instant money transfers with just a few taps. Launched in 2016, UPI has become more than a convenience; it has started reshaping the way Indians think about money and financial services.

In cities, people quickly adopted UPI for its speed and ease. But its impact in rural India tells a much deeper story. For shopkeepers in small towns, farmers selling their produce, or a daily wage worker sending money home, UPI is not just about going digital it is about access, empowerment, and inclusion. For many, it is the first step into the formal financial system, breaking long-standing barriers of distance, paperwork, and mistrust in banks.

Yet, this transformation has not been without challenges. Patchy internet signals, low digital awareness, and doubts about the safety of online transactions often hold people back. Some villagers still prefer the familiarity of cash, while others slowly experiment with scanning QR codes at their local tea stall. This mix of curiosity and caution reflects the ongoing journey of digital payments in rural areas. Although several studies have examined the growth of digital payments in India, most focus on overall transaction volumes, urban adoption patterns, or technological efficiency of UPI. Limited research specifically investigates the role of UPI in promoting digital financial inclusion within rural India. Moreover, existing studies largely emphasize quantitative growth indicators while overlooking structural challenges such as digital literacy, infrastructure

gaps, trust issues, and behavioural aspects of rural users. There is also insufficient integration of policy perspectives with ground-level adoption trends. Therefore, a focused analysis of UPI as a catalyst for financial inclusion in rural India remains underexplored, necessitating the present study. Hence the following research question can be framed:

RQ: Whether the UPI Adoption creates an impact on the Digital Financial Inclusion based on the evidence from Rural India.

Review of Literature

The article shows how Indian banking has quickly moved from cheques and branch counters to mobile apps, UPI, and digital platforms that bring services to people's fingertips. While cities have embraced these changes, rural customers still struggle with poor connectivity, low awareness, and trust issues. The paper stresses that digital literacy is the key without it, the promise of digital banking cannot fully reach villages. It also reminds us that banks must not only adopt new technology but also ensure that rural people feel confident and included in using it. Singh (2025) explores the socio-economic impact of UPI on small businesses, shopkeepers, and street vendors in India. The study finds that cashless transactions have helped these groups by reducing cash-handling risks, improving transparency, and speeding up payments. It also notes that UPI encourages more customer trust and increases sales opportunities for micro-entrepreneurs. However, challenges like low digital literacy, transaction failures, and fear of fraud continue to limit its full benefits. The paper concludes that while UPI has opened new opportunities for small traders, sustained training and awareness programs are crucial for long-term success. Kumari, Singh, and Ahmad (2024) examine how digital innovations like UPI, mobile banking, and wallets are driving India toward a cashless economy. The study highlights benefit such as greater convenience, transparency, and financial inclusion, while also

noting barriers like cybersecurity risks, digital illiteracy, and uneven infrastructure. Overall, the authors argue that digital payments are reshaping economic behavior in India but stress the need for strong policy support and awareness programs to make the shift more inclusive.

Dev, Gupta, et al (2024) investigate how UPI has influenced the spending behavior of Indian users. Their study reveals that while UPI has made transactions faster and more convenient, it has also led to a tendency for increased impulsive spending due to the ease of digital payments. To address this, the authors propose designing financially responsible user interfaces that can help users track expenses, set limits, and develop healthier financial habits. The paper adds an important behavioral dimension to UPI research, showing that digital payment systems not only enable access but also subtly reshape consumer financial discipline. Dubey and Dwivedi (2021) examine how digitalization is shaping India's move toward a cashless economy and its impact on financial inclusion. The paper highlights that innovations like UPI and mobile banking have expanded access to financial services, particularly for previously unbanked populations. On the positive side, digitalization has promoted efficiency, transparency, and convenience. However, the study also underlines key challenges such as cybersecurity risks, lack of digital literacy, rural connectivity issues, and mistrust in online transactions. The authors conclude that while digital payments can significantly advance financial inclusion, success depends on addressing infrastructure

gaps and building user confidence. Gupta and Khanna (2019) discuss the rise of cashless transactions in India and the government's push toward digital payments after demonetization. The paper highlights how tools like debit cards, mobile wallets, and UPI have contributed to making transactions quicker and more transparent. It also notes the advantages of reduced cash dependency, such as lower risks of theft and better financial tracking. At the same time, the authors underline challenges including cybersecurity threats, lack of awareness, and digital infrastructure gaps, especially in rural regions. The study concludes that while India is moving steadily toward a cashless economy, stronger awareness campaigns and secure systems are necessary for sustainable growth. Sarika and Vasantha (2019) study the impact of mobile wallets on cashless transactions in India. Their findings suggest that mobile wallets have become a popular medium for quick, small-value payments, particularly among younger and urban consumers. The paper highlights benefit such as convenience, ease of access, and reduced reliance on cash, but it also points to issues like transaction failures, security concerns, and low adoption in rural areas. The authors conclude that while mobile wallets play an important role in advancing digital payments, their long-term success depends on building trust and extending reach beyond urban markets. Hence based on the above past literatures, the hypothesis can be quoted as,

H1: UPI Adoption has a significant impact on the Digital Financial Adoption as per the evidence from Rural India.

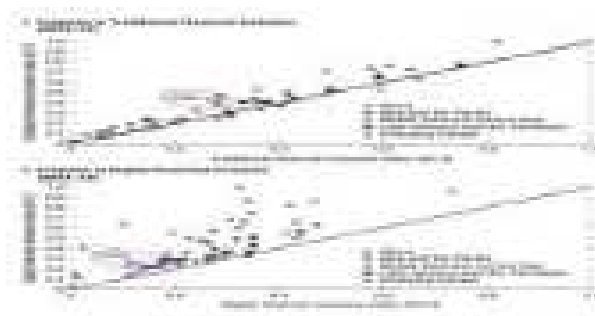


Fig. No. 1: Traditional and Digital Financial Inclusion Index

Source: Primary data (Compiled by Author based on RBI (2023), NPCI (2023), NITI Aayog (2022))

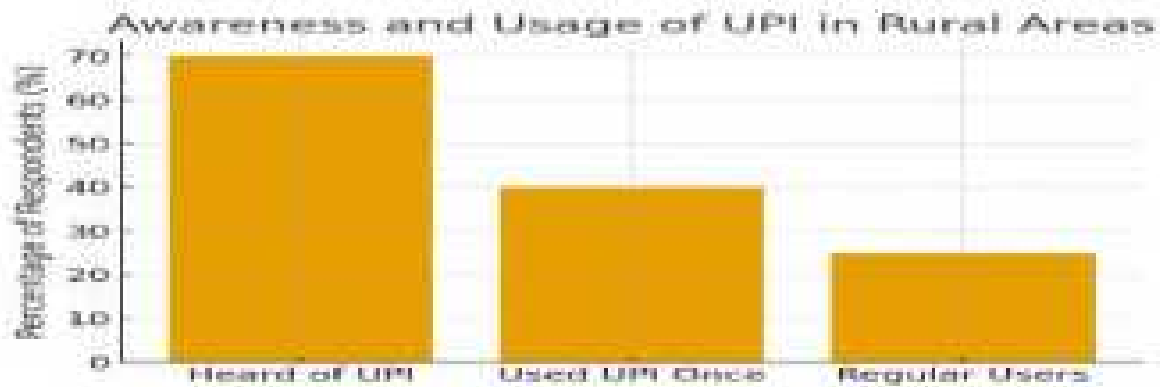


Fig. No. 2: Awareness and Usage of UPI in Rural Areas

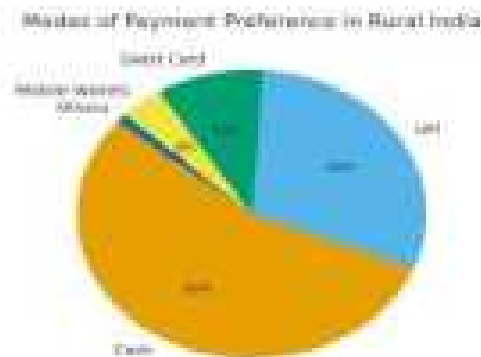


Fig. No. 3: Mode of Payment Preference in Rural India

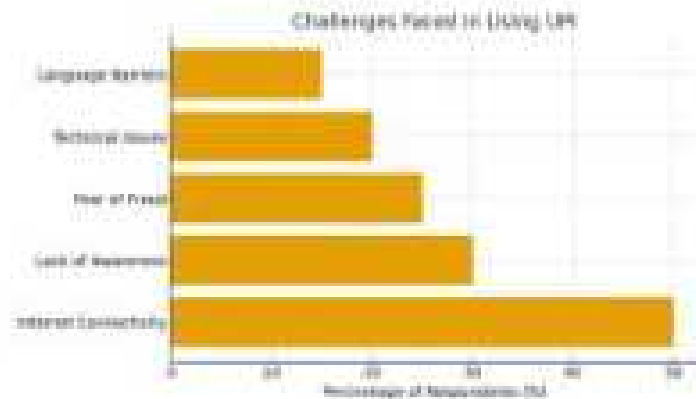
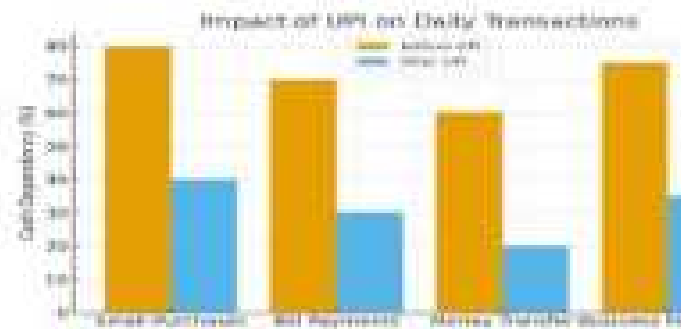


Fig. No. 4: Challenges Faced in using UPI



Source: Primary data collected by author through survey (2023). Data compiled by author (2023).

Fig. No. 5: Impact of UPI in Daily Transactions

According to the latest NPCI data, a handful of states dominate India's UPI ecosystem in terms of total transaction volume (Q1 FY 2025-26):

- Maharashtra: 6.58 billion transactions the highest in the country, driven by high smartphone penetration, strong merchant acceptance, and dense urban centres like Mumbai and Pune.
- Karnataka: 3.7 billion transactions second highest, with Bengaluru's tech-savvy population pushing adoption.
- Uttar Pradesh: 3.58 billion transactions the only major Northern state in the top five, reflecting adoption in Tier-2 cities.
- Telangana: 2.77 billion transactions.
- Tamil Nadu: 2.33 billion transactions.

States with stronger urban economies, better internet connectivity, and higher merchant onboarding show significantly larger UPI transaction volumes, indicating both greater adoption and routine use in daily economic activity.

Per Capita UPI Usage Highlights

When UPI usage is adjusted for population size, the pattern shifts from absolute volume to depth of adoption:

Table No. 1: Per Capita UPI Usage Highlights

State/UT	Approx Monthly Transactions per Person	Relative Adoption
Delhi	23.9	Very High
Goa	23.3	Very High
Telangana	22.6	High
Chandigarh	22.5	High
Maharashtra	17.4	High (for large states)
Bihar, Tripura	<4	Low

Source: NPCI data, total transaction volume (Q1 FY 2025-26):

Small states and urban dominions lead in per capita usage, showcasing routine reliance on UPI for daily transactions often exceeding 20 transactions per person per month. Conversely, populous and economically lagging states like Bihar and Tripura record far lower figures, indicating persistent digital divides in adoption intensity.

Regional Patterns: South & West vs East & Northeast

- Southern and Western regions (e.g., Maharashtra, Karnataka, Telangana, Tamil Nadu) show uniformly high UPI activity, both in absolute volume and user frequency.
- Eastern and North-Eastern states (e.g., Assam, Jharkhand, West Bengal) lag significantly after population adjustment, often due to weaker infrastructure, limited merchant acceptance, and lower smartphone penetration.

- Some geographically remote regions like Arunachal Pradesh and Sikkim report relatively higher per-capita usage than neighbouring states — possibly due to reliance on digital payments where physical cash access is limited.

While UPI adoption is strong across much of southern and western India, there remains a multi-speed digital economy, where digital payment penetration is uneven, driven by infrastructure, literacy, and economic activity differences.

UPI Transaction Growth (National Level)

- UPI transaction volume in India surged from 375 crore transactions in 2018 to 17,221 crore transactions by 2024, with the total value rising from ₹5.86 lakh crore to ₹246.83 lakh crore over the same period. This reflects a strong compound annual growth trend in both volume and value, making UPI the dominant digital payments platform in India.
- UPI accounted for approximately 83–85 % of all digital payment transactions by volume in recent years, underscoring its central role in the country's move toward digital finance.

Methodology of the Study

The study was based entirely on secondary data, adopting a descriptive research design to explore the role of UPI in rural India. Data Collection was purely based on primary and secondary information sources. Data was collected from reliable sources such as the Reserve Bank of India (RBI) annual reports, National Payments Corporation of India (NPCI) statistics, NITI Aayog publications, and government surveys on digital payments. In addition, insights were drawn from peer-reviewed journals, industry reports (PwC, Deloitte), and authentic news articles related to financial inclusion and digital banking. The data collection followed a systematic literature review approach, using keywords such as UPI,

cashless economy, digital payments, rural adoption, and financial inclusion. Quantitative data such as UPI transaction volumes and adoption trends were compiled and presented through charts and graphs, while qualitative data such as policy discussions and case studies were analyzed thematically to identify key opportunities and challenges. Furthermore, for more consistency and accuracy the study followed assessing the opinions of the small shopkeepers among the areas of Malappuram District. The dimensions considered for the study include Convenience(4 items) from Venkatesh et al. (2003), Ease of access (4 items) developed by Davis (1989), Security concerns with 4 items from Featherman & Pavlou (2003) and Reliability in Transaction consists of 4 items adapted from DeLone & McLean (2003). The dimension for Digital Financial Inclusion was measured using 5 items taken from (Demirgüç-Kunt et al., 2018; Park & Mercado, 2015). However, the study is limited by the availability of rural-specific data and relies on the accuracy of published sources, which may not fully capture the behavioural aspects of rural users.

Data Analysis and Findings

In order to assess the association between the UPI Adoption as well as Digital Financial Inclusion, multiple regression analysis which is a widely adopted method as per the study of (Shabbir et al., 2010) and thus, was used with the help of the SPSS software package. Also, multiple regression analysis was considered as the widely recognized analysis for social science research (Zikmund et al., 2009). Table 1 summarised the analysis of consistency of the variables considered and the Cronbach's values above 0.6 denoted the consistency Hair et.al (2010).

Table No. 2: Reliability Analysis

Factor	No. of items	α
Convenience	4	.707
Ease of Access	4	.709
Security Concerns	4	.732
Reliability in Transaction	4	.696
Digital Financial Inclusion	5	.657

Source: Author's Compilation

In order to analyze the relationship between the variables selected for the study, EFA is generally employed (Pallant, 2007). EFA is an approach of classifying and clustering all the strongly correlated variables into a single category as per (Hair et.al; 2012). Correlation between the variables is an essential requirement for EFA. However, the correlation should not be very high so that the chance of multicollienarity does not arise (Pallant, 2010). Moreover, Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin (KMO) test have to be conducted before conducting the Exploratory Factor Analysis (EFA) method. In addition, the KMO value must be between zero and one. The closer the value is to one, the better the results. However, the value must be above 0.6 for the sufficiency of the sample (Hair et al., 2012). Table 2 indicates the results of the KMO test. The results showed a KMO value of .718. It is practically significant for the KMO test because the results have crossed the cut-off point. Therefore, the data collected for the research are qualitatively satisfactory and suitable for principal component analysis. It shows the correlation between the variables is acceptable.

Table No. 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.718
Bartlett's Test of Sphericity	Approx. Chi-Square	973.4
	df	91
	p value	.000

Source: Author's Compilation

The EFA was done using Varimax rotation. This method is used to obtain principal components (Malhotra & Birks, 2007). The test also considers factor loading that can be considered meaningful. Therefore, it should be greater than .5, with an eigenvalue cut-off of 1, especially when the number of factors is less than 30, and commonality should be greater than .7. However, a range of .7 to .8 can be considered acceptable (Jolliffe, 2002). From the results obtained in the EFA, it is clear that 7 items were removed out of the 21 because they did not meet the minimum requirements. This is shown in Table 3 below. The rest of the items were categorized into five components that were able to explain 63.6% of the variation in the variables that were measured.

These five factors were described in terms of factor loading, percent of variance, and cumulative percent of variance. Out of these five factors, 'Ease of Access' had the highest cumulative percent of variance at 22.2%, followed by the 'Reliability in Transaction' factor that had a cumulative percent of variance of 15.2%.

Table No. 4: Factor Analysis

Factor		CV	EA	SC	RT	DFI
Convenience	CV 1	.818				
	CV2	.759				
	CV3	.718				
Ease of Access	EA1		.617			
	EA2		.622			
	EA3		.791			
	EA4		.717			
Security Concerns	SC1			.784		
	SC2			.851		
Reliability in Transaction	RT1				.760	
	RT2				.826	
	RT3				.773	
Digital Financial Inclusion	DFI3					.766
	DFI4					.836
Initial Eigen Values		1.400	3.113	1.246	2.127	1.015
% of Variance Cumulative %		9.998	22.233	8.898	15.196	7.251
		9.998	32.231	41.129	56.325	63.576

Source: Author's Compilation

Table 4 presents the direction of the four hypotheses examined in this study. The results showed that the highest value of the Beta Coefficient was recorded by the Security Concerns predictor, followed by the Reliability in Transaction predictor. In contrast, the Convenience predictor recorded the lowest value of the Beta Coefficient, followed by the Ease of Access predictor. However, the criterion variable recorded the lowest value of the Beta Coefficient. Analysis of variance was conducted by utilizing the analysis of variance (ANOVA) method in order to check the importance of the predictors in terms of the criterion variable, as shown in Table 5. In addition, the calculated F-ratio was discovered to be 23.02, with a significant value of less than .05 ($p < .000$). In other words, the F-ratio revealed that 23.02% of the variance in green purchase intentions was explained by the four predictors: Convenience, Ease of Access, Security Concerns and Reliability in Transaction.

Table No. 5: Multiple Regression Analysis

Variable	β_1	S.E	β_0	t	p
(Constant)	3.320	1.255		2.647	.009
CV	.114	.067	.104	1.692	.092
EA	.098	.046	.124	2.157	.032
SC	.268	.052	.299	5.201	.000
RT	.070	.028	.127	2.457	.015

Source: Author's Compilation

Table No. 6: ANOVA

Model		Sum of Squares	df	MeanSquare	F	P
1	Regression	650.181	4	162.545	23.023	.000 ^b
	Residual	2365.172	335	7.060		
	Total	3015.353	339			

a. Dependent Variable: Sustainable Purchase Intention

b. Predictors: (Constant), CV,EA,SC,RT

Source: Author's Compilation

Results and Discussions

Across villages and small towns, UPI has become the go-to method for payments. People no longer have to carry cash everywhere. Young adults, especially those aged 18–35, are driving this adoption, but even older generations are slowly joining in because of the convenience. Before UPI, many villagers had to walk several kilometers to reach a bank branch. Now, with UPI, they can transfer money, pay bills, and even receive government subsidies directly from their phones. Farmers, daily wage workers, and small shopkeepers are now part of the formal financial system. For the study, multiple regression analysis was used to examine the impact of various UPI adoption factors on digital financial inclusion because it is considered a powerful tool in social science studies to examine relationships between multiple variables (Andy Field, 2013). The ability to access banking from home has made life simpler and safer no more worries about carrying large amounts of cash. UPI has created opportunities for rural women to take charge of finances. Many women running small home-based businesses or selling homemade products can now receive payments digitally, without relying on male family members. This shift not only boosts their confidence but also allows them to participate actively in the household and community economy. The reliability analysis showed that all scales were reliable since they had high enough alpha values to meet the criteria. In addition, exploratory factor analysis using Varimax rotation was performed to ensure that all scales were valid (Barbara G. Tabachnick & Linda S. Fidell, 2013). The results showed that a significant amount of variance was accounted for in the data set, which confirmed that it was a good fit.

Village shops, tea stalls, and roadside vendors now enjoy smoother cash flow thanks to digital payments. Micro-businesses no longer lose sales due to lack of cash. Even in areas without banks, smartphones and UPI have

made financial transactions possible. Some MSMEs have reported tangible growth in sales after adopting UPI, proving that digital payments can directly improve livelihoods. In line with earlier studies on digital payments and financial inclusion, security concerns and transaction reliability were found to have a significant impact on digital financial inclusion (Reserve Bank of India, 2021; World Bank, 2018). Transactions are now almost instantaneous. Farmers can receive payments immediately for their produce without middlemen. Government aid, pensions, and subsidies reach beneficiaries directly, reducing leakages and corruption. This transparency is building trust in the digital system.

Discussions

- Digital literacy is still a barrier

Despite UPI's convenience, many rural users struggle with understanding how to operate apps or scan QR codes. Some elders fear making mistakes or falling into fraud. Community training programs, workshops, and simple user-friendly apps are crucial to help everyone use UPI confidently.

- Connectivity issues

Internet connectivity is still a challenge in some remote villages. Without a stable network, even willing users cannot make digital transactions reliably. Government initiatives like Bharat Net are helping, but there's still work to be done to ensure smooth digital access for all.

- Regulatory challenges

Certain types of digital transactions, such as real-money online games, have seen declines due to bans. While protecting consumers is essential, regulations should also support innovation and small entrepreneurs who rely on digital platforms for business.

- Ensuring inclusivity

While young and tech-savvy populations are quick to adopt UPI, marginalized groups including older adults, women with limited education, and those in extremely remote areas may lag behind. Continued efforts are needed to make digital financial services accessible to everyone.

Conclusion

UPI has transformed the financial landscape of rural India. It's not just a payment tool it's a bridge connecting villagers to the broader economy. The study concludes that UPI has emerged as a major factor in facilitating digital financial inclusion in rural areas, especially villages and small towns. The study findings show that UPI has made digital financial transactions easier by providing convenience, accessibility, and reduced use of cash, thus facilitating greater participation in formal financial systems (Asli Demircug-Kunt et al., 2018). Farmers receive instant payments, shopkeepers expand their customer base, women gain financial independence, and households can manage money more safely and efficiently. However, the journey isn't complete. It has enabled people, including farmers, daily wage laborers, and small shopkeepers, to take an active part in digital financial transactions. Moreover, statistical findings also showed that security and reliability of transactions have a strong influence on digital financial inclusion, which is also in line with earlier studies on digital payment system adoption (Viswanath Venkatesh et al., 2003; Paul Pavlou, 2003). Bridging digital literacy gaps, improving internet connectivity, and fostering inclusive policies are vital. If these challenges are addressed, UPI could become a true engine of economic empowerment for rural India, turning villages into digitally enabled, financially confident communities. Furthermore, UPI has also been a major factor in empowering women in rural areas by providing greater financial freedom and facilitating their participation in economic activities, thus aligning with the

overall objectives of inclusive finance (Thorsten Beck et al., 2007). Small businesses and micro-enterprises have also been benefited by UPI through better cash flow and higher sales, thus demonstrating its potential in transforming rural economies.

However, it also points out certain challenges like low levels of digital literacy, limited internet connectivity, regulatory issues, and disparities in usage among various sections of the population. This is in line with earlier studies that have emphasized certain structural issues that affect financial inclusion in developing nations (Robert Cull et al., 2014). Hence, it can be concluded that though UPI has been instrumental in furthering the cause of digital financial inclusion to a large extent, efforts still need to be made to enhance digital literacy levels to ensure that all sections of the population benefit from it.

Future scope of the study

Despite offering valuable insights into the role of UPI in promoting digital financial inclusion in rural India, this study has certain limitations. First, the findings are based on data collected from selected rural regions, which may limit the generalizability of the results across all rural areas of India due to regional disparities in infrastructure, literacy levels, and banking penetration. Also, the rapidly evolving nature of digital payment technologies and regulatory frameworks may influence adoption patterns over time, making the findings context-specific. Future research can expand the geographical scope by conducting comparative studies across different states or regions to identify structural and cultural variations in UPI adoption. A longitudinal study may provide deeper insights into how sustained usage of UPI influences long-term financial behaviour, savings patterns, and credit access among rural populations. Further research can also explore gender-based digital inclusion, the role of financial literacy programs, and the impact of government initiatives on strengthening trust

in digital transactions. Comparative studies between UPI and other digital payment modes could offer a broader understanding of digital ecosystem dynamics. Moreover, future studies may adopt advanced statistical techniques such as Structural Equation Modeling (SEM) to examine causal relationships between digital adoption, trust, accessibility, and financial inclusion outcomes.

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An Analytical Study on Young Investors Perception Towards Mutual Fund Investment with Special Reference to Rajkot City

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ABSTRACT

Youngsters are the major and important part of financial market and their participation has transformed the investment landscape of our nation and so as urban and developed cities like Rajkot. Mutual fund is one of the popular investment vehicles amongst the young generation because of its benefits like safety, liquidity, transparency, professional management and diversification. Because of these benefits mutual fund can be accessed even by small investors in making their financial need fulfilled. The study mainly focuses on examining the awareness, perception and preference of young investors towards mutual fund investment in Rajkot city. It also focuses on identifying important factor that influence the investors while investing in mutual funds. Descriptive and analytical research design is adopted for the study. The primary data was collected using structured questionnaire containing demographics, awareness and perception related questions. The questionnaire was circulated among the youngsters of Rajkot city with age of 20-35 years. By using convenience sampling technique the final sample size was decided. To analyse the data various tools like percentage analysis, Mann-Whitney U test, Kruskal-Wallis test and factor analysis is used to measure the awareness and perception of young investors of Rajkot city. The findings of the study reveals that majority of the investors are aware of mutual fund investment and perceive mutual fund investment positively. The study will be helpful for financial advisors and policy makers in making young investors financially aware and customising investment products as per the requirement of youngsters. The social implication emphasizes on making investors aware of mutual fund and promoting informed investment decision through proper saving behaviour. The study contributes to the limited area of Rajkot city helping in localizing the investment behaviour and preference of investors.

Keywords: Investors Awareness, Investors Perception, Mutual Fund, Young Investors, Risk-Return.

Introduction

In recent years, investment has undergone a significant transformation driven by financial literacy, availability of digital platforms and investors growing interest in market linked investments. One of such popular investment option is mutual funds. Mutual funds has emerged as popular investment avenue among retail investors due to its benefits like diversification, professional fund management, lower risk than direct investment, liquidity and many more (B.N., Nagashree N, & Manjula, 2025).

Young investors with long term financial goals are exploring mutual fund investment to achieve financial independence. Usually young investors are the one who accepts innovation and are ready to take risk to get higher returns. Young investors have major role in making our investment system. So it is important to understand the perception of young investors because their preferences, perception and investment decision are driven by various factors like financial awareness, market trends, demographic profile and risk taking capabilities. It is important for financial institutions to know about investors' perception to make strategies that cater the demand of young investors segment (Tanwar & Kamlesh, 2026).

Rajkot is one of the metro cities of Gujarat state and an important urban center with increasing investment activities. With increasing investment choices, increasing employment, increasing level of income and easier access to banking and financial institutions made the city witness the shift in the investment pattern of individual. Young investor with age group of 18-35 years makes a significant portion of mutual fund investor base, showing their increasing interest for SIPs and long term financial planning. In this context it is important to study young investors perception for mutual

fund as it will help us understand their level of awareness, preference for mutual fund scheme, important factor that influence while investing, risk tolerance and many more important aspect about their behaviour for mutual fund investment. many researches has been done in the context of investors' perception for mutual fund investment in India. It can be identify from the results of the studies that majorly young investors are investing in mutual fund using investment modes like SIPs. It is observed that no specific study is done to know young investors perception for mutual fund specifically of Rajkot city. Thus, the research question for the study indicated that to analyse young investors (with age of 20-35 years) level of awareness, perception for risk, return, liquidity and transparency factor of mutual fund, preference of scheme of mutual fund, important factors while investment and risk tolerance of investors specifically of Rajkot city.

Review of literature

R. Ganapathi (2015) conducted a study on perception of investors of Coimbatore city for mutual fund investment. The researcher concluded that there is significant association exist between investors' education qualification and occupation with the risk tolerance level of investors. This suggests that investors risk tolerance is significantly affected by their education and occupation. While other factors like gender, age and annual income are insignificant of the risk tolerance behaviour of investors. As per the study of Subina Syal and Nidhi Walia (2017) the analysis contributed women investors investment decision pattern and factor that influence their investment decision making. The study concludes that 4 factors affect the investment decision of women investors of Punjab and they are hedging, Judgement, confidence and influence. It also concludes that women investors take suggestions from experts, think about various

aspect of investment decision and become confident before making any investment decision. Kunal Gaurav et al. (2023) have examined corporate professionals' investment behaviour for mutual fund investment using exploratory factor analysis. The result indicates 7 factors that influence the behaviour of investors namely fund growth and security of investment, investors' convenience, monetary consideration, reliability of the company, scheme features and market circumstances, company performance and industry expansion.

Girish M and Ravikumar K (2023) examined the perception of investors for mutual fund for Karnataka state. The study concluded that financial literacy makes investors attitude positive for mutual fund. Investor with higher financial literacy tends to perceive mutual fund favourably. Transparent communication by asset manager and regulatory authorities' protection shapes positive behaviour of investors for mutual fund investment. Dr. Somanchi Hari Krishna et al. (2023) investigated investors' perception for mutual fund using interview method. The study concluded that investors seek accurate information before investing in mutual fund and that changes their attitude and perception for mutual fund investment. An investment adviser mainly forms their perception for mutual funds. The researchers concluded that sharing information about mutual funds and financial experts' advice can change the perception of investors. B. Jagadeeswaran and M. Hemavathy (2026) examined the level of awareness, behaviour on risk perception and risk perception pattern of mutual fund investors. The study revealed that basic mutual fund awareness among the urban investor is relatively high. Retail investors lack in their skill to compare the performance metrics of mutual fund investment. The investor forms their risk perception based on past experience, information availability and demographic correlates.

Neel Bharucha et al. (2022) conducted research to identify investors' perception for mutual fund in Gujarat state. It was found from the study that majority of the investors prefer SIP after getting fully informed about investment. Majority of the investors prefer equity mutual fund taking into consideration the benefits in the long run. Jaykumar G. Parmar and Saurabh H. Patel (2025) concluded in their study that male respondents were dominating in their investment in mutual funds and majority of them were below 30 ages. Mutual funds and Bank FDs were most popular investment avenues amongst respondents. It was observed that education qualification, income and risk perceptions were mainly influencing investors' perception to invest in mutual funds.

Thus, the hypothesis for the study were framed as

H0: There is no significant difference between investors level of awareness towards mutual fund across Gender of the investors.

H0: There is no significant difference between investors level of awareness towards mutual fund across Age of the investors.

H0: There is no significant difference between investors level of awareness towards mutual fund across Education Qualification of the investors.

H0: There is no significant difference between investors level of awareness towards mutual fund across Occupation of the investors.

H0: There is no significant difference between investors level of awareness towards mutual fund across Monthly Income of the investors.

H0: There is no significant difference between rankings of investors across factors important for mutual fund investment.

H0: There is no significant difference between rankings of investors across scheme preference of investors for mutual fund investment.

Methodology of the study

The present study shows the perception of young investors for mutual funds across Rajkot city. The study covers the awareness of mutual funds amongst young investors, preference for mutual fund scheme, and perception of investors for risk, return, liquidity and transparency and factor important for investment decision. It also covers investors risk tolerance level for mutual fund investment. The study is limited to the urban area of Rajkot city only. The study is limited to the investors of mutual funds with age of 20-35 years. The study considers descriptive and analytical research design to justify the problem statement. A descriptive research design is used to describe the perception, attitude and investment behaviour of young mutual fund investors of Rajkot city. Along with describing the perception and attitude, to examine the relationship between variables analytical research design is used. This research design is adopted because it fits perfectly with the research problem and also helps identifying investors' behaviour across the selected geographical area. The study is based on primary and secondary data collection method. Primary data is collected from the urban Rajkot city using structured questionnaire. The secondary data is collected from the journals, research papers, magazines and articles concerning about mutual fund investment.

The primary data is collected using a well-structured questionnaire. The questionnaire is divided into 4 parts. The first part consists of demographic profile of respondents; the second part deals with investors' level of awareness, the third part of the questionnaire belong to investors' preference for scheme and important

factors while investing in mutual funds. The final and fourth part carries various statements relating to risk, return, safety, liquidity and transparency of mutual fund investment to know about investors' perception for mutual fund investment. For awareness, preference, important factors and perception 5 point likert scale technique is used. Residents of Rajkot city with age of 20-35 years and having mutual fund investments at least for once were considered as a population for the study. Along with this specification the respondents should have basic investment knowledge in general and specific to mutual fund investment to form the population for the study. Due to time limit and lack of other resources only urban area of Rajkot city is considered for the study. The study is specific to one city so it will give more meaningful and significant results compare to studying on broad area.

A non-probability sampling method specifically convenient sampling method is used to identify the samples for the study. Respondents were selected based on their willingness to participation, availability and accessibility. A sample size of 153 investors is considered to represent the target population and make meaningful conclusion on investors' perception for mutual funds. The study covers two types of variables namely dependent variable and independent variable. The dependent variables of the study are perception, preference and awareness of investors. The independent variables of the study are demographics, risk-return factor, liquidity-transparency factor, investment characteristics and risk tolerance of investor.

Data analysis and findings

To check the reliability of the data collected, Cronbach's Alpha is used on likert scale items.

Table No. 1: Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N
0.894	0.926	41

There are total 41 items available in questionnaire consisting of perception related statements, awareness related statements, important factors and preference for mutual fund scheme. The Cronbach's Alpha for all 41 items together is 0.894. Which is greater than 0.7 indicating higher reliability of the questionnaire items. The Cronbach's Alpha for individual items is shown in the analysis part of the research.

The table 1 represents the demographic profile of investors. Total 153 respondent investors are there in the study. Amongst them 94 (61.4%) investors are male and 59 (38.6%) investors are female. It can be said male investors are dominating in mutual fund investment. 11.1% investors belong to age group of 20-25 years, 46.4% investors are from 25-30 years of age group and 42.5% investors are grouped into the age group of 30-35 years. It is observed that majority of the investors are from 25-35 years of age group. Very few investors are there with age below 25. 54.2% investors are graduates, 29.4% are post-graduates, and 7.8% investors have professional qualification. While only 8.5% investors have education below graduation. This represents that majority of the investors have good educational background. From total 153 investors 41.2% investors are private employees, 17% investors have business and professional occupation individually. Only 8.5% mutual fund investors are government employee. It can be concluded that mutual fund investment is quite popular among private employees. As per monthly income groups of investors 34.6% investors belong to 20,000-50,000 income group, 34% investors belong to 50,000-1,00,000 monthly income group. 14.4%, 9.8% and 7.2% investors belong to 1,00,000-1,50,000, more than 1,50,000 and below 20,000 income group. Majority of the investors with income ranging from 20,000-1,00,000 prefers mutual fund investment more.

Table No. 2: Demographic Profile of Investors

Particulars		Frequency	Percentage
Gender	Male	94	61.4%
	Female	59	38.6%
Age	20-25	17	11.1%
	25-30	71	46.4%
	30-35	65	42.5%
Education Qualification	Below Graduate	13	8.5%
	Graduate	83	54.2%
	Post Graduate	45	29.4%
	Professional Qualification	12	7.8%
Marital Status	Married	86	56.2%
	Unmarried	67	43.8%
Occupation	Private Employee	63	41.2%
	Government Employee	13	8.5%
	Self-Employed	25	16.3%
	Business	26	17.0%
Monthly Income	Profession	26	17.0%
	Below 20,000	11	7.2%
	20,000-50,000	53	34.6%
	50,000-1,00,000	52	34.0%
	1,00,000-1,50,000	22	14.4%

Source: Primary data

The table 2 indicates that majority of the investors are agreeing to the awareness related statements suggesting a good level of awareness among investors. Only one item has mean value around 3 with standard deviation more than 1 suggesting varying agreement for the statement. This indicates that investors' awareness about technical terms of mutual funds is different across the group of investors. The Cronbach's Alpha is 0.941 for the 6 items of awareness suggesting an excellent internal consistency

Table No. 3: Descriptive Statistics of Awareness Statements

Awareness Statements	Mean	SD	N
I am aware of mutual fund investment.	4.44	.751	153
I am aware of different types of mutual fund schemes.	4.11	.900	153
I know that mutual fund contains risk.	4.31	.805	153
I know that mutual fund companies take charges for their services.	4.26	.879	153
I know about technical terms used in mutual fund investment.	3.52	1.247	153
I know the benefits of mutual fund investments.	4.09	.934	153
Cronbach's Alpha = 0.941 N = 6			

Source: Primary data

The mean ranks of male and female for awareness are 76.71 and 77.47. The Mann-Whitney U test result indicates the sig. value 0.915 which is greater than 0.05 at 5% level of significance resulting in accepting the null hypothesis. So there is no significant difference exist between investors' awareness and gender. Male and female are similarly aware of mutual funds. The mean ranks of age group 20-25, 25-30 and 30-35 years are 44.97, 76.14 and 86.32 individually. The Kruskal-Wallis test shows the Chi-square Value 12.295 with 2 degree of freedom. The p value is 0.02 which is less than 0.05. The null hypothesis is rejected indicating significant difference in awareness across groups. From the mean ranks it can be said that investors with 30-35 years of age have higher awareness while 20-25 years have lowest awareness. The Kruskal-Wallis test results chi-square 31.821 with p value 0.000. The null hypothesis is rejected resulting in significant difference. From the mean ranks it can be said that investors with higher education qualification has higher awareness for mutual funds. The chi-square test value is 20.288 with 4 degree of freedom. The null hypothesis is rejected resulting significant different across income groups for awareness. Investors with higher income groups have higher awareness for mutual funds.

Table No. 4: Investors Level of Awareness across the Demographics using Mann-Whitney U test and Kruskal-Wallis test

Particular	Demographic	N	Mean Rank
Awareness * Gender	Male	94	76.70
	Female	59	77.47
Mann-Whitney U= 2745.000 Z = -0.107 Asymp. Sig.= 0.915			
Awareness * Age	20-25	17	44.97
	25-30	71	76.14
	30-35	65	86.32
Chi-Square = 12.295 df = 2 Asymp. Sig. = 0.002			
Awareness * Education Qualification	Below Graduate	13	34.50
	Graduate	83	68.90
	Post Graduate	45	93.84
	Professional Qualification	12	115.92
Chi-Square = 31.821 df = 3 Asymp. Sig. = 0.000			
Awareness * Occupation	Private Employee	63	67.83
	Government Employee	13	77.73
	Self-Employed	25	65.50
	Business	26	76.19
	Profession	26	110.71
Chi-Square = 20.288 df = 4 Asymp. Sig. = 0.000			
Awareness * Monthly Income	Below 20,000	11	44.86
	20,000-50,000	53	57.10
	50,000-1,00,000	52	94.38
	1,00,000-1,50,000	22	85.45
	More Than 1,50,000	15	98.23
Chi-Square = 29.962 df = 4 Asymp. Sig. = 0.000			

Source: Primary data

The ranks are assigned to the factors based on mean ranks. The 1st rank is given to highest mean ranked factor that is rate of return. The 2nd important factor is past performance and net asset value and 3rd important factor is transparency and so on. The chi-square value is 440.654 with 8 degree of freedom. The p value is 0.000 which is less than 0.05 indicating rejecting null hypothesis. The results indicate that ranks for factor important while investing are significantly different across the group of investors.

Table No. 5: Friedman Rank Test for Factor Important While Investing

Important Factors	Mean Rank	Rank
Safety	5.12	5
Liquidity	4.43	7
Transparency	5.34	3
Diversification	5.30	4
Rate of Return	5.81	1
Past performance	5.79	2
Net Asset Value	5.79	2
Tax benefits	2.82	7
Reputation of company	4.60	6

Table No. 6: Test Statistics

Test Statistics	
N	153
Kendall's W	0.360
Chi-Square	440.654
df	8
Asymp. Sig.	0.000

Source: Primary data

Based on the mean ranks equity mutual fund scheme were given 1st rank as mentioned in table 5. Sector specific mutual funds are 2nd most preferred by investors. Debt funds are preferred as 3rd most preferred scheme of investment. The chi-square value is 285.573. The p value is 0.000 indicating rejecting null hypothesis. It concludes that investors' preference for scheme is different among different group of investors. The Kendall's W is 0.267 which exhibits weak to moderate level of agreement for ranking of preference for schemes.

Table No. 7: Friedman Rank Test for Preference for Mutual Fund Scheme

Schemes of mutual fund	Mean Rank	Ranks
Equity fund	6.28	1
Debt fund	5.11	3
Hybrid fund	3.89	6
Index fund	3.08	8
Money Market fund	3.39	7
Tax saving fund	3.90	5
Sectorial Fund	5.60	2
Solution oriented fund	4.75	4

Table No. 8: Test Statistics

Test Statistics	
N	153
Kendall's W	0.267
Chi-Square	285.573
df	7
Asymp. Sig.	0.000

Source: Primary data

In table 6, the mean ranks for all the statements are around 4 which shows investors agreement to the statements. The standard deviation is less than 1 indicating investors' agreement for the perception statements. Only 3 statements have SD greater than 1 indicating varying agreement for those statements.

Table No. 9: Mean and Standard Deviation for Perception Statements

Perception Statements	Mean	SD
Mutual fund gives good return with minimum investment.	3.88	1.114
Investing in different asset classes reduces the overall risk.	4.54	0.761
Investing in well-known mutual fund companies reduces the risk of loss.	3.84	1.215
Investors' rights are protected by government rules and regulations.	4.58	0.694
Keeping mutual fund investment for longer duration increases return.	4.27	0.975
Mutual fund gives good return than other investments like Bank FD and Saving Accounts.	4.46	0.896
Easy Withdrawal options are available in mutual fund investment.	4.76	0.585
Mutual fund investment has easier access to money than other investments.	4.75	0.644
Open Ended Funds have higher liquidity than other funds.	4.37	0.902
A particular portfolio can be liquidated at any time whenever needed.	4.71	0.668
Flexibility in fund selection helps to increase return.	3.61	1.373
Offer documents are standardized and contain all necessary details.	4.69	0.612
Websites of mutual fund is updated regularly for investors use.	4.73	0.576
Mutual fund portfolio discloses risk-return of fund and provides transparency to investors.	4.74	0.626
Important measures are taken to redress the grievance of investors.	4.75	0.631
Equity mutual fund gives higher return than other funds.	4.76	0.629
Risk and return are correlated. Higher the risk higher the return.	4.82	0.673
Mutual fund investments are subject to market risk.	4.92	0.362
Cronbach's Alpha = 0.946 N = 18		

Source: Primary data

Table No. 10: KMO and Bartlett's test of Sphericity:

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.912
Bartlett's Test of Sphericity	Approx. Chi-Square	2.820E3
	df	153
	Sig.	0.000

The KMO shows that enough number of samples is there to perform factor analysis. The KMO is 0.912 which is quite higher than the threshold limit indicating good amount of samples to perform factor analysis. The Bartlett's test shows the correlation between factors. The p value is 0.000 which demonstrates relatedness between variables. So the null hypothesis is rejected resulting in correlation matrix is not identity matrix. It suggests that underlying factors exist in investors' perception.

Table No. 11: Communalities of Factors

Communalities		
	Initial	Extraction
Mutual fund gives good return with minimum investment.	1.000	0.605
Investing in different asset classes reduces the overall risk.	1.000	0.560
Investing in well-known mutual fund companies reduces the risk of loss.	1.000	0.708
Investors' rights are protected by government rules and regulations.	1.000	0.647
Keeping mutual fund investment for longer duration increases return.	1.000	0.756
Mutual fund gives good return than other investments like Bank FD and Saving Accounts.	1.000	0.635
Easy Withdrawal options are available in mutual fund investment.	1.000	0.740
Mutual fund investment has easier access to money than other investments.	1.000	0.828
Open Ended Funds have higher liquidity than other funds.	1.000	0.492
A particular portfolio can be liquidated at any time whenever needed.	1.000	0.686
Flexibility in fund selection helps to increase return.	1.000	0.658
Offer documents are standardized and contain all necessary details.	1.000	0.774
Websites of mutual fund is updated regularly for investors use.	1.000	0.819
Mutual fund portfolio discloses risk-return of fund and provides transparency to investors.	1.000	0.742
Important measures are taken to redress the grievance of investors.	1.000	0.874
Equity mutual fund gives higher return than other funds.	1.000	0.724
Risk and return are correlated. Higher the risk higher the return.	1.000	0.699
Mutual fund investments are subject to market risk.	1.000	0.568
Extraction Method: Principal Component Analysis.		

Source: Primary data

Table 10 shows that 47.7% investors are investing in mutual funds from past 1-3 years. 22.2% investors invest from less than 1 year. 16.3% investors invest for more than 5 years. Majority of the investors (40.5%) have investment objectives of long-term growth. 20.3% and 15% investors invest with capital appreciation and regular income generation goal. Majority of the investors' source of information are broker and social media. 56.9% investors have medium risk tolerance for mutual fund investment. While 22.9% investors have high risk tolerance and 20.3% have low risk tolerance.

Table No. 12: Investment Characteristics of Investors

	Particulars	Frequency	Percentage
Investment Duration	Less Than 1 Year	34	22.2%
	1-3 Years	73	47.7%
	3-5 Years	21	13.7%
	More Than 5 Years	25	16.3%
Investment Objective	Long Term Growth	62	40.5%
	Capital Appreciation	31	20.3%
	Regular Income Generation	23	15.0%
	Professional Fund Handling	20	13.1%
	Diversified Portfolio	9	5.9%
	Tax Benefits	8	5.2%
Source of Information	Friends and Family	12	7.8%
	Broker	83	54.2%
	Social Media	33	21.6%
	Advertisement	17	11.1%
	Relatives	8	5.2%
Risk Tolerance	Low	31	20.3%
	Medium	87	56.9%
	High	35	22.9%
Total		153	100

Source: Primary data

Findings

From the findings, most of the investors of mutual funds are men who are aged between 25 and 30 years and have attained graduation level of education. Majority of the investors are working in the private sector with salaries of around Rs. 20,000-Rs. 50,000 per month. From the above study, it can be seen that there is no difference between the awareness of mutual fund investment among males and females. Awareness is, however, comparatively high for those aged between 25-35 years. The level of awareness is found to increase with educational qualification and monthly incomes of individuals. Hence, financially well-off and academically educated people know more about mutual fund investments. Awareness is also comparatively high among investors involved in professions than others (Kumar & Goyal, 2015; Kaur & Kaushik, 2016). From the above study, there is a discovery that such variables as rates of return, past performance, and

other considerations regarding risk influence the decision-making process among investors regarding mutual fund investments. Equity mutual funds, sectoral mutual funds, and debt mutual funds constitute the most attractive types of mutual funds as compared to others. The variables of liquidity, transparency, and risk-return relationship have been revealed by many investors to be the most significant in assessing mutual fund investments. Most investors have also revealed to have medium levels of risk appetite, meaning that they take into consideration the need to strike a balance between investment risk and expected rate of return. These results confirm those found in previous studies (Bashir et al., 2013; Jain & Mandot, 2012).

Conclusion

Young generation invests in mutual fund due to its risk-return and liquidity-transparency perceptions. They are thoughtful to take risk to get higher return. Majority of the young investors prefer SIP for their regular and long term financial goals. But there are investors who are still not investing in mutual fund due to lack of knowledge and lack of confidence. There are very few investors with age 18-25 in Rajkot city. So mutual fund institutions should make them aware of investing and educating them about mutual funds to get them invest in mutual funds. Majorly investors are from 25-35 years of age so mutual fund companies can target these investors and make them available with schemes of their choice to cover this range of investors and get benefited by them. Investors should be careful while investing and should check all the necessary information to make investment as their investment goals.

Future Implications Of The Study

The current study deals exclusively with young investors residing in Rajkot, and hence the results cannot be applied to other types of investors belonging to different age groups and locations. Investors' perceptions and behaviors

may vary depending upon market situations and economic and financial conditions. This is because the results are obtained through survey-based primary data collection process, which is associated with various limitations of the survey method of research, such as potential biases and errors in responses. Moreover, the sample size of the current study is not representative of all mutual fund investors. Selected demographic and investment-related variables are included in the current analysis while there might be many others that impact investment decisions but are not taken into account in this study. Changes in government policies and market performance can also impact the findings of the current study. Also, the cross-sectional design of the study makes it incapable of capturing changes in investors' behaviors in the long run.

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Understanding Generation Z Behaviour towards Eco-Friendly Products in the Context of Sustainable Consumption

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ABSTRACT

This study examined the perception of Generation Z behaviour towards eco-friendly products in the context of sustainable consumption. Gen Z have the most sensitive characteristics among the other age group, therefore their behaviour attitude is significant in the era of sustainability and green purchasing. The analysis adopted an empirical approach by using a survey questionnaire to collect data from 125 respondents from Gen Z in Malappuram district. The conceptual model evaluated the four independent variables such as environmental concern, social influence, perceived product value and awareness and attitude towards purchase intention as the dependent variable. The study used statistical techniques such as descriptive analysis and regression modelling using Microsoft Excel and SPSS.

The result of the analysis reveals that Generation Z consumers express positive awareness, attitudes with moderate purchase intention toward eco-friendly products. Among the independent variables, perceived product value is the great influencing factor, followed by environmental concern and social influence, while awareness and attitude are not an important variable in the combined model. Therefore, companies and businessmen should concentrate on enhancing perceived value, stressing environmental merits, and choosing social channels to strengthen eco-friendly purchase intention among Generation Z. This study suggests that companies should focus less on awareness alone and more on communicating the practical value of eco-friendly products. Since perceived product value is the compelling factor of purchase intention, companies should ensure quality, durability, usefulness, and value for money in their marketing.

Keywords: Generation Z, Eco-friendly products, purchase intention, sustainable consumption, perceived product value, green purchase behaviour, environmental concern.

Introduction

Sustainability concerns are emerged as significant problems all over world due to the rapid urbanisation, over population, climate changes and pollution related problems. All these problems are to be addressed by not only the government bodies but common people have also some duties on that. Controlling or mitigating these issues are become global responsibility due to the effect of globalisation and cross boarder exchange of product and service.

Introduction of 2030 agenda signifies the role of everyone in promoting the sustainable practices to save the world from threatens of sustainability issues. We are setting out together on the path towards sustainable development, devoting ourselves collectively to the pursuit of global development and of “win-win” cooperation which can bring huge gains to all countries and all parts of the world (UN report on 2030 Agenda, 2015).

Sustainable practices such as sustainable production, recyclable packaging, reduced carbon emissions, and responsible resource utilization will make positive impact in the environment.

Many consumers express intention to buy sustainable products, but actual behaviour is limited due to lack of reliable information and search difficulties (Leif Azzopardi & Frans vande Sluis 2026). Consumers are increasingly interested in sustainability, but misleading environmental claims and green washing reduce trust and affect eco-friendly purchase decisions (Alexandra Jones & Natalina Zlatevska 2026). The lack of awareness on sustainable products leads to wrong purchase behaviour among consumers.

Consumers adopt eco-products when they possess environmental concern, awareness with eco-products, and a sense of responsibility

towards the environment (Jana Hojnik, Mitja Ruzzier & Maja Konečnik Ruzzier 2019). Environmental knowledge, environmental concern, and green attitude positively influence consumers’ eco-friendly purchasing behaviour (Erni Rusyani, Rambabu Lavuri & Ardi Gunardi 2021). Consumers prefer green goods when the products satisfy their needs, expectations, and environmental perceptions. Environmental awareness strongly influences purchase behaviour (Andreea Barbu et al. 2022).

Generation Z consumers are highly sensitive to the changes happening to the environment. Generation Z generally refers to individuals born between the year 1997 and 2012. Generation Z consumers are highly technology-oriented, socially connected, and more conscious about ethical and sustainable consumption compared to previous generations (Priporas Constantin-Vasile et al. 2017). Gen Z consumers show strong concern for environmental sustainability and prefer brands that demonstrate social and ecological responsibility (Francisca Genoveva-Casal 2022). Social media influencers and digital platforms significantly shape Gen Z’s attitudes favourable to environmental friendly and eco-conscious products (Djafarova Elmira & Chloe Bowes 2021). Generation Z people are more interested to involve in sustainable consumption if companies communicate genuine environmental commitment and corporate social responsibility (Ana Maria Soares et al. 2023).

This investigation objective is to find the Gen Z behaviour towards sustainable products in the sustainable consumption scenario. It also try to analyse the attitude, behaviour and intentions of Generation Z towards eco-friendly products.

Review of literature

The social influence, knowledge about environment and governmental interventions

on green purchase behaviour is meaningful. It also indicates that social influence is a key factor for influencing green purchase behaviour through friends group, social anticipation, and knowledge. In contrast, environmental attitude and responsibility show weaker levels of influence on green purchase behaviour (Chhetri & Poudel, 2024). In this paper the results show that unnecessary consumption does not considerably impact ESB, and thus the gap between attitude and behaviour and co-existence between sustainable and unsustainable behaviours is further supported (Sarajlić et.al, 2025). There is inversely proportional to the level of knowledge of individuals regarding the eco-system and environment friendly products, which is a starting point for someone to consume sustainable products. In practice, consumers buy little of such products, and the main reason is that they lack knowledge regarding the characteristics of the sustainable version of the product (Rubiyatno et.al, 2024). The study shows that there is a direct relationship between both the sustainable attitude of Generation Z consumers and the satisfaction it conveys to them, as well as their environmental safeguarded activities (Dragolea et.al, 2023). Impactful marketing activities, including lucid green labelling and influencer partnership, can play a significant role in developing consumer attitude and behaviour, and also enhancing the appeal of eco-friendly products (Saikrishna & Archana, 2025). The important factors identified by the Generation Z of the V4 countries affecting pro-quality and pro-environmental buying decisions were price of the product, past experience with the product, durability of the product, and other personal needs (Bełch et.al, 2023). There is a vital impact of social responsibility (SR), Environmental Concern (EC), and the use of social media related to environmental problems (SM) on Sustainability Intention (SI) among Generation Z. These factors, increase sustainable consumption behavior (SBC) within this demographic (Hidayat et.al,

2024) while the Gen Z express high awareness of environmental problems and exhibits a positive attitudes toward sustainable fashion, this does not constantly transform into actual buying behaviour, at the same time, fashionability and price expectation had limited direct impact on behaviour (Talesara, 2025). Factors like as price sensitivity and limited product availability restrain normal purchase. The results reflect that an awareness on environmental problems and positive attitudes and behaviour play a significant role in developing sustainable buying intention, consequently encouraging sustainable consumer attitude (Priya, 2025).

Research Gap

Many studies examined the generation Z behaviour towards the concept of sustainable consumption and sustainable practices. Some studies are specifically focused on sustainable fashion products and green purchasing behaviour. However, the present studies are more stressed on urban markets and green purchasing behaviour. Limited studies are given attention on eco-friendly products especially in Indian economy specifically to the southern part of the country. There is also insufficient studies related to the Gen Z behaviour towards sustainable products such as eco-friendly products. So there is a contextual gap regarding the study. This study is trying to fill this gap by examining the behavioural factors influencing Generation Z consumers toward eco-friendly products in Keralam.

Objectives

1. To assess the awareness level, attitudes, and purchase intention of Generation Z consumers towards eco-friendly products.
2. To analyse the impact of environmental issues, social influence, and perceived product value on the purchase behaviour of sustainable products among Generation Z consumers.

Hypothesis and conceptual framework

H1 There is a significant relationship between environmental concern and purchase intention towards eco-friendly products among Generation Z consumers.

H2 Social influence significantly affects the purchase intention of eco-friendly products among Generation Z consumers.

H3 Perceived value of eco-friendly products significantly influences sustainable consumption behaviour among Generation Z consumers.

H4 Positive attitude towards eco-friendly products significantly influences actual purchase behaviour.

H5 There is a significant association between demographic variables and eco-friendly purchasing behaviour among Generation Z consumers.

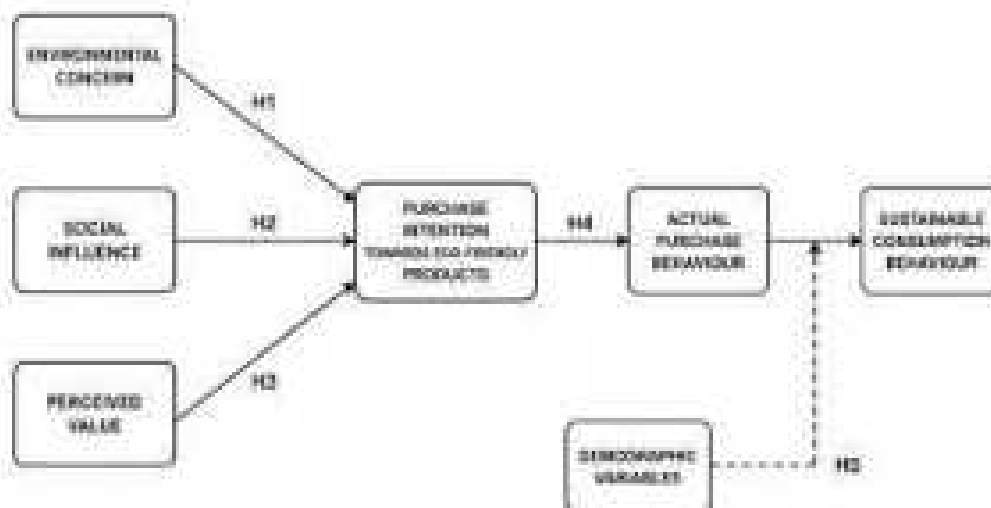


Fig. No. 1: Conceptual Framework

Methodology

Descriptive and analytical research design was used in this study to assess Generation Z behaviour towards eco-friendly products. Primary data collected through a structured questionnaire and Secondary data collected from journals, books, reports, websites, and published research articles related to sustainable consumption and green marketing. The study employed convenience sampling technique to collect data from Generation Z respondents. The method was adopted due to the ease of access to respondents. Total 125 sample were collected from generation Z located in Malappuram district. The measurement scale reliability was checked by Cronbach's alpha showing a value of 0.975 which reflect an excellent internal consistency over the 44 items in the questionnaire. Descriptive statistics, multiple regression analysis and simple regression analysis were used for the study. SPSS software is used for the analysis of data.

Analysis and result

The overall reliability of the measurement scale was determined to be 0.975, which showing

that high reliability and internal consistency in the items of questionnaire. The demographic examination reveal that 52% of respondents are male and 42% are female. Among the total respondents, 56% are belong to the age group of 18-21. In terms of educational qualification 56% holds under graduate degree. 58% have a monthly income below 10000.

Table No. 1: Awareness, attitude and purchase behaviour of generation Z consumers towards Eco-friendly products.

Variable	Mean Score
Awareness & Attitude	16.144
Environmental Concern	14.28
Perceived Product Value	12.408
Purchase Intention	12.072
Social Influence	8.992

Note: Mean score ranges from 0 (Strongly Disagree) to 4 (Strongly Agree)

Table A shows that Generation Z respondents scored highest on Awareness & Attitude (M = 16.14), which they are highly aware of eco-friendly products and have a positive attitudes toward them. Environmental Concern also scored high score (M = 14.28), indicating that Gen Z is more conscious about environmental problems. Purchase Intention (M = 12.07) and Perceived Product Value (M = 12.41) illustrate moderate-to-good levels, suggesting a reasonable but not yet fully converted behavioural pattern. Social Influence scored the lowest (M = 8.99), showing that it has a lesser role compared to other.

The multiple regression model is statistically significant, with $F=85.686$ and $p<0.001$, showing that the independent variables together explain purchase intention well. The model has an R^2 of 0.741, meaning about 74.1% of the variation in purchase intention is explained by awareness and attitude, environmental concern, social influence, and perceived product value.

Table No. 2: Factors influencing purchase intention

Predictor	Beta	Significance	Interpretation
Perceived product value	0.624	< 0.001	Strongest positive factor
Environmental concern	0.166	0.020	Significant positive factor
Social influence	0.149	0.016	Significant positive factor
Awareness and attitude	0.037	0.635	Not significant in the combined model

Table B illustrate that, perceived product value is the highest factor, with a standardized beta of 0.624 and a very strong significance level ($p<0.001$). This reveals that when Gen Z consumers think eco-friendly products are good in quality, useful, and worth to the price, their intention to buy increases substantially.

Social influence is also significant, with $\beta = 0.149$ and $p=0.016$, pointing that friends, family, influencers, and social media do affect purchase intention, but not as much to perceived value. Environmental concern also significant, with $\beta = 0.166$ and $p=0.020$, indicating that the Gen Z who are more conscious about environmental problems are intend to purchase environment-friendly products.

Although, awareness and attitude is not statistically significant in the full model, with $\beta = 0.037$ and $p=0.635$. This indicate that although Gen Z may be aware of eco-friendly products and may have a positive attitudes, those variables alone do not meaningfully predict purchase intention once the other variables are considered.

Discussion

These outcome of the analysis indicate that Generation Z consumers are not only aware of eco-friendly products but are also positively interested toward them; at the same time, awareness alone does not make any lead to purchase intention. Instead, practical preferences such as perceived product value become a great influence in developing the real purchase intention.

The tremendous influence of perceived product value indicate that Generation Z consumers are more likely to buy eco-friendly products when they believe these products are value for the price and ensure long-term gains. This finding reveals the significance of product quality, affordability, and usefulness in persuading sustainable buying behaviour.

The importance of effect of environmental concern shows that buyers who are more concerned about pollution, climate change issues, and sustainability are more influence to buy eco-friendly products. Also, social influence shows that friends, family, influencers, and

social media have a important position in building environment-friendly buying decisions.

The un-important effect of awareness and attitude in the full model indicates that even though respondents may aware about eco-friendly products and articulate positive attitudes, these variable alone are not enough to push purchase intention once value, concern, and social influence are considered.

Conclusion

All together, the study indicates that Generation Z consumers shows favourable awareness, attitudes, and moderate purchase intention toward eco-friendly products. Out of the independent variables, perceived product value is the great influencing factor, followed by environmental concern and social influence, while awareness and attitude are not an important variable in the combined model. Therefore, companies and businessmen should concentrate on enhancing perceived value, stressing environmental merits, and choosing social channels to strengthen eco-friendly purchase intention among Generation Z.

Implications

This study propose that companies should concentrate less on awareness alone and more on communicating the practical value of eco-friendly products. Since perceived product value is the compelling factor of purchase intention, companies should ensure quality, durability, usefulness, and value for money in their marketing.

The results also convey that environmental issues and social influence matter, so marketing should showcase sustainability advantages while also using peer-based communication, influencers, and social media platforms to enhance purchase intention among Generation Z. For policymakers and educators, this means that awareness campaign should go beyond information-sharing and promote visible, everyday sustainable purchasing behaviour.

Limitations

- **Sample Size Constraints:** This study included only 125 respondents. It may not be adequate for representing the attitude and opinions of Gen Z community.

- **Geographic and Demographic Limitations:** Majority of the respondents are from Malappuram district. Thus, the findings may not always represent the attitude and perception of Generation Z consumers in the whole state.

- **Cross-Sectional Nature:** Gen Z perception and attitude are evolving in the ever-changing scenario of the new product development. To get better findings on behavioural shift, a longitudinal study is needed.

Scope for future study

Future studies may be conducted in larger geographical areas with more sample sizes. Further studies can compare Generation Z living in urban areas and rural areas. Studies can measure variables not only the purchase intention but the actual purchase behaviour and spending habits.

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