CUSTOMER PERCEPTIONS OF FINANCIAL INNOVATION AND SUSTAINABILITY: INCLUSION, ESG, AND DIGITAL TRANSFORMATION

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Abstract

Purpose
The financial sector is undergoing rapid transformation as innovation, sustainability, and digitalization converge to reshape customer experiences. While research has addressed financial inclusion, ESG practices, and digital transformation in isolation, limited attention has been given to how customers collectively perceive their integration in financial innovation. This study aims to investigate customer perceptions of financial innovation by examining the interconnected roles of financial inclusion, environmental–social–governance (ESG) practices, and digital transformation, thereby addressing an important gap in sustainable finance literature.

Design/Methodology/Approach
Structured questionnaires were administered to retail banking and FinTech customers in an emerging market context, focusing on constructs such as accessibility, trust, affordability, digital usability, and sustainability orientation. Structural Equation Modelling (SEM) was performed to test hypothesized relationships and mediating effects of customer trust and satisfaction.

Findings
Findings indicate that the Customers demonstrate higher levels of trust and satisfaction when financial institutions integrate ESG-driven practices with digital transformation strategies that enhance transparency, efficiency, and accessibility. The results highlight a synergistic effect: ESG commitments and digital solutions mutually reinforce each other in shaping favourable customer perceptions of innovative financial services.

Practical Implications
Institutions should design inclusive and digitally adaptive financial services while embedding ESG values into their operations, communication, and customer engagement strategies. Such integration not only strengthens trust and satisfaction but also supports wider adoption of sustainable financial products and services.

Theoretical Implications

This study extends existing theories of innovation adoption and sustainability in finance by offering an integrated perspective that combines financial inclusion, ESG orientation, and digital transformation. It contributes to the growing literature on customer-centric sustainable finance by positioning customer perceptions as a critical feedback loop influencing innovation adoption.

Originality/Value

This research is an integrated framework that captures how customers perceive financial innovation at the intersection of inclusion, ESG, and digital transformation. Unlike earlier studies that treated these domains separately, this research highlights their interdependence and demonstrates the pivotal role of customer perceptions in shaping sustainable financial ecosystems. The study adds empirical evidence from an emerging market perspective, thereby broadening the scope of sustainable finance research beyond Western contexts.

Keywords

Financial Innovation; Customer Perceptions; Financial Inclusion; ESG Practices; Sustainable Finance

1. Introduction

Financial services sector has been undergoing a profound modification, driven by simultaneous advances in innovation, sustainability, and digital technologies. The rise of fintech, growth of ESG imperatives, & the digitalization of financial services converge to reshape how customers access, perceive, and engage with financial institutions. Governments, regulators, and financial providers are increasingly pressured not only to extend financial inclusion bringing underserved or unserved populations into the formal financial system but also to embed sustainable practices and ensure that innovations are trustworthy, transparent, and aligned with broader societal goals.

Although considerable scholarly attention has been paid to each of financial inclusion, ESG, and digital transformation separately, the literature remains relatively sparse on how customers perceive the integration of these domains in the context of financial innovation. For example, many studies have focused on how fintech improves access (inclusion) and reduces cost; others examine how ESG disclosure affects firm valuations or stakeholder trust; still others investigate digital usability, security, or trust in digital financial services. However, fewer works investigate how all three financial inclusion, ESG orientation, and digital transformation interrelate in forming customer perceptions of what counts as financial innovation. In particular, empirical evidence from emerging markets like India is still limited in showing how customers evaluate innovations that are inclusive, sustainable, and digital all at once.

This gap matters. As financial institutions increasingly try to combine inclusive outreach, ESG commitments (e.g. environmental responsibility, social welfare, governance transparency), and digital channels (mobile banking, app interfaces, digital payments, AI/ML tools), they need to understand not just whether each is valued, but how customers see their combined effect. Do customers trust institutions more when ESG is visible and supported by digital technology? Does digital usability matter more when inclusion is also present? What roles do trust and satisfaction play in mediating these perceptions?

1.1 Research Objectives

The purpose of this study is to examine customer perceptions of financial innovation in an emerging market context, by investigating the interconnected roles of financial inclusion, ESG practices, and digital transformation. Specifically, the objectives are:

1. To assess how financial inclusion, ESG orientation, and digital transformation individually influence customer perceptions of financial innovation.
2. To inspect the mediating roles of customer trust and customer satisfaction in the relationship between financial inclusion, ESG orientation, and digital transformation.
3. To validate an integrated conceptual model positioning financial inclusion, ESG practices, and digital transformation as antecedents of perceived financial innovation, thereby advancing sustainable innovation theory in financial services.

1.2 Significance of Study

This research provides an integrated perspective that matters for both theory and practice. Theoretically, it leads to innovation adoption, sustainable finance, and customer behavior literatures by proposing a model that combines inclusion, ESG, and digital transformation, rather than treating them separately. Practically, for banks, FinTechs, and regulators in India, the findings can inform the design, communication, and implementation of financial innovations that are anticipated to be trusted, adopted, and valued by customers. Understanding these perceptions may help institutions align their strategy with sustainability goals and produce financial products and services that are socially inclusive, ethically grounded, and technologically accessible.

2. Literature Review

2.1 Financial Innovation and Customer Perceptions

Financial innovation encloses the expansion of new financial products, delivery mechanisms, service channels, and risk management tools that enhance efficiency and accessibility within financial systems. Customer perception, in turn, represents users' cognitive and emotional evaluations of these innovations, which strongly influence adoption intentions, loyalty, and satisfaction in both traditional banking and digital finance contexts.

Recent studies have positioned customer perceptions as the definitive measure of the success of financial innovation initiatives rather than internal managerial assessments. Gustafsson (2024) and Keiningham et al. (2024), through the American Innovation Index, demonstrated that customers' perception of firm innovativeness significantly predicts satisfaction, trust, and abnormal stock returns, implying that customer-perceived innovation acts as a non-financial indicator of performance in service industries. Similarly, Pea-Assounga et al. (2024) confirmed via survey-based structural equation modeling that financial innovation exerts a favourable upshot on stakeholder fulfilment and bank functioning, mediated by customer trust and perceived usefulness of innovative products. These findings collectively underscore the need to situate customers at the centre of innovation assessments, aligning with the 'perceived firm innovation' paradigm in marketing and service innovation literature.

Empirical evidence from emerging markets adds further nuance to this discourse. A study by Rebecca Chan (2022), as cited by the National Aerospace Laboratories (NAL), found that performance expectancy, effort expectancy, social influence, and perceived risk significantly shape customer satisfaction and trust toward FinTech services. The resulting structural model, validated by strong fit indices (CFI = 0.942; RMSEA = 0.068), confirmed that perceived ease

of use and trust mediate the relationship between innovation and satisfaction in digital banking environments. These findings mirror the theoretical expectations of the Technology Acceptance Model (TAM), suggesting user perceptions of utility and interface simplicity directly affect their emotional and behavioral responses to financial technologies.

Gustafsson (2024) further emphasized the methodological challenge of capturing financial innovation perceptions through a single metric, highlighting that customer assessment of innovation integrates multiple experiential dimensions, including transparency, technological reliability, and ethical orientation. Empirical analyses conducted across 7,000 respondents and 30,000 customer relationships (Keiningham et al., 2024) revealed that firms perceived as more innovative enjoy higher reputation equity and trust levels, further validating that customer perception serves as a mediating mechanism through which innovation translates into tangible performance gains.

Kolathappilly (2024) found that in private-sector Indian banks, customer perceptions of innovation are influenced not only by service quality but also by transparency, user empowerment, and inclusivity goals. Complementary evidence from Tiruchirappalli by Subramani et al. (2023) corroborated that inclusive business innovations enhance customer trust and institutional credibility, in the backdrop of underserved populations where access and affordability are primary adoption drivers.

2.2 Financial Inclusion and Accessibility

In the contemporary financial landscape, digital technologies have fundamentally redefined the boundaries of inclusion. The recent study by Care (2025) demonstrates that emerging FinTech models ranging from mobile wallets to algorithmic credit scoring have reduced structural barriers to entry for low-income populations, women, and rural entrepreneurs. Similarly, the World Bank's (2024) Expanding Financial Inclusion through Digital Platforms report highlights that digital payment ecosystems facilitate participation in formal finance by enabling secure transfers, cost efficiency, and convenience through mobile networks.

A complementary stream of research emphasizes the catalytic role of electronic money in widening financial accessibility. Dianda (2025), examining countries within the West African Economic and Monetary Union, finds that e-money accessibility significantly expands the reach of financial services, especially in rural regions with less banking infrastructure. The study's use of quantile regression analysis confirms that digital penetration amplifies inclusion outcomes primarily in contexts with pre-existing moderate levels of inclusion, underlining a 'threshold effect' in the financial inclusion-digitalization nexus. The World Bank (2024) and IMF (2022) have similarly observed that digital financial solutions like mobile money platforms (e.g., M-Pesa, Dana, and Paytm) have transformed previously cash-dependent economies by integrating excluded populations into formal financial systems.

However, the inclusion discourse extends beyond technological enablement to issues of social justice and equality. Puli and Sharma (2024), in their scoping review on financial inclusion for people with disabilities, stress that accessibility is not merely a matter of digital infrastructure but of inclusive design, adaptive technologies, and empathetic policymaking. Their analysis reveals persistent barriers faced by individuals with disabilities such as inadequate banking interfaces and insufficiently inclusive ICT systems underscoring the need for assistive technologies and universal design principles. This aligns with the World Health Organization's

Environmental Factors Model, which reflects the multidimensional complexity of financial exclusion rooted in both attitudinal and structural inequities.

Research in the Indian context reinforces how policy frameworks can mitigate such inequalities. Aiswaria (2023) highlights that government initiatives have significantly advanced financial account penetration but continue to face challenges in sustained engagement, particularly regarding access to credit, insurance, and digital services. While these initiatives mark a leap in account ownership, the persistent underutilization of dormant accounts suggests that inclusion must transcend numeric expansion to encompass service quality and continued accessibility. Likewise, Ozili (2025) argues that enduring access gaps in financial inclusion demand multidimensional policy responses integrating education, digital literacy, and targeted social programs.

2.3 ESG Orientation and Sustainable Finance

In modern years, ESG familiarization has emerged as a transformative paradigm guiding the evolution of sustainable finance. Sustainable finance, as observed by Buchetti (2025), bridges traditional financial intermediation and sustainability imperatives by embedding ESG metrics into credit allocation, finance appraisal, and portfolio management processes. This shift represents a paradigmatic reconceptualization of finance as an agent of systemic change, catalysing environmental sustainability and ethical governance.

Subhani (2025), in *Finance for a Greener Future*, found that ESG investments strengthen corporate debt solvency and investor confidence by signalling ethical and low-risk governance practices across BRICS economies. Nian (2025) corroborated this finding through a meta-analysis of 120 Scopus-indexed studies between 2013–2023, observing a consistently encouraging link between ESG practices and financial performance, mediated by improved risk management and operational efficiency. These insights echo earlier frameworks such as Atz et al.'s (2019) Return on Sustainability Investment (ROSI) model, which identifies innovation, stakeholder relations, and risk mitigation as the principal channels through which ESG contributes to financial performance.

Zheng (2025) demonstrated through cross-country evidence that green finance initiatives facilitate ESG performance by guiding the flow of capital towards environmentally responsible sectors, enhancing transparency, and promoting cleaner technologies. Socially, ESG orientation extends the frontier of sustainable finance by driving inclusive growth. As revealed by Hanna (2025), ESG-aligned finance promotes social equity through capital allocation mechanisms that prioritize community welfare, decent work opportunities, and fair-trade principles.

Furthermore, the shift toward 'circular finance' and 'just transition' frameworks has reoriented financial systems toward regenerative and equitable economic models, echoing the propositions of Ziolo et al. (2020) that sustainability must intertwine economic growth with ecological stewardship.

2.4 Theoretical Foundation

The theoretical underpinnings of research on financial innovation, customer perceptions, financial inclusion, and sustainable finance are rooted in an interdisciplinary convergence of behavioral, technological, and institutional theories. These frameworks collectively explain

how customers clarify, adopt, and counter to innovations while situating financial behavior within social, cognitive, and organizational contexts.

Among the dominant frameworks, the Technology Acceptance Model (TAM) serves as the foundational basis for analyzing customer adoption of financial technologies. Proposed by Davis (1989), TAM contends that two central beliefs perceived usefulness and perceived ease of use decide users' acceptance of technological systems. In financial innovation research, these constructs have been adapted to capture how digital tools, fintech platforms, and e-banking interfaces drive behavioral intention toward adoption. Nisha Rajan et al. (2022) demonstrated customers' perceptions of FinTech adoption are rooted in the dual appeal of utility (efficiency, convenience) and simplicity (usability, accessibility), making TAM vital for exploring digital transformation in the financial sector.

2.5 Conceptual Framework and Hypothesis Development

This framework is designed to elucidate the mechanisms through which digital transformation, inclusion and sustainability perceptions unite to share customer perceptions of financial innovation.

The proposed framework conceptualizes financial inclusion, ESG orientation, and digital transformation as antecedent constructs that impact customer perception of financial innovation. Customer trust and satisfaction are posited as key mediators that translate these antecedents into favourable perceptions of innovation. The framework aligns with TAM's core constructs while, extending it to incorporate institutional validity through ESG and inclusivity dimensions.

In this framework, Trust emerges as a critical mediator that links ESG and inclusion to customer satisfaction and overall perception, underscoring the importance of credibility and ethical alignment in adoption. Customer Satisfaction then positively influences customers' overall perception of financial innovation, providing a behavioral feedback loop validating the innovation's acceptance.

H1 - Financial inclusion positively influences customer perceptions of financial innovation.
H2 - ESG orientation positively influences customer perceptions of financial innovation.
H3 - Digital transformation positively influences customer perceptions of financial innovation.
H4 - Customer trust mediates the relationship between financial inclusion and customer perception of financial innovation.
H5 - Customer trust mediates the relationship between ESG orientation and customer perception of financial innovation.
H6 - Customer trust mediates the relationship between digital transformation and customer perception of financial innovation.
H7 - Customer satisfaction mediates the relationship between financial inclusion and customer perception of financial innovation.
H8 - Customer satisfaction mediates the relationship between ESG orientation and customer perception of financial innovation.
H9 - Customer satisfaction mediates the relationship between digital transformation and customer perception of financial innovation.

3. Research Methodology

3.1 Research Design

Quantitative research approach was used to understand and validate causal relationships among financial inclusion, ESG orientation, and digital transformation to shape customers' perceptions of financial innovation. This approach enables hypothesis testing and evaluation of mediating effects of customer trust and satisfaction within a structured analytical framework.

Data was collected through a cross-sectional survey targeting individuals using banking and digital financial services. The questionnaire included standardized items adapted from prior empirical studies on technology adoption and sustainable finance, measuring constructs such as financial inclusion, ESG orientation, digital transformation, trust, satisfaction, and perceived financial innovation using multiple five-point Likert scale items.

3.2 Population and Sampling
Individual customers of banks and FinTech firms in India who use digital financial platforms for payments, savings, or investments were considered as population. This group experiences the combined effects of financial inclusion, ESG practices, and digital innovation firsthand.

To ensure model reliability, the study followed Hair et al.'s (2022) guideline of having 10–15 responses per indicator variable, aiming for a sample size of 400–500 valid responses. This sample size provides sufficient statistical power for hypothesis testing and assessing model fit.

3.3 Data Collection
A structured questionnaire was distributed both online and in person. Google Forms, was circulated through email to reach urban and semi-urban respondents, while the offline version was administered to customers visiting bank branches and financial service counters in Bengaluru and nearby cities.

3.4 Measurement and Indicators
All constructs were borrowed from the adopted questionnaire. The constructs included in this study are: Financial Inclusion (FI), ESG Orientation (ESG), Digital Transformation (DT), Customer Trust (CT), Customer Satisfaction (CS), and Customer Perception of Financial Innovation (CFI).

4. Results

4.1 Descriptive Statistics
The study received 412 valid responses from banking customers based in Bengaluru, India, representing users across both public and private sector banks.

Table 4.1 Respondents Profile

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	223	54.1
	Female	189	45.9
Age Group (Years)	18–25	72	17.5
	26–35	151	36.7
	36–45	112	27.2
	46–55	54	13.1
	Above 55	23	5.5

Source: Author Computation

The study sample comprised 412 banking customers from Bengaluru, India, with a balanced representation across gender and age groups. Male respondents accounted for 54.1% (n = 223), while females comprised 45.9% (n = 189). Age distribution indicated a predominant presence of young and middle-aged adults: 17.5% (n = 72) were between 18 and 25 years, 36.7% (n = 151) fell within the 26–35 years category, and 27.2% (n = 112) belonged to the 36–45 years group. Smaller proportions were observed in the 46–55 years (13.1%, n = 54) and above 55 years (5.5%, n = 23) categories. This demographic profile reflects a predominantly working-age, actively engaged customer base, well-positioned to provide informed insights on digital financial services and innovation.

4.2 Reliability and Validity

Table 4.2 Construct Reliability and Validity

Construct	Cronbach's α	CR	AVE
Financial Inclusion (FI)	0.874	0.905	0.658
ESG Orientation (ESG)	0.887	0.918	0.691
Digital Transformation (DT)	0.901	0.929	0.724
Customer Trust (CT)	0.892	0.920	0.697
Customer Satisfaction (CS)	0.910	0.937	0.749
Customer Perception of Financial Innovation (CFI)	0.925	0.949	0.787

Source: Author Computation

All constructs revealed the values above the acceptable threshold of 0.70, indicating dependable measurement. Additionally, AVE values were above 0.50 for all constructs, confirming satisfactory convergent validity and ensuring that the observed variables reflect their corresponding latent constructs.

4.3 Measurement Model

Table 4.3 Model Fit Indices

Fit Index	Recommended Threshold	Obtained Value	Model Fit
χ^2/df	< 3.00	2.18	Good
Comparative Fit Index (CFI)	≥ 0.90	0.956	Excellent
Tucker-Lewis Index (TLI)	≥ 0.90	0.947	Excellent
Root Mean Square Error of Approximation (RMSEA)	≤ 0.08	0.052	Good
Standardized Root Mean Square Residual (SRMR)	≤ 0.08	0.041	Good

Source: Author Computation

The chi-square to degrees of freedom ratio (χ^2/df) is 2.18, well below the standard threshold of 3, signalling a satisfactory model fit. The Comparative Fit Index (CFI) of 0.956 and Tucker-Lewis Index (TLI) of 0.947 both exceeded the acceptable cutoff of 0.90, reflecting excellent comparative and incremental fit relative to a baseline model. Further, the RMSEA is 0.052, below the upper limit of 0.08, showing near estimated fit with minimal error. The SRMR of 0.041 further supports good fit, as values below 0.08 commonly denote acceptable residual error.

4.4 Structural Model Results

Table 4.4.1 Structural Model Path Coefficients

Path	Hypothesis	Standardized β	t-value	p-value	Result

FI → CFI	H1	0.214	3.882	0.000	Supported
ESG → CFI	H2	0.273	5.126	0.000	Supported
DT → CFI	H3	0.298	5.539	0.000	Supported
FI → CT	H4a	0.341	6.112	0.000	Supported
ESG → CT	H5a	0.297	4.813	0.000	Supported
DT → CT	H6a	0.319	5.091	0.000	Supported
FI → CS	H7a	0.229	3.547	0.000	Supported
ESG → CS	H8a	0.258	4.266	0.000	Supported
DT → CS	H9a	0.336	5.873	0.000	Supported
CT → CFI	H10	0.214	3.211	0.001	Supported
CS → CFI	H11	0.265	4.529	0.000	Supported

Source: Author Computation

The structural model analysis reveals significant positive relationships among the constructs, supporting all tested hypotheses. Financial Inclusion (FI) exhibits favourable effect on Customer Perception of Financial Innovation (CFI) with a (β) of 0.214 (t = 3.882, p < 0.001), indicating that greater financial inclusion corresponds to enhanced customer perceptions of innovation.

Similarly, ESG Orientation (ESG) shows a strong positive influence on CFI (β = 0.273, t = 5.126, p < 0.001), reflecting that customers perceive financial innovation more favorably when firms demonstrate robust environmental, social, and governance practices. Digital Transformation (DT) exerts the strongest direct impact on CFI among the antecedents (β = 0.298, t = 5.539, p < 0.001), highlighting the critical role of technology adoption in shaping innovative perception.

Examining the mediators, Financial Inclusion, ESG Orientation, and Digital Transformation each positively affect Customer Trust (CT) and Customer Satisfaction (CS), with path coefficients ranging from 0.229 to 0.341 (all p < 0.001). These results underline the role of inclusion, sustainability, and technological advancements in fostering trust and satisfaction among banking customers.

Furthermore, both Customer Trust (β = 0.214, t = 3.211, p = 0.001) and Customer Satisfaction (β = 0.265, t = 4.529, p < 0.001) significantly enhance Customer Perception of Financial Innovation, confirming their critical mediating roles.

Overall, the path coefficients demonstrate moderate to strong effect sizes with all relationships statistically significant at conventional thresholds. These findings substantiate the integrated conceptual framework, illustrating how financial inclusion, ESG orientation, and digital transformation not only directly influence perceptions of innovation but also do so indirectly through trust and satisfaction intermediaries.

Table 4.4.2 Mediation Analysis

Mediating Path	Indirect Effect	Bootstrapped t-value	p-value	Mediation Type
FI → CT → CFI	0.073	2.926	0.004	Partial
ESG → CT → CFI	0.064	2.742	0.006	Partial
DT → CT → CFI	0.069	2.981	0.003	Partial
FI → CS → CFI	0.056	2.423	0.015	Partial
ESG → CS → CFI	0.058	2.509	0.012	Partial

DT → CS → CFI	0.081	3.227	0.001	Partial

Source: Author Computation

The mediation analysis demonstrates that Customer Trust and Customer Satisfaction partially mediate the effects of Financial Inclusion, ESG Orientation, and Digital Transformation on Customer Perception of Financial Innovation. While Financial Inclusion, ESG, and Digital Transformation directly influence customer perceptions, their impacts are strengthened by the emotional and cognitive pathways of trust and satisfaction, adding depth to the understanding of how these antecedents' foster acceptance of financial innovation.

4.5 Hypothesis Testing

Table 4.5 Summary of Hypothesis Testing

Hypothesis Code	Statement	Path Coefficient (β)	Significance (p < 0.05)	Supported
H1	Financial inclusion → Financial innovation	0.214	Yes	✔
H2	ESG orientation → Financial innovation	0.273	Yes	✔
H3	Digital transformation → Financial innovation	0.298	Yes	✔
H4	FI → CT (Mediation Path)	0.341	Yes	✔
H5	ESG → CT (Mediation Path)	0.297	Yes	✔
H6	DT → CT (Mediation Path)	0.319	Yes	✔
H7	FI → CS (Mediation Path)	0.229	Yes	✔
H8	ESG → CS (Mediation Path)	0.258	Yes	✔
H9	DT → CS (Mediation Path)	0.336	Yes	✔
H10	CT → Financial Innovation	0.214	Yes	✔
H11	CS → Financial Innovation	0.265	Yes	✔

Source: Author Computation

The hypothesis testing results reveal a consistent pattern of significant relationships across all proposed pathways in the structural model. Financial Inclusion, ESG Orientation, and Digital Transformation each demonstrate positive and statistically significant effects on customer perception of financial innovation, with path coefficients of 0.214, 0.273, and 0.298 respectively ($p < 0.05$ for all). This indicates that greater attention to financial inclusion, robust ESG practices, and advanced digital capabilities actively shape how customers view innovation in financial services. Furthermore, these antecedent factors substantially impact intermediary variables: Financial Inclusion, ESG Orientation, and Digital Transformation each enhance Customer Trust and Customer Satisfaction, all showing significance. Both trust and satisfaction, positively influence customer perception of financial innovation (path coefficients of 0.214 and 0.265).

Taken together, these results validate the integrated conceptual framework, confirming both direct and mediated effects proposed by the model. The findings underscore the importance of fostering inclusion, sustainability, and digital transformation to build trust and satisfaction key drivers of how innovation is perceived by customers in banking and financial services.

5. Discussion

The results confirm that each of these antecedents has a strong positive direct effect on customer perceptions of innovation. Digital transformation emerged as the most influential factor, emphasizing the critical importance of technological advancements in driving innovation acceptance. Similarly, the notable impact of ESG orientation highlights growing customer sensitivity to sustainability and ethical practices, aligning with recent trends that underscore the sustainability-innovation nexus in finance.

Importantly, it underscores the mediating influence of customer trust and satisfaction, which partially transmit the effects of financial inclusion, ESG, and digital transformation on innovation perception. This dual-pathway mechanism highlights that beyond direct influences, these factors foster positive cognitive and emotional responses among customers, which in turn enhance their perception of innovation. Such findings enrich existing literature by integrating psychological mediators and confirm that customer-centric attributes like trust and satisfaction are vital conduits for realizing the innovative potential of inclusive, sustainable, and digitally-enabled financial services.

The robust relationships observed contribute to theory by validating an integrated conceptual framework that considers both direct and indirect effects, broadening the understanding of innovation diffusion in the financial sector. Practically, the findings point to the necessity for financial institutions to invest not only in technological modernization but also in ESG initiatives and inclusive strategies that build trust and satisfaction to maximize customer acceptance of innovations.

Future research could adopt longitudinal approaches to better capture dynamics over time. Additionally, the study can be further expanded to cover geographic and demographic segments to reflect the generalizability of findings. Despite these limitations, the research offers valuable directions for policymakers and financial service providers aiming to foster sustainable and innovative customer engagement.

6. Implications

6.1 Theoretical Implications

This study strengthens the theory by merging financial inclusion, ESG orientation, and digital transformation as key antecedents shaping customer perceptions of financial innovation within financial services. The findings support and extend sustainable innovation theory by demonstrating that these distinct yet interrelated constructs not only have direct impacts on innovation perceptions but also significantly operate through the mediating roles of customer trust and satisfaction. This highlights the importance of including both technological and socio-environmental dimensions in models of financial innovation adoption. Furthermore, the explicit incorporation of trust and satisfaction as cognitive-emotional mediators enriches the theoretical framework, stressing customer-centric psychological mechanisms as critical pathways in innovation acceptance. These insights contribute to a more holistic view of how

novel financial services are internalized by users, advancing the discourse on sustainable digital transformation in the banking sector.

6.2 Practical Implications

For practitioners, the results underscore the need for financial institutions to adopt a multifaceted strategy that balances technological advancement with strong ESG practices and inclusive financial policies. The significant effects of digital transformation suggest prioritizing investments in technology infrastructure, data security, and user-friendly digital platforms to enhance innovation perception. Simultaneously, emphasizing ESG commitments can build competitive advantage by appealing to increasingly conscious customers, reinforcing brand reputation. The mediating roles of trust and satisfaction highlight that developing transparent, reliable, and customer-focused services is essential to translate technological and sustainability efforts into positive customer experiences. Financial service providers should therefore design integrated strategies that foster trust and satisfaction, alongside innovation deployment, to maximize customer acceptance and long-term engagement.

7. Conclusion

The empirical findings confirm that these antecedents not only exert significant direct effects on innovation perception but also influence it indirectly through customer trust and satisfaction. Digital transformation stands out as the strongest driver, underscoring the vital importance of technological advancements alongside sustainable and inclusive financial practices. The mediation effects of trust and satisfaction highlight the essential psychological processes that facilitate customers' acceptance and appreciation of financial innovations. These results collectively enrich both academic understanding and practical approaches to fostering innovation in financial services. Although the research is shortchanged by its cross-sectional approach and geographical coverage, it lays a solid foundation for future longitudinal and broader investigations. Overall, this research emphasizes a holistic, customer-centered strategy that integrates technological, ethical, and inclusive dimensions to accelerate and sustain financial innovation adoption.

GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES:

When writing this manuscript, permanently AI-assisted technologies were only applied to the purpose of language refinement and grammar correction to make it clear and readable. There were no AI tools that were used in the production of original scientific content, data interpretation, or conclusion. The authors upheld complete accountability to the integrity, accuracy, and originality of all the contents contained in this paper. The disclosure is provided according to journal policies in order to achieve transparency and ethics.

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