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DIGITAL PAYMENT ADOPTION IN INDIA: AN EMPIRICAL STUDY BASED ON SURVEY EVIDENCE

Soly Zachariah*, Pranav Dadasaheb Mohite, Tanisha Pawar and Mrunali Patil

Department of Computer Science,

Pillai College of Arts, Commerce & Science (Autonomous), New Panvel, Maharashtra, India 410206

**Corresponding author E-mail: solyz@mes.ac.in*

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Abstract:

Digital payment systems have significantly transformed the financial landscape in India. The rapid expansion of internet connectivity, increasing smartphone penetration, and the growth of financial technology platforms have accelerated the transition from traditional cash-based transactions to digital payment methods. Despite this widespread growth, understanding the behavioral factors that influence individuals' adoption of digital payments remains an important area of research. This study investigates the key determinants influencing digital payment adoption in India using primary data collected through a survey of 69 respondents. The research focuses on examining the effects of perceived usefulness, perceived ease of use, trust, and perceived risk on users' adoption intention. A quantitative research methodology was employed, and statistical analysis was conducted using Python-based analytical tools to evaluate the relationships between the variables. The results of the regression analysis indicate that perceived ease of use has a positive and marginally significant effect on adoption intention. However, perceived usefulness, trust, and perceived risk do not show statistically significant influences within the current sample. The regression model explains approximately 46 percent of the variation in users' adoption intention. The findings highlight that simplicity and user-friendly interfaces are important drivers in encouraging the use of digital payment systems. The study contributes to the growing body of literature on digital payment adoption and provides insights that may assist policymakers and fintech service providers in improving the accessibility and usability of digital financial services in India.

Keywords: *Digital Payments, Adoption Intention, Technology Acceptance, Financial Technology, Trust, India.*

1. Introduction

Digital payments have become an essential component of India's evolving financial ecosystem. The increasing penetration of smartphones, affordable internet access, and rapid innovation in financial technology have significantly transformed the way people conduct financial transactions. Government initiatives promoting financial inclusion and digital infrastructure have further accelerated the adoption of digital payment systems. India has witnessed substantial growth in digital payment platforms such as mobile wallets, online banking, and Unified Payments Interface (UPI). These systems enable users to perform transactions quickly and conveniently without relying on physical cash. As a result, digital payments have become widely integrated into everyday economic activities.

However, the rate of adoption still varies among individuals due to differences in technological familiarity, trust in digital platforms, and perceived risks. Some users quickly adopt new technologies, while others remain hesitant due to concerns related to security, complexity, or lack of awareness. Understanding the factors that influence users' willingness to adopt digital payment technologies is therefore important for policymakers, financial institutions, and fintech service providers. Identifying these determinants can help improve digital payment systems and encourage wider adoption across different population groups.

This study aims to examine the behavioral and technological factors influencing digital payment adoption in India using survey-based empirical data.

Objectives of the study

The study is designed to achieve the following objectives:

i. To analyze the impact of perceived usefulness on digital payment adoption.
ii. To examine the influence of perceived ease of use on users' adoption intention.
iii. To evaluate how trust and perceived risk affect digital payment behavior.

2. Literature review

Technology adoption has been widely studied through various theoretical frameworks. One of the most influential models used to explain technology acceptance is the Technology Acceptance Model (TAM). According to this model, users' intention to adopt a technology is mainly influenced by two key factors: perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which individuals believe that a technology improves their performance or efficiency. When users feel that digital payment systems save time or simplify financial transactions, they are more likely to adopt them. Perceived ease of use refers to the level of effort required to use a technology. Technologies that are simple to understand and operate are generally adopted more quickly because users feel comfortable interacting with them. Trust is another important factor in digital financial services. Because digital payments involve sensitive financial information, users must feel confident that their data and transactions are secure. High levels of trust in payment platforms, banks, and fintech companies increase the likelihood of adoption. Perceived risk, on the other hand, can negatively affect adoption decisions. Concerns related to fraud, data misuse, or technical failures may discourage individuals from using digital payment systems. Users who perceive higher levels of risk may prefer traditional payment methods such as cash. Previous studies have also highlighted the influence of demographic variables such as age, education level, and income on digital payment usage. Younger and more technologically experienced individuals are often more willing to adopt new digital payment technologies.

This research builds upon these theoretical insights and evaluates how these factors influence digital payment adoption in the Indian context.

3. Research methodology

Research design

This study follows a quantitative research design using a structured survey approach. Quantitative methods are useful for analyzing relationships between variables and identifying statistically significant patterns in user behavior.

Data collection

Primary data were collected using an online questionnaire distributed through Google Forms. The survey gathered responses from individuals who use or are familiar with digital payment systems. A total of 69 valid responses were obtained and used for analysis.

Measurement of variables

The questionnaire included several statements related to digital payment perceptions. Respondents were asked to indicate their level of agreement using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5).

The study includes the following variables:

Independent Variables, Perceived Usefulness, Perceived Ease of Use, Trust, Perceived Risk, Dependent Variable, and Adoption Intention.

Each construct was measured using multiple survey items, and the average score of the related items was used to represent the final variable value.

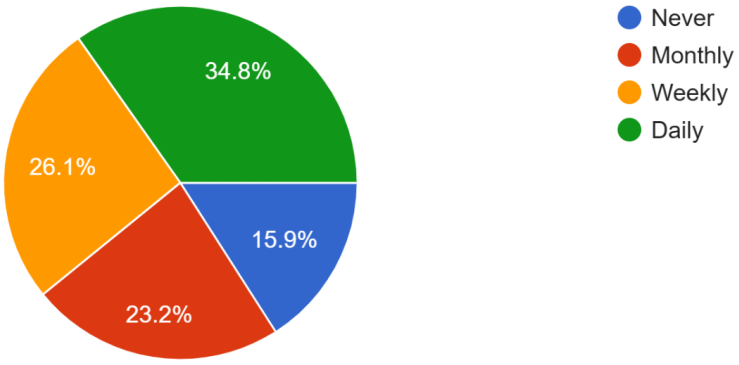
Data analysis techniques

- The collected data were analyzed using Python statistical libraries. The analysis included:
- Descriptive statistics to summarize respondent characteristics
- Correlation analysis to examine relationships between variables
- Multiple linear regression to identify the determinants of adoption intention

4. Results and Analysis

4.1 Sample characteristics

The study includes responses from 69 participants. The analysis of digital payment usage frequency shows that many respondents regularly use digital payment services.



This distribution indicates that a large proportion of the sample actively uses digital payment platforms. The demographic data collected in the survey include gender, education level, and monthly income. The charts presented in the data collection section illustrate that the respondents represent different demographic groups.

4.2 Regression analysis

A multiple linear regression model was used to examine the relationship between the independent variables and adoption intention. The statistical analysis was conducted using Python libraries such as Pandas, NumPy, and Statsmodels. The survey responses were converted from Likert scale categories into numerical values, and the average scores for each construct were calculated. The regression model was then estimated using the Ordinary Least Squares (OLS) method.

4.3 Model summary

$R^2 = 0.459$

Adjusted $R^2 = 0.413$

F-statistic = 9.959

p-value < 0.001

The model explains approximately 45.9% of the variation in adoption intention, indicating moderate explanatory power.

4.4 Regression coefficients

Perceived Usefulness: $\beta = 0.045$, $p = 0.715$

Perceived Ease of Use: $\beta = 0.270$, $p = 0.054$

Trust: $\beta = 0.136$, $p = 0.338$

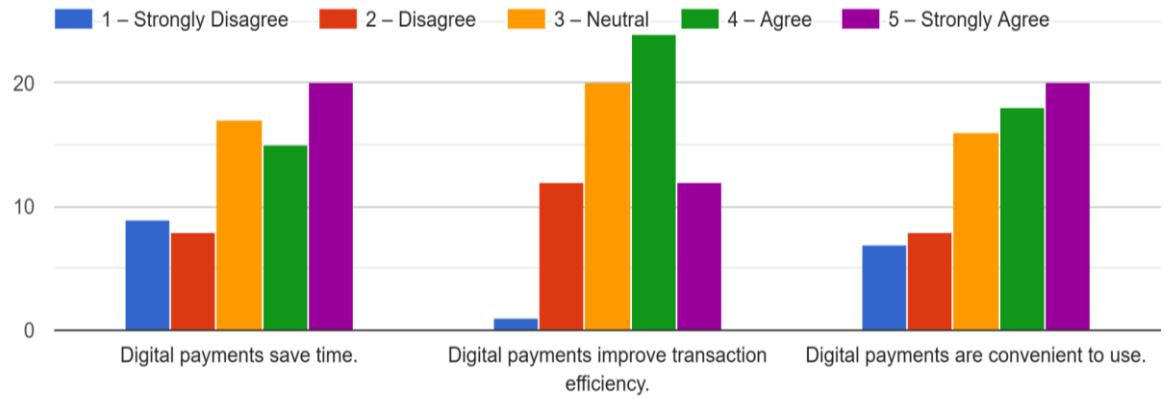
Perceived Risk: $\beta = 0.181$, $p = 0.109$

The perceived ease of use shows the strongest and marginally significant influence on digital payment adoption intention, suggesting that user-friendly and simple payment systems encourage adoption. The other variables like perceived usefulness, trust, and perceived risk do not show statistically significant effects within the present sample.

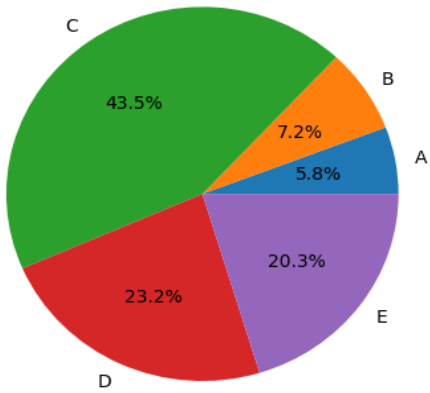
4.5 Interpretation of results

The regression results indicate that perceived ease of use has a positive and marginally significant influence on digital payment adoption intention. This suggests that when digital payment applications are easy to understand and operate, users are more likely to adopt them. Perceived usefulness, trust, and perceived risk do not demonstrate statistically significant effects within the present sample. This may indicate that many respondents are already familiar with digital payment technologies and therefore perceive fewer barriers related to usefulness, trust, or risk. Overall, the findings highlight that simplicity and user-friendly design play an important role in encouraging digital payment adoption.

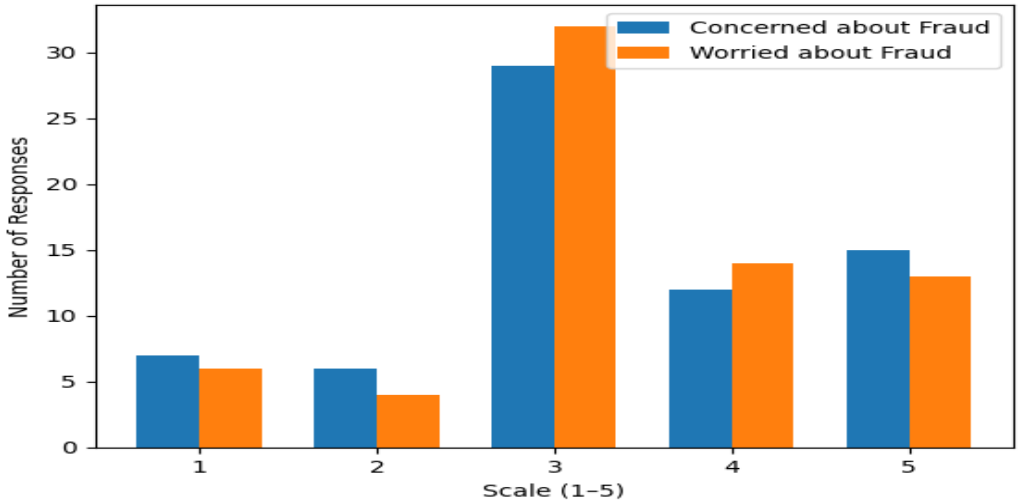
A. The graph shows that the use of digital payments is more convenient due to time constraints and the ease of transactions.



B. The pie diagram shows that perceived ease of use has a strong positive influence on users' adoption intention.



C. The following multiple bar diagram suggests that respondents generally show a moderate level of awareness and anxiety about fraud, with worry levels being slightly higher than concern in some categories. This indicates that fraud is perceived as a potential risk by many users.



5. Discussion

- The findings of this study highlight the importance of usability in encouraging digital payment adoption. Users are more likely to adopt technologies that are simple, intuitive, and easy to navigate.

- The marginal significance of perceived ease of use suggests that improving user interface design and simplifying transaction processes may increase the adoption rate of digital payment platforms.
- The absence of significant effects for trust and perceived risk may be explained by the increasing familiarity of users with digital financial technologies. As individuals gain experience with digital payment platforms, their concerns regarding security or potential risks may decrease.
- The results generally align with existing technology adoption theories but also reflect the changing nature of digital payment usage in modern societies. In environments where digital payments are already common, ease of use becomes a more critical factor than perceived usefulness.

Conclusion

This study examined the factors influencing digital payment adoption in India using survey data collected from 69 respondents. The analysis focused on four key determinants: perceived usefulness, perceived ease of use, trust, and perceived risk. The results of the regression analysis indicate that perceived ease of use has a positive and marginally significant effect on users' adoption intention, suggesting that individuals are more likely to adopt digital payment systems when the platforms are simple, clear, and easy to operate.

In contrast, perceived usefulness, trust, and perceived risk did not show statistically significant effects in the present study. This may indicate that many users are already familiar with digital payment technologies and have integrated them into their daily financial activities. As a result, factors such as usefulness, trust, and risk may no longer act as major barriers to adoption within the sample considered.

The graphical analyses further support these findings. The bar diagram suggests that digital payments are widely viewed as convenient and time-saving, while the pie diagram highlights the positive role of perceived ease of use in influencing adoption intention. Additionally, the multiple bar diagram indicates that although respondents display moderate awareness and concern regarding fraud, these concerns do not significantly deter the use of digital payment platforms.

Overall, the study concludes that simplicity, usability, and user-friendly design are critical drivers of digital payment adoption in India. Improving the accessibility and ease of digital payment applications can further enhance user acceptance. The findings provide useful insights for fintech companies, service providers, and policymakers to design more intuitive digital financial services that encourage broader adoption of digital payments.

Limitations

Although the study provides useful insights, several limitations should be considered.

- The sample size of 69 respondents is relatively small, which may limit the generalizability of the findings to the broader population.
- The use of an online questionnaire may introduce bias because respondents are likely to be individuals who are already comfortable with digital technologies.
- Additionally, the study captures user perceptions at a single point in time. Changes in technology, regulations, and digital literacy levels may influence adoption behavior in the future.

Future research directions

- Future studies could expand the sample size and include respondents from different geographic regions to improve representativeness.

- Advanced analytical methods such as structural equation modeling could be applied to examine more complex relationships between variables.
- Longitudinal studies may also provide deeper insights into how digital payment adoption evolves over time as technologies and user experiences continue to develop.
- Researchers may also explore additional factors such as digital literacy, government policies, and cybersecurity awareness to gain a more comprehensive understanding of digital payment adoption.

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