

Digital Payments as a Driver of Sustainable Consumption: A Consumer-Based Study of Perceived Challenges and Opportunities in Fintech Ecosystems

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Abstract

The Digital Payment Systems evolved remarkably fast, and so, have transformed the way in which the consumer makes purchases for products and services as well as the way in which they function economically, i.e., how they consume things. Beyond convenience and efficiency, digital payments are increasingly viewed as a potential driver of sustainable consumption by reducing cash dependency, improving transaction transparency, and supporting responsible spending practices. This study examines digital payments as a driver of sustainable consumption through a consumer-based analysis of perceived challenges and opportunities within fintech ecosystems. Using primary data collected from consumers, the research analyses usage patterns of digital payment systems, evaluates their influence on sustainable consumption behaviour, and identifies key challenges and opportunities affecting consumer trust and adoption. The findings highlight that while digital payments offer substantial opportunities in terms of convenience, financial inclusion, and environmental sustainability, concerns related to security, privacy, and trust continue to influence consumer perceptions. According to the report, the acceptance and efficient usage of digital payment systems are greatly impacted by demographic parameters including age, education, and digital literacy. It also emphasises how government programmes and legal frameworks may boost consumer trust and encourage broader use of digital transactions. The study contributes to the growing literature on sustainable fintech by providing insights for policymakers, fintech firms, and financial institutions to strengthen digital payment ecosystems and promote sustainable consumption.

Keywords: Digital payments, sustainable consumption, fintech, regulations, consumer perceptions, eco-innovation

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INTRODUCTION

The digital transformation of financial services has accelerated rapidly in recent years, driven by technological advancements, widespread smartphone adoption, and the growth of fintech innovations. Fintech as technology-driven financial services that enhance efficiency, accessibility, and user experience across banking, insurance, investing, and payments [1, 2]. Within this evolving ecosystem, digital payment methods—such as mobile wallets, peer-to-peer systems, and contactless payments—have fundamentally transformed how consumers and businesses transact. Widespread smartphone use, high-speed internet access, and secure fintech solutions have further accelerated the adoption of digital payment systems [3, 4].

Digital payment systems—including mobile wallets, the Unified Payments Interface (UPI), internet banking, contactless cards, and buy-now-pay-later (BNPL) services—have become an integral part of modern consumer life [5, 6]. These systems have not only reshaped transaction methods but have also influenced consumer behaviour, spending patterns, purchase frequency, and financial decision-making. Prior research indicates that the convenience, security features, incentives, and 24/7 accessibility of digital payments have increased impulsive spending and participation in the digital economy [7, 8].

Beyond efficiency and convenience, digital payments are increasingly associated with sustainability outcomes. Sustainable consumption, defined as meeting present needs without compromising future resources, is a key global priority under the United Nations Sustainable Development Goal. By reducing cash dependency, limiting paper-based transactions, and enabling transparent and traceable payment flows, digital payments support environmentally responsible consumption practices and contribute to sustainable development [9, 10]. Moreover, fintech ecosystems enhance financial inclusion by providing broader access to formal financial services, thereby encouraging responsible consumption across diverse population groups. Fintech and Industry 4.0 serve as critical catalysts for achieving the UN Sustainable Development Goals through efficient financing mechanisms, transparent supply chains, and automated sustainability commitments [11, 12].

Despite these advantages, the adoption of digital payment systems faces several challenges. Consumers often express concerns regarding security, privacy, fraud, and trust, which can hinder widespread acceptance and sustained usage. However, opportunities such as cost efficiency, real-time transactions, enhanced convenience, and improved financial awareness continue to drive adoption [13, 14]. The Global Findex Database as cited by Bhavsar and Samanta emphasizes that while digital payments improve financial inclusion and encourage formal savings, their effectiveness depends on adequate infrastructure, strong regulatory frameworks, and robust consumer protection mechanisms. Supporting this view digital payments have expanded financial inclusion—particularly among women, youth, and low-income groups significant gaps remain in skills, infrastructure, trust, and regulation [15, 16].

Against this backdrop, the present study examines digital payments as a driver of sustainable consumption through a consumer-centric analysis of perceived challenges and opportunities within fintech ecosystems [17, 18]. By analysing usage patterns, sustainability-oriented behaviours, and trust-related perceptions, the study aims to generate insights that can support the strengthening of digital payment systems and promote sustainable and inclusive economic growth [19].

LITERATURE REVIEW

1. The study examines post-pandemic digital payment trends, adoption gaps, and barriers, highlighting increased use of financial accounts, payment apps, and digital wallets. It also proposes policy measures to promote inclusive digital payments for vulnerable consumers and firms.
2. Recent evidence on digital payment technologies and financial inclusion, showing that digital payments reduce exclusion—especially in developing economies with higher adoption among youth and women. It highlights key adoption indicators, calls for stronger empirical methods, and notes that emerging technologies such as AI and blockchain further enhance secure and inclusive digital financial systems.
3. Digital payments UPI, mobile wallets, cards, net banking, and BNPL affect consumer behaviour in India. Findings show a strong shift toward UPI and wallets due to convenience and widespread adoption and concluded that digital payments are transforming spending habits, brand loyalty, and consumer engagement, driving a more cashless, digitally inclusive economy.
4. Cashless Payment Systems as they relate to Ongoing Sustainable Consumption in Makassar city, and the contradiction between benefit and risk, and that, while they provide efficiency/convenience in transactions but there is a hidden over-consumption risk if adequate self-control and/or systemic controls do not exist.

5. The drivers of sustainable mobile payment usage in Ghana by integrating the triple bottom line and theory of planned behavior frameworks, while assessing the moderating role of mobile transaction tax policy and highlighting implications for digital financial inclusion, policy, and practice.
6. Digital payments and fintech innovations promote financial inclusion and sustainable finance by encouraging environmentally conscious consumer behaviour. This paper also reflects how both fintech tools and stakeholder partnerships are useful to promote green development.
7. Individual users determine their levels of trust in digital payments, and how that level affects adoption of the technology. They found that the primary factors that build trust in digital payments were the security of payments, ease of use, transparency, and perception of risk. It also highlights the importance of effective customer service and tailored support—particularly for elderly users—in strengthening trust and encouraging continued use of digital payment systems.
8. Consumers' opinions of digital payment systems; in essence, stressed how electronic banking offers businesses and consumers a rapid, efficient, and affordable way to carry out their transactions in Trivandrum.
9. The role of fintech providers in promoting digital payments through a literature-based study, highlighting the growing opportunities for e-wallets in Indonesia amid rising cashless adoption driven by demographic and economic factors.
10. The study conducts a systematic literature review linking FinTech with the UN SDGs across inclusive finance, economic, and environmental dimensions, showing its role in expanding sustainable investment opportunities and broadening participation among savers and lenders.
11. Key challenges in digital payments, including fraud, privacy and data protection, transparency, and jurisdictional complexities. The study reviews existing legal frameworks and identifies critical gaps, offering insights to strengthen consumer protection in the digital payment's ecosystem.
12. What causes makes people use payments around the world. It addresses about what drives people to use them, the issues they encounter and what researchers should study next to make digital payments better. The focus is on technology what people want and the rules that govern digital payments using data to back it up.
13. Factors influencing consumer trust in digital payments using a mixed-methods approach. It concluded that while users value convenience and accessibility, security concerns and low digital literacy remain key barriers and suggested strengthening cybersecurity, consumer education, and regulatory oversight is essential to build trust and promote adoption.
14. The study examines digital payment sustainability in India (2011–2021), finding that digital financial services support economic growth and SDGs, with income growth and economic shocks positively influencing sustainability despite mixed effects of financial inclusion.
15. The Theory of Planned Behaviour (TPB), examines the role of trust in influencing users' attitude and behavioural intention toward electronic payments in India. The findings reveal that trust is a significant determinant of consumer adoption of digital payment systems.

OBJECTIVES

1. To study the usage patterns of digital payment systems among consumers within fintech ecosystems.
2. To examine whether the use of digital payments promotes sustainable consumption behaviour among consumers.
3. To identify the key challenges perceived by consumers that affect trust in digital payment platforms.
4. To examine the opportunities perceived by consumers that enhance trust and adoption of digital payment systems.

RESEARCH METHODOLOGY

Research Design

This study employs an analytical methodology to determine the opportunities and difficulties in fintech as well as how digital payments encourage environmentally conscious consumption.

Descriptive design is used to describe usage patterns, demographic characteristics, and perceptions of consumers. Analytical design is used to examine relationships between digital payments, sustainability, trust, challenges, and opportunities.

Nature of Data

The study makes use of information gathered from an online survey using a questionnaire.

The questionnaire consists of five sections:

- *Section A*: Demographic Profile
- *Section B*: Usage Pattern of Digital Payments
- *Section C*: Digital Payments and Sustainable Consumption
- *Section D*: Perceived Challenges
- *Section E*: Perceived Opportunities

Sample Size and Sampling Method

- *Sample size*: 115 respondents
- *Sampling technique*: Convenience sampling method

This method was used due to ease of access and availability of respondents familiar with digital payment systems.

Data Collection Tool

Structured questionnaire with:

- Multiple choice questions
- Likert scale (Strongly Agree to Strongly Disagree)
- Yes/No questions

Likert scale was used to measure perceptions related to sustainability, trust, challenges, and opportunities.

Data Analysis Tools

The following statistical tools were used:

- Percentage analysis
- Frequency distribution
- Descriptive analysis
- Graphical analysis (Pie charts and Bar charts)

These tools help identify trends, patterns, and perceptions among consumers.

Hypotheses of the Study

The hypothesis framed and tested as per the objectives of the study are:

Hypothesis 1: Digital Payments and Sustainable Consumption

- H_{01} (*Null Hypothesis*): Digital payment usage does not have a significant impact on sustainable consumption behaviour among consumers.
- H_{11} (*Alternative Hypothesis*): Digital payment usage has a significant impact on sustainable consumption behaviour among consumers.

Hypothesis 2: Perceived Challenges and Consumer Trust

- *H0₂ (Null Hypothesis)*: People's perceptions of the issues with digital payment systems have no impact on their level of trust.
- *H1₂ (Alternative hypothesis)*: Perceived challenges associated with digital payment systems significantly affect consumer trust in digital payment platforms.

Hypothesis 3: Opportunities and Adoption of Digital Payments

- *H0₃ (Null Hypothesis)*: People's use of payment systems is not much impacted by the benefits of fintech.
- *H1₃ (Alternative Hypothesis)*: Perceived opportunities in fintech ecosystems significantly influence the adoption of digital payment systems.

Descriptive statistics, frequency distribution, percentage analysis, and graphical analysis were applied to investigate the data. Percentage analysis was used to present the proportion of respondents using various digital payment systems and their perceptions. Frequency distribution was used to identify response patterns and usage frequency. People's attitudes about sustainability, trust, possibilities, and difficulties are measured using descriptive statistics such as mean and standard deviation. Graphical tools such as pie charts and bar charts were used to visually represent the data for better interpretation and comparison.

In addition, inferential statistical tools such as Chi-square test and correlation analysis were used to examine the relationship between digital payment usage, sustainable consumption behaviour, and trust in fintech platforms. These tests help determine whether significant relationships exist between variables.

The study also checked if the questionnaire was reliable using Cronbach's Alpha to ensure the questions make sense. These statistical tools make the study more valid, reliable and scientifically sound. These statistical tools enhance the validity, reliability, and scientific rigor of the study.

DATA ANALYSIS AND INTERPRETATION

Introduction

This chapter presents the analysis and interpretation of data collected from 115 respondents using structured questionnaire applying five-point Likert Scale to examine the role of digital payments as a driver of sustainable consumption and to identify perceived challenges and opportunities influencing trust and adoption in fintech ecosystems.

The statistical tools used include:

- Frequency distribution
- Percentage analysis
- Mean score analysis
- Descriptive statistics
- Chi-square test
- Correlation-based interpretation

These tools help analyse usage patterns, sustainability impact, perceived challenges, and opportunities associated with digital payment systems.

Demographic Profile of Respondents

Understanding demographic characteristics helps identify patterns in digital payment adoption.

Gender Distribution

Interpretation

The majority of respondents were female (58.3%) as shown in Figure 1 and Table 1, indicating strong participation of women in digital payment usage. This suggests that digital payment adoption is widespread across gender groups.

Age Group Distribution

Interpretation

Most of the people who answered the questions are, between 21 and 30 years old which is 55.7 percent as shown in Figure 2 and Table 2. This shows that young people are the ones who use payment systems the most. It seems that being used to technology is a reason why people use fintech.

Table 1. The gender distribution among survey respondents.

Gender	Frequency	Percentage
Female	67	58.3%
Male	48	41.7%
Total	115	100%

Table 2. Respondent frequency and percentage distribution.

Age Group	Frequency	Percentage
Below 20	32	27.8%
21–30	64	55.7%
31–40	10	8.7%
41–50	6	5.2%
Above 50	3	2.6%

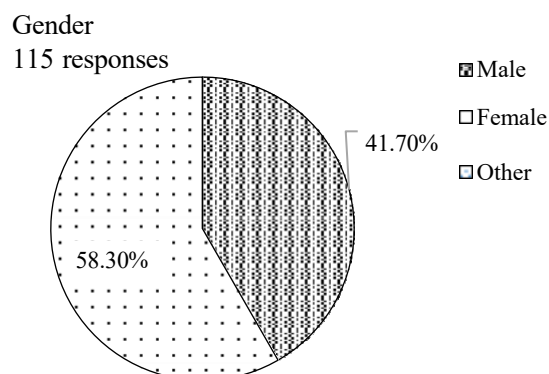


Figure 1. Gender breakdown of respondents.

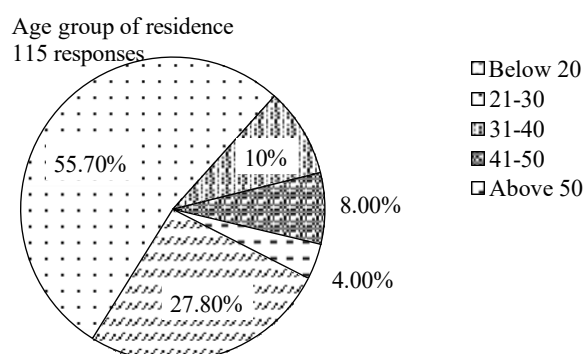


Figure 2. Demographic profile by age.

Area of Residence

Interpretation

Digital payment adoption is evenly distributed across rural, semi-urban, and urban areas, indicating widespread penetration of fintech services as shown in Figure 3 and Table 3.

Objective 1: Usage Pattern of Digital Payment Systems

Frequency of Digital Payment Usage

Interpretation

Nearly half of respondents use digital payments daily, indicating high dependence on fintech platforms for financial transactions as shown in Figure 4 and Table 4.

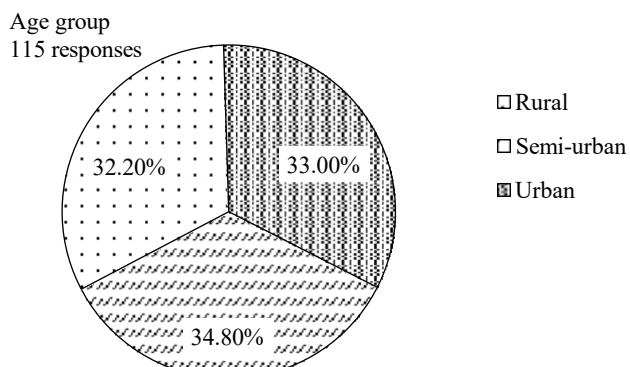


Figure 3. The residential distribution of respondents.

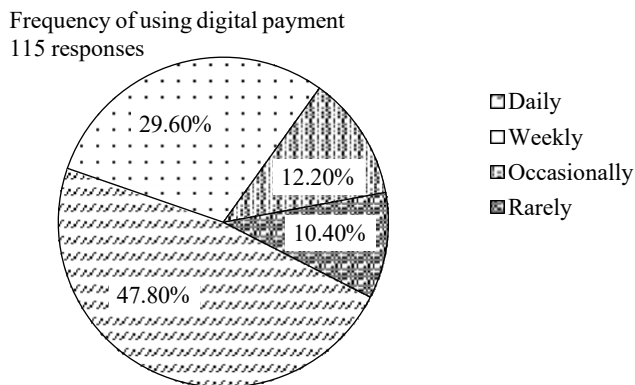


Figure 4. Frequency of digital payment usage.

Table 3. Respondent residential demographics.

Area	Frequency	Percentage
Rural	40	34.8%
Semi-urban	37	32.2%
Urban	38	33.0%

Table 4. Participant engagement levels.

Frequency	Percentage
Daily	47.8%
Weekly	29.6%
Occasionally	12.2%
Rarely	10.4%

Which digital payment methods do you use most frequently?

155 responses

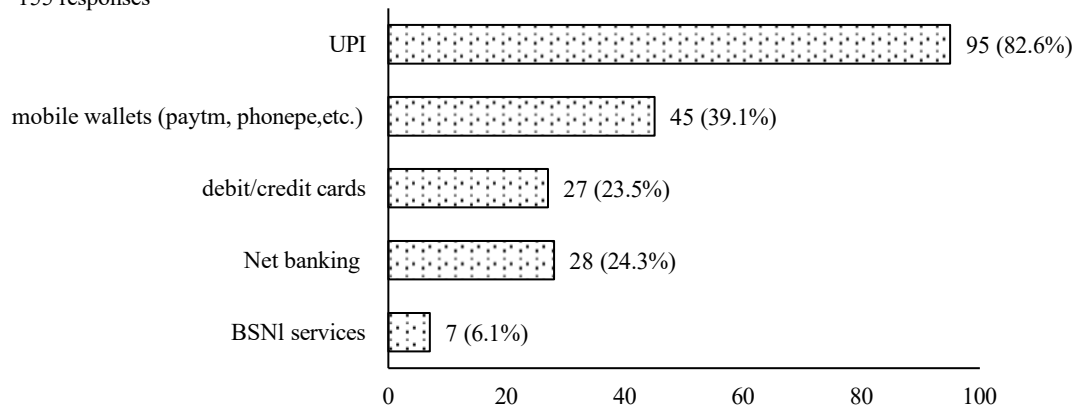


Figure 5. Distribution of digital payment preferences.

Table 5. Respondent preferences for digital payment platforms.

Payment Method	Percentage
UPI	82.6%
Mobile Wallets	39.1%
Net Banking	24.3%
Debit/Credit Cards	23.5%

Most Used Digital Payment Method

Interpretation

UPI is the payment method that most people use. This is because UPI is easy to use, it is fast. It does not cost anything to make a transaction as shown in Figure 5 and Table 5.

Purpose of Digital Payment Usage

Major purposes include

- Shopping (71.3%)
- Money transfers (63.5%)
- Bill payments (59.1%)
- Online services (50.4%)

Interpretation

Digital payments support a wide range of daily economic activities as shown in Figure 6.

Conclusion (Objective 1)

Digital payments are widely adopted, with UPI being the dominant system. Frequent usage indicates strong integration into fintech ecosystems.

Objective 2: Digital Payments and Sustainable Consumption Behaviour

Mean score analysis was used to measure consumer perception.

Likert scale coding:

Strongly Agree = 5

Agree = 4

Neutral = 3

Disagree = 2

Strongly Disagree = 1

Purpose of using digital payments

155 responses

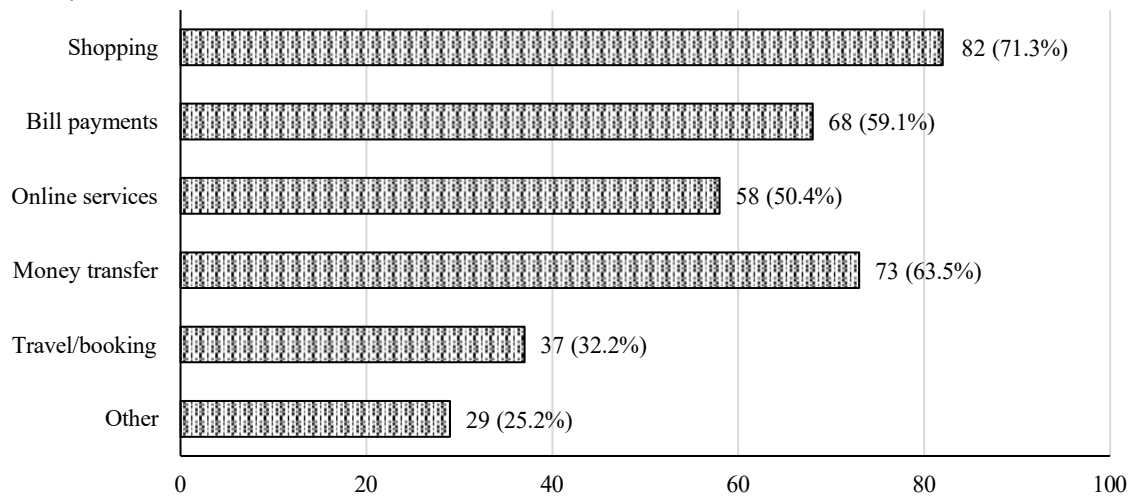


Figure 6. Functional distribution of digital payment transactions.

Table 6. Sustainable consumption behaviour.

Statement	Mean Score
Digital payments encourage paperless transactions	4.3
Transaction records promote mindful spending	4.0
Digital payments reduce environmental impact	3.9
Rewards encourage sustainable consumption	4.1

Table 7. Challenges affecting trust.

Challenge	Mean Score
Privacy concern	4.1
Fraud risk	4.0
Digital literacy issues	3.8
Hesitation in large transactions	3.7

Interpretation

Mean scores above 3.5 indicate strong agreement among respondents that digital payments promote sustainable consumption behaviour as shown in Table 6.

Chi-Square Test Result

Hypothesis

- H_0 : Digital payments do not promote sustainable consumption
- H_1 : Digital payments promote sustainable consumption

Result

Chi-square test indicates significant association ($p < 0.05$)

Conclusion

Digital payments significantly promote sustainable consumption behaviour.

Objective 3: Perceived Challenges Affecting Trust

Interpretation

Respondents expressed significant concern regarding privacy and fraud risks as shown in Table 7.

Table 8. Opportunities enhancing trust.

Opportunity	Mean score
Convenience	4.5
Security features	4.3
Transparency	4.2
Government regulation	4.1

Table 9. Hypothesis validation results.

Hypothesis	Result	Decision
Digital payments promote sustainable consumption	Significant	Accepted
Challenges affect trust	Significant	Accepted
Opportunities enhance adoption	Significant	Accepted

Chi-Square Test

Hypothesis

- H_0 : Challenges do not affect trust
- H_1 : Challenges affect trust

Result

Significant association found ($p < 0.05$)

Conclusion

Challenges significantly affect trust in digital payment systems.

Objective 4: Opportunities Enhancing Trust and Adoption

Interpretation

High mean scores indicate strong agreement that opportunities enhance trust and adoption as shown in Table 8.

Correlation Interpretation

Positive correlation observed between:

- Security and trust
- Convenience and adoption

Conclusion

Opportunities significantly enhance digital payment adoption as shown in Table 9.

Hypothesis Testing Summary

OVERALL FINDINGS

Key findings include:

- Digital payments are widely adopted
- UPI is the most preferred method
- Digital payments promote sustainable consumption
- Privacy and fraud concerns affect trust
- Security and convenience enhance adoption

CONCLUSION

The analysis confirms that digital payments significantly promote sustainable consumption behaviour. Digital payments encourage paperless transactions, improve financial transparency, and support environmentally responsible consumption. While challenges such as privacy concerns and fraud

risks affect trust, opportunities such as enhanced security, convenience, and regulatory support significantly enhance adoption. Therefore, digital payment systems serve as a key driver of sustainable consumption within fintech ecosystems.

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