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Evaluation and Assessment of the Impact of the Adoption of Digital Payment in India through the Technology Acceptance Model (TAM)

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Abstract

India's internet and mobile phone usage has skyrocketed over the last decade. As the number of people using the internet and mobile devices grows, online payment methods for the general public are becoming more streamlined thanks to government initiatives like Digital India. As a result, the number of digital payment implementations is rapidly increasing. Automated Technologies Digital payment refers to a customer using a credit card, internet banking, or mobile banking application on a smart phone to pay for goods and services at a point of sale. The perception around digital payments has a significant impact on their adoption rate. The researchers used a structured questionnaire to collect data on people's attitudes towards digital payments. Research was conducted among 206 respondents regarding the provision of primary data. This research used the Technology Acceptance Model (TAM) to examine the prevalence of digital payment uptake across India's population. The research technique included validity and reliability tests, confirmatory factor analysis, KMO and Bartlett's analyses, and a review of common method bias. Based on the results' high levels of validity, reliability, and model fit, SPSS can be used to test hypotheses effectively. The findings of this study make it clear that the technological acceptance model may provide helpful insights into the underlying factors that drive people to use a digital payment evaluation system.

Keywords: *Cashless Transactions, Consumer Perception, Digital Payment, TAM, Reliability Tests, KMO and Bartlett's analyses, Common Method Bias.*

Introduction

India, a diverse nation, is ideal for studying technological diffusion. India is a microcosm for understanding innovation recognition, with over 1.3 billion people of various socioeconomic backgrounds, societal beliefs, and innovative abilities. In India' digital payment adoption is a compelling story against the backdrop of the government's authority's robust digital payment initiative and mobile phone usage. The process of transferring funds using electronic devices such as laptops and mobile phones is known as digital payment. Digital payments are more efficient, faster, and convenient than traditional banking systems (Barnes, 2002; Adhikary *et al*., 2021). Digital payments use takes less time and effort and provides numerous benefits to both citizens and the entire country (Thakur and Srivastava, 2014; Kajol *et al*., 2022). It deters thieves and makes money management more effortless. During the 1990s, e-banking became

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increasingly popular, particularly among people with advanced degrees in developed countries. By 2025, the widespread adoption of high-speed data transmissions had facilitated the exponential growth of digital payment systems (Sharma and Sharma, 2019; Norbu*et al.*, 2024).

Since November 8, 2016, when India's previous currency was phased out, the prevalence of digital payment systems has steadily increased. In recent years, digital payment adoption (DPA) has become more popular in India (Wardhani*et al*., 2023). The government is driving a major overhaul of India's financial system through the Digital India initiative. Individuals have shifted away from the traditional paper currency in favour of digital payment Adoption. The proliferation of mobile devices has significantly increased the sophistication and usability of Digital Payment Adoption (DPA) in the banking industry (Krishna *et al.*, 2023). Mobile phones have grown in importance in modern society thanks to the widespread availability of user-friendly Android applications across multiple online platforms, increasing people's reliance on this technology to perform tasks such as banking (Mallat, 2004; Malaquias *et al.*, 2024).

The concept of digital payment systems has facilitated frequent and expedient transactions. By maintaining a safe distance from one another and conducting transactions via digital services, individuals can prevent the transmission of viruses. This is the primary and most significant advantage. By enabling vendors to accept digital payments directly into their bank accounts, they help suppliers increase sales and gain experience in small towns and villages where cash is scarce (Alalwan et al., 2017; Srivastava *et al*., 2024).

During the 1980s, as personal computers became increasingly popular, research studies about how people used technology gained prominence (Venkatesh *et al.*, 2003). The lack of empirical data on user reactions to digital payment performance posed a significant barrier to progressing research in the field of personal digital applications (Slade *et al.*, 2014; Guillén*et al.*, 2003; Liébana*et al.*, 2015; Lee *et al.*, 2015; Andreev *et al., 2012;* Benbasat *et al.*, 1986). India's situation is unique in that it has a large number of digital payment systems and a primarily cash-based economy. The Indian government has recently launched numerous initiatives to reduce its reliance on cash. The Aadhaar biometrically certified identity program (ABCI) is used in the India Stack's to streamline and lower electronic transaction costs (Pratik, 2017). Significant progress has been made, especially in digital payment tools.

Digital payments are innovative in India's financial system, and understanding digital payment acceptance is vital as the world's largest democracy progresses toward digital empowerment. The Technology Acceptance Model (TAM) is used to assess India's complicated digital payment acceptance issues. The Technology Acceptance Model (TAM) measures customer adoption of new technologies (Hossain& Mahmud, 2016; Sahiet al., 2021). Many factors affect people's adoption of technology (Gao and Waechter, 2015; Staykova and Damsgaard, 2016).

This research uses the Technology Acceptance Model (TAM) to examine Indians' adoption factors for digital payment. This study examines how convenience affects customers' willingness to use digital payment systems and looks into how people's opinions toward the perceived hazards of digital payment systems affect their willingness to use them. The impact of digital payment adoption in India will be evaluated using the Technology Acceptance Model (TAM) as a framework in this research work. To facilitate this event, the next section of this research paper has been organised as follows: Section 2 and Section 3 provide a brief overview of the literature review and conceptual framework. Following a research methodology discussion in Section 4, Section 5 examines the findings with limitations, makes recommendations for future research, and conclusion.

Literature Review

Conspicuous technological advances have significantly increased the convenience and comfort of human life. Undoubtedly, the Internet has had a profound and revolutionary impact on all aspects of our lives (Doan, 2014; Oliveira *et al.*, 2016). The banking industry has undergone significant changes due to technological advances on the internet (Deslonde and Becerra, 2018). In recent years, digital transactions have emerged as an essential component of policies to increase financial inclusion (Pratik, 2017; Muchran and Ahmar, 2019). More than 90 countries have adopted mobile money platforms, and major international donors invest between $30 and $40 billion per year in initiatives that promote digital inclusion. (Mallat and Oorni, 2003). Digital payments offer numerous advantages, including streamlining cash transactions by eliminating the need to produce change and lowering costs associated with long-distance business transactions by eliminating the need to physically deposit cash (Lazim *et al.*, 2021). Furthermore, they have the potential to improve financial transparency (by reducing cash-related fraud occurrences) and security (by reducing cash theft incidents), as well as streamline business record-keeping (by establishing a comprehensive transaction history that is easily verifiable, thereby simplifying interactions with the formal financial sector). Enhanced transparency may positively impact the economy as a whole, including making it easier for individuals to pay their taxes (Liu *et al.*, 2012; Kumar *et al.*, 2017; Opoku and Francis, 2019).

Digital payments, which are made using digital devices, have the potential to significantly improve the lives of millions of people in developing countries by providing financial services. Despite their enormous potential, digital payment methods have yet to be widely adopted in developing countries (Padashetty and Kishore, 2013). Developing nations increasingly embrace digital payment methods such as credit and debit cards, internet banking, and mobile money (Davis, 1989; Rathore, 2016). These approaches are critical to ensuring equal access to financial resources for all. Despite extensive educational and promotional efforts, adoption rates of digital payment in some low-income countries remain low. Digital payment adoption remains low in India, and although digital payments are not yet widely accepted, their popularity is growing. There are still areas where they go completely unused. As of 2023, the average Chinese citizen owned more than four credit or debit cards and an estimated 0.5 Point of Sale (PoS) terminals used to process card payments. On the contrary, the average number of cards per person in India was less than one, and the per capita presence of point-of-sale (PoS) terminals was estimated to be around 0.004.

Digital payments are important in the payment market because digital devices are widely used worldwide. The proliferation of digital device ownership creates many opportunities for transforming how people manage and transfer funds through secure digital transactions (Taheam*et al.*,2016). As new digital payment technologies become available, more people switch from traditional payment methods to contactless devices. As technology has advanced, numerous new payment methods have emerged. Wearable technology, near-field communication (NFC), digital wallets, peer-to-peer applications, and quick response codes are some examples of the digital world (Robey and Farrow, 1982; Franz and Robey, 1986; Nasr *et al.*, 2020). Another area of study focused on professionals' fascination with the evolution of digital systems, specifically the evaluation and improvement of their digital equipment (Gould and Lewis, 1985; Good*et al*., 1986). These studies used a variety of subjective performance perception scales; however, the scales' validity and reliability were not assessed. The subjective measures' internal and external validity could not be established because they had insufficient correlation with actual use (De Sanctis, 1983; Ginzberg, 1981; Schewe, 1976; Srinivasan, 1985).

As a result, it was critical to develop reliable methodologies for studying the psychological factors that influence the relationship between digital payment system characteristics and their use. In 1989, Davis developed the technology acceptance model (TAM) from the theory of reasoned action (TRA) to address the lack of a conceptual framework and measurement scales for assessing technology adoption. According to the model, how someone intends to use technology affects their behaviour more than how they perceive it (Salem and Nor, 2020).

Davis' (1989) Technology Acceptance Model (TAM) popularly explains technology adoption and utilisation. Liao et al. (2018) found that usability and simplicity affect technology adoption. Customers are considered in this paradigm. Researchers who find technology products useful and easy to use are likelier to adopt them (Yuliantiet al., 2020). Digital payment systems assist businesses and individuals immediately and in the long term. They optimise procedures, reduce costs and length, and boost project efficiency (Foley Curley, 1984; Sharda, Barr, & McDonnell, 1988). A large body of study has been dedicated to examining the determinants that influence humans' acceptance of digital payment systems based on their perceived value in information systems management (Davis, 1989).

Fourteen research studies have used the Technology Acceptance Model (TAM) or its derivatives, cementing their position as the most important framework or theory for explaining the adoption of digital payment systems. Kim *et al.* (2015) analysed how people use value-added services (VAS) and digital payments. They combined the Technology Acceptance Model (TAM) and the Innovation Diffusion Theory (IDT) in their investigation. In contrast, Berrado et al. (2013) and Susanti and Astuti (2019) used only the Technology Acceptance Model (TAM) to find out the factors that influence the implementation of mobile payments in various cultural contexts.

Fayada and David's (2015) study examines a concern about the initial TAM and provides evidence for its robustness. The goal is to improve the TAM's dependability and practicality across various contexts. Another aspect that has been investigated is expanding the model to include usability and practicality assessments (Bach *et al.*, 2016). After a thorough examination, it became clear that TAM remains universally recognised as the most efficient framework for conducting quantitative research in information management (Deslonde and Becerra, 2018). Nonetheless, its importance in qualitative research or desk studies is relatively low. The review emphasises the importance of the technology acceptance model as a fundamental approach for understanding and predicting user acceptance, intention to use, and practical system implementation.

Musyaffi *et al. (*2021) and Burg and Mailizar (2021) investigate the factors influencing college students' willingness to adopt e-learning during the COVID-19 crisis. An online survey was requested from 590 students at an Indonesian university. The principal framework used in the analysis was the Technology Acceptance Model (TAM). The goal of including system quality and e-learning experience as explanatory variables was to improve our understanding of the factors influencing students' motivation to participate in e-learning (Saroy*et al.*, 2023).

Erkeket al. (2021) conducted a study on the factors influencing the attitudes and intentions of financially apprehensive individuals confined to their homes during the pandemic to implement mobile banking services. Individuals' willingness to use mobile banking applications is positively influenced by their usability, which includes simplicity, speed, enjoyment, and security. In contrast, perceptions of financial risk have a negative impact on these applications (Niankara, 2023).

Liao et al. (2018) state that mobile payment (m-payment) exhibits considerable potential. Mobile phone users have voiced concerns regarding the security of mobile payments and the unauthorised utilisation of their devices to conduct financial transactions (Fadhilah and Aruan, 2023). The principal concerns expressed by individuals pertained to matters of security and privacy, which consequently led to their hesitancy in adopting digital payment solutions. Muchran and Ahmar (2019) provided evidence that the adoption of mobile wallets is still in its infancy, signifying that the innovation-decision Process is ongoing. Although mobile phone payments have existed for a substantial duration, they are currently poised to undergo substantial expansion and gain widespread acceptance (Annan *et al.,* 2024). Moreover, a growing proportion of individuals are conducting financial transactions via their mobile devices. The notion of a "digital payment," denoting a smartphone with wallet capabilities, has amassed considerable traction (Dahlberg *et al.,* 2008).

In the realm of money transfers, digital wallets have demonstrated their merits through their intuitive interface, heightened security measures, and economical pricing. The proliferation of technological innovations has enabled the development of a multitude of novel payment systems, consequently augmenting the ease, accessibility, and legitimacy of transactions (Yuliant and Wiguna, 2020). Apps for mobile payments are growing in popularity among consumers. By providing digital wallets and flexible payment alternatives, brands are streamlining the lives of their customers (Wamuyu, 2014; Lazim*et al.,* 2021). A significant motivation for individuals to adopt digital wallets is the convenience they provide by enabling online transactions without requiring physical movement between different locations (Bryan and Zuva, 2021). Prior studies have conducted thorough investigations into the extent to which individuals are intrigued by mobile payment applications and have consistently discovered a substantial level of interest (Najdawi and Said, 2021). Usability, expressiveness, and reliability affect the adoption of digital wallets as payment methods (Dewan and Chen, 2005; Pham and Ho, 2015). Young people's use of digital wallets was linked to their motivation to improve their performance, usability and manageability, and safety and security. Poor user base, high cost, complexity, and perceived security risks have limited digital payment system adoption. The Payment Mode Influences the Consumer Purchase Model (Srivastava and Raghubir, 2008; De Kerviler et al., 2016). Using digital wallets as a new payment method, KPMG examined self-regulation, direction, and payment aversion. Operational mechanisms and consumer attitudes about mobile payments make up research (Ghosh, 2021).

Digital wallet payments simplify transaction processing and expand payment options, improving the shopping experience (Slade *et al.,* 2014). An experiment by Dwivedi *et al.* (2014) examined the framework for consumer acceptance of mobile payments. Technology security and dependability affect users' emotions and motivations. In the larger model, demographics significantly moderated variable relationships (Shaikh*et al.,* 2022). Wallets allow transactions without debit or credit cards(Hughes *et al.,* 2016). An attribute that sets these digital applications apart is their capability to enable instantaneous fund accessibility and convenient mobility. For example, at your convenience, the funds in your Paytm wallet can be effortlessly transferred to your bank account (Sahi *et al.,* 2021). A considerable deterrent looked at by India, as expressed in a report published by the Ministry of Finance, relates to the expansion of digital payment usage use among its general population. The extent of the Indian populace with access to formal financial services is assessed to be around 63%. Using digital payment frameworks can advance more noteworthy monetary incorporation (Hoda, 2022).

Digital payments have become progressively practical in India because of a few vital

components: uplifted cell phone entrance, upgraded information network foundation, the organisation of 4G and 5G networks, and a strong trader ecosystem (Widayani*et al.*, 2022). Moreover, public authorities, controllers, and organisations collaborate to propel the reason (Susanto, 2022). The report distributed by the Reserve Bank of India depicts a sweeping procedure for progressing digital payment systems in India. This procedure includes executing guidelines, developing a versatile foundation, laying out a viable oversight framework, and putting consumer loyalty as the main concern (Widayani*et al.*, 2022). India fills in as a worldwide community for the execution of digital payment. With an inexact populace of 1.35 billion individuals, India involves around 18% of the world's population. India presently has a good percentage of the population that is exceptional with mobile phones and web access, the two of which are fundamental requirements for empowering Digital payment transactions (Bhatia *et al.*, 2023)

A thorough literature review shows that multiple studies have examined the factors influencing the adoption and use of digital payment systems. Most of this research is from industrialised nations (Fayad and Paper, 2015; Tamang et al., 2021; Chaveesuk, 2021;). Few of these studies have been done in developing nations (Slade et al., 2015; Chen and Ren, 2022).

Conceptual Framework and Hypotheses

Throughout the past 10 years, the Technology Acceptance Model (TAM)) has been utilised to evaluate its utilisation for IT and e-services. The two philosophies have reliably neglected to give a superior comprehension or forecast of user behaviour. With an end goal to explain the determinants that motivate people to embrace creative advancements in fields for example, digital payments and online e-business, many speculations have been proposed, including intention theory (Balakrishnan *et al.*, 2021). This intention model's ability to precisely figure out people's tendency to use digital payments and execute online exchanges has been upheld by proof. The model is comprised of five parts that impact Indian buyers' readiness and willingness to adopt digital payment methods. As indicated by this model, five elements impact digital payment reception: perceived usefulness, Perceived risk, Attitude, Government support, and Perceived ease of use. These theories clarify and examine Indians' digital payment options.

TAM Model

The Technology adoption Model (TAM) is a quantitative metric used to assess the level of user adoption of emerging technology. TAM only considers viewership, perceived danger, and government authority. Ravikumar*et al.* (2019), practicality and usability drive extensive use. Prioritising prospective users' needs in the Technology Acceptance Model (TAM) estimates new technology adoption. TAM sought to transform how people used and viewed technology and information systems. The primary TAM model tested two beliefs, perceived utility (PU) and perceived ease of use (PEU).

Perceived usefulness refers to the probability that carrying out a particular framework will work on the viability of a forthcoming customer's activities (Soman, 2003). Perceived ease of use refers to a forthcoming customer's emotional evaluation of the level of simplicity with which they expect to work the framework viable. According to the Theory of Acceptance and Use of Technology (TAM), external factors can influence an individual's trust or belief in a specific system.

Hypotheses

Perceived Ease of Use:

People's expectations to use technology depend on perceived usability, according to Davis' TAM Model (1989). According to TAM, customers will adopt a simple technology. Results have consistently supported this relationship in various settings, including advanced instalment frameworks. Venkatesh and Davis (2000) found that apparent convenience strongly influences people's attitudes and goals toward e-commerce sites. Gefen et al. (2003) found that apparent convenience strongly influences customers' acceptance of digital payment systems. Focusing on a well-defined digital payment system reception has also highlighted usability. According to versatile financial research, shoppers' perceptions of the ease of digital payment system exchanges affected their perceived ease of use (Suh and Han, 2002). Davis defines "ease of use" (EOU) as the degree to which a person considers the operation of a particular system to be effortless. The Technology Acceptance Model (TAM) assesses the cognitive effort required by prospective users to use the target applications effectively. IT assumes that people can use emerging technologies proficiently and with little effort. Adopting technologies with complex user interfaces that require significant effort to master is considered risky (IMAP report, 2016). This study thus formulates the following hypothesis.

H1: Consumers' inclination to adopt digital payment is positively correlated with their perception of its ease of use.

Perceived Risk:

The Technology Acceptance Model (TAM) states that perceived risk is a major factor in clients' acceptance of new developments (Davis, 1989). Fears of security, protection, and financial ruin can deter people from using computerised payment methods. Many studies have examined how perceived risk affects digital payment adoption. Pavlou (2003) found that apparent perceived risk affects buyers' digital payment system readiness. Kim et al. (2009) found that security concerns affect clients' expectations to adopt digital payment systems.

Additionally, digital payment system exams included perceived risk. Research on digital payment systems found that security and protection concerns hindered reception (Suh and Han, 2002). Fraud and misrepresentation are major barriers to the adoption of digital payment systems (Liao et al., 2013). Perceived risk refers to the expected manifestation of a potential negative outcome. The concept of perceived risk refers to an individual's cognitive assessment of the various potential hazards associated with using digital payment systems (Mailizar*et al.*, 2021; Sahi*et al.*, 2022). Another notable concern with digital payments is their ability to present hazards and risks. Customers and businesses suffer significant financial losses as a result of these risks. The term "risks of fraud in digital payments" refers to unauthorised activities within an operating system (Kala'lembang *et al.*, 2024). Based on the above discussion, the following hypothesis has been formulated.

H2: The perceived risk associated with digital payment usage inversely affects consumers' adoption intention.

Government Support:

Government support refers to government assistance provided to businesses to encourage the acceptance and widespread use of groundbreaking technologies. The spread of technological advancements within a country is dependent on government support. Tan and Teo found a direct

correlation between government assistance and the adoption rate of emerging technologies (Mailizar*et al.*, 2021). The government's intervention may facilitate the spread of an idea. An individual's proclivity to adopt technology can be determined by assessing the level of support received. Individuals are more likely to embrace digital payment mechanisms once they understand the government's support (Bryan and Zuva, 2021). Based on the above discussion, the following hypothesis has been formulated.

H3: Government support positively influences individuals' inclination to shop online and utilise digital payment methods.

Attitude

According to the Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB), attitude toward a behaviour shapes expectations and actions (Ajzen and Fishbein, 1980). Digital payment adoption attitudes reflect customers' overall evaluation of the innovation, including its value, convenience, and dependability. Demeanor consistently affects innovation reception in observational studies. Venkatesh and Davis (2000) found a positive correlation between clients' perspectives and digital payment adoption expectations. Lu et al. (2005) found that positive views of internet banking influenced consumer adoption. Kim and Prabhakar (2004) found that customers' inspirational views on digital payment system adoption strongly influenced their reception goals. Gefen *et al.* (2003), customers' positive views of digital payment systems increased their likelihood of adoption. Whether a person has a positive or negative attitude toward something, their attitude represents their typical response or reaction to it(Keramati*et al.*, 2012). Attitude strongly influences the adoption of digital payment methods (Mallat, 2007). Attitude most affects behavioural intention (Kapoor *et al.*, 2014). Considering the above, the following hypothesis is proposed:

H4: Attitude significantly and positively impacts the adoption of digital payment.

Perceived Usefulness

Perceived usefulness (PU), as defined by, is the degree to which an individual believes that implementing a specific technology will improve their job performance. It indicates whether an individual believes a technological device will assist them in accomplishing their objective. Davis defines perceived ease-of-use (PEOU) as "the extent to which an individual believes that a specific system will not cause any discomfort." The issues can be resolved with the aid of technology that is intuitive and simple to operate. Negative opinions cannot exist regarding something that is difficult to use and has an intricate interface. The perceived usefulness of digital payment systems (PUSE) in achieving goals reflects people's attitudes toward their utility (Chandrasekhar and Nandagopal, 2016). Value drives an individual's emotional response to a stimulus (Koenig-Lewis *et al.*, 2015). The hypothesis was based on the above information.

H5: Perceived usefulness (PUSE) significantly and positively influences consumers' attitudes towards digital payment.

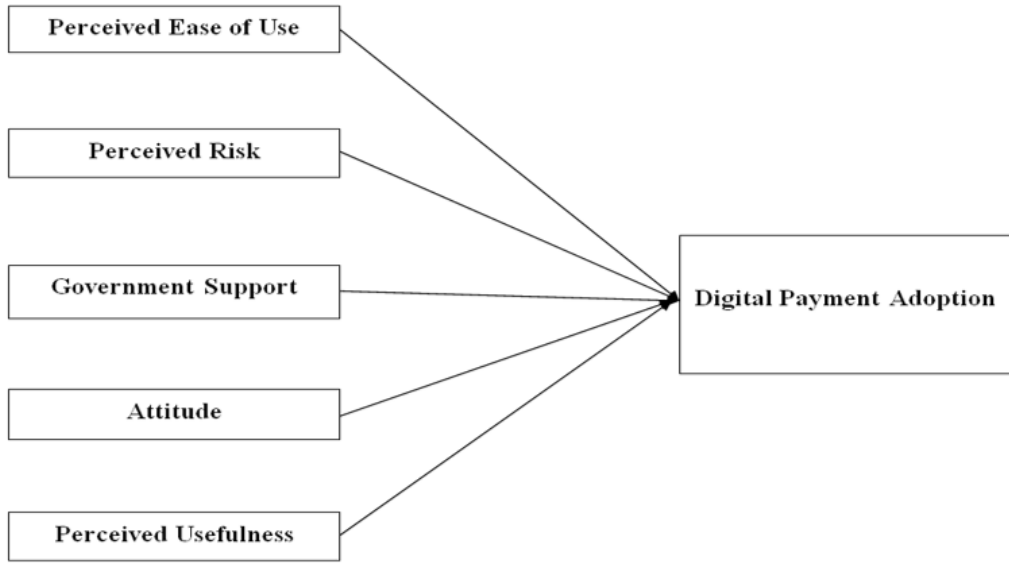

Figure 1. Research Model

Research Methodology

Table 1 gives a complete profile of the respondents engaged with the research, involving 206 respondents. The age dispersion reveals that the larger part falls inside the 20–45 age range, with 30.01% between 20–25 years, 22.30% between 26–35 years, and 25.70% between 36–45 years. Orientation circulation shows a slight male prevalence, with 56.31% male and 43.69% female respondents. In terms of education, the majority of respondents (52.42%) have advanced degrees, followed by post-graduate (27.18%) and doctoral certificates (20.38%). Work experience changes, with huge portrayals across various sections, including 0–5 years (17.47%), 6–10 years (25.24%), and 11–20 years (20.38%). Income, an extensive portion of respondents procure between 0-30 Lakhs every year, with 29.12% acquiring 0–10 Lakhs, 21.35% procuring 11–20 Lakhs, and 24.75% procuring 21–30 Lakhs. This profile offers insights into the socioeconomics of the review members, providing an establishment for additional examination and translation of the exploration.

Variables	**Respondents (N=206)**	**(%)**
Age		
20-25 Years	62	30.01
26-35 Years	46	22.30
36-45 Years	53	25.70
46-55 Years	38	18.40
55 and above	7	3.40
Gender		
Male	116	56.31
Female	90	43.69

Education		
Graduation	108	52.42
Post-graduation	56	27.18
Doctoral	42	20.38
Work experience		
0-5 Years	36	17.47
6-10 Years	52	25.24
11-20 Years	42	20.38
21-30 Years	41	19.90
31 and above years	35	16.99
Income		
0-10 Lakhs	60	29.12
11-20 Lakhs	44	21.35
21-30 Lakhs	51	24.75
31-40 Lakhs	35	16.99
41 and above lakhs	16	7.76

Table 1. Participant's Profile Description

Note: one lakh is equal to 100,000 (one hundred thousand) in the international unit system.

The Technology Acceptance Model (TAM) is used to understand and forecast how people adopt and use new technologies. A questionnaire was created to evaluate the proposed hypothesis in this study. As shown in Table 2, the preliminary stage entails gathering essential participant information, such as gender, age, income, and educational qualification, through a series of questions. The responses were categorised using a five-point Likert scale, with five indicating "strongly agree" and one indicating "strongly disagree." The questionnaire with items used in this study is given below.

S.No.	Variables	Statements
Government Support		
1	***GS1:***	Feel pressure from the government to begin utilising digital payments.
2	***GS2:***	The government is offering sufficient help to safeguard consumers' privileges in online business transactions.
3	***GS3:***	Government support in empowering you to utilise more digital payments.
Perceived Usefulness		
1	***PU1:***	Are you being urged by retailers to begin utilising digital payments?
2	***PU2:***	Decide to shop online because it's a decent choice compared to offline choices.
3	***PU3:***	A digital payment has low dangers.
4	***PU4:***	Utilising digital payments saves your time and cash.
5	***PU5:***	Digital payments are superior to utilising cash.
Perceived Ease of Use		
1	***PEU1:***	Digital payments are simple to utilise.

2	***PEU1:***	A digital payment is simple for you.
3	***PEU1:***	You accept digital payments for shopping.
4	***PEU1:***	You find digital payment systems easy to adopt.
Perceived Risk		
1	***PR1:***	You are confronted with critical boundaries while utilising internet banking.
2	***PR2:***	You encountered monetary loss because of digital fraud.
3	***PR3:***	At any point, you have experienced digital payments security threats.
Attitude		
1	***AE1:***	You normally use cash as your payment method.
2	***AE2:***	You believe in the security of digital payments systems.
Digital Payment Adoption		
1	***DPA 1***	You favour utilising digital payments.
2	***DPA 2***	You frequently utilise debit/credit cards for digital payments.
3	***DPA 3***	You regularly utilise debit/credit cards for in-store payments.
4	***DPA 4***	You involve electronic bank transfers as a payment strategy.
5	***DPA 5***	You are concerned about going through with online financial transactions, like paying bills or making purchases.

Table 2. Questionnaire

A reliability test was conducted in the first step to check whether the scale adopted for collecting the data from the sample was reliable. Then, the Validity test was done using composite reliability and average variance extracted method to check the validity of the adopted scales for measuring the variables. In the next step, the authors conducted the Common Method bias test using Harman's single factor test analysis because the data was collected using a single source point. After this, a Confirmatory Factor Analysis was conducted to check the measurement model fit. In the last step, the Hypotheses testing was done using SPSS AMOS. AMOS provides a graphical representation of the model and analysis, giving a more detailed and clear understanding of the results.

Results and Analysis

Reliability Test

Reliability test analysis was done using Cronbach's alpha (Kennedy, 2022). The results are presented in Table 3 below. The obtained values indicated that all the scales used for measuring the variables are reliable, as all the values are above 0.70. The highest reliability value is gained for the government support scale comprising three items, i.e., 0.936. The lowest value of reliability is gained for the perceived risk scale comprising three items, i.e., 0.738. The other values obtained are 0.934 for perceived ease of use, 0.823 for attitude, 0.816 for perceived usefulness, and 0.900 for digital payment adoption scales.

Variable	No. of items	Cronbach's alpha
Perceived Ease of Use	4	0.934
Perceived Risk	3	0.738
Government Support	3	0.936
Attitude	2	0.823

Perceived Usefulness	5	0.816
Digital Payment Adoption	5	0.900

Table 3. Reliability Test Analysis Using Cronbach's Alpha.

KMO and Bartlett's Test

Bartlett's Experimental Outcomes and the Kaiser-Meyer-Olkin (KMO) test help us understand the group's efficacy and factor analysis suitability. The Kaiser-Meyer-Olkin Proportion of Examining Sufficiency (KMO) measures chance-related component variability (Thao et al., 2022). Variables meet factor analysis criteria with a KMO score above 1. The KMO score of 0.903 suggests that survey variables are strongly correlated, requiring further study. A correlation matrix is spherical if Bartlett's Test of Sphericity shows no linkages between its components. With 231 degrees of freedom, the test measurement has a 4465.200 Chi-Square value. A p-value of less than or equal to 1,000 (Sig.) indicates that the relationship between the components is statistically significant and not null.

Therefore, the unfounded conjecture that there is no connection between factors is rejected, confirming that the relationship lattice is not a character grid and validating the suitability of the data for factor analysis. These results indicate that the provided data is suitable for conducting a systematic analysis to evaluate the adoption of digital payments in India using the Technology Acceptance Model (TAM). KMO and Bartlett's test was conducted to check the adequacy of the sample. The results are shown in Table 4 below.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.903
Bartlett's Test of Sphericity	Approx. Chi-Square	4465.200
	Df	231
	Sig.	.000

Table 4. KMO and Bartlett's Test

Common Method Bias

A common method bias test was conducted to check whether the data had any common method variance. For this, the factor analysis was done using the principle component analysis. The investigation of common method bias was conducted to ensure the validity of the data collected. The Table titled "Total Variance Explained" displays the principal component analysis (PCA) results used to evaluate the extent of common method variance. The Table displays the fundamental eigenvalues and the quantities extracted from squared loadings for each component. The primary focus is on the level of variability determined by the main component since it indicates the extent to which a single variable dominates the data. In this case, the principal component explains 49.346 per cent of the Variance. Other factors, however less important, contribute to additional differences. This shows that a single cause does not influence the data, as less than half of the variability can be explained. The cumulative discrepancy exhibited by the earliest segments further proves that the data are devoid of systematic bias. The constant increase in the aggregate rate after including new components indicates that the data is complicated and cannot be attributable to a single factor. In conclusion, the findings of this study indicate that the data used in the Technology Acceptance Model (TAM) analysis of digital payment usage in India is not subject to common technique bias. This boosts the trustworthiness

of the results.

The total Variance explained by a single factor is less than 50% as seen in Table 5 below. This suggests that the data is free from the problem of common method biases.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.856	49.346	49.346	10.856	49.346	49.346
2	2.420	10.999	60.344	2.420	10.999	60.344
3	1.542	7.010	67.354	1.542	7.010	67.354
4	1.403	6.377	73.732	1.403	6.377	73.732
5	1.075	4.885	78.616	1.075	4.885	78.616
6	.722	3.283	81.899			
7	.611	2.776	84.675			
8	.547	2.485	87.160			
9	.480	2.183	89.343			
10	.385	1.752	91.095			
11	.312	1.416	92.511			
12	.284	1.292	93.803			
13	.241	1.097	94.900			
14	.218	.992	95.892			
15	.202	.917	96.808			
16	.173	.788	97.597			
17	.138	.626	98.223			
18	.105	.479	98.702			
19	.091	.412	99.114			
20	.083	.376	99.491			
21	.071	.325	99.816			
22	.041	.184	100.000			
Extraction Method: Principal Component Analysis.						

Table 5 Total Variance Explained

Composite Reliability and Average Variance Extracted

The composite reliability values and average Variance extracted for each of the six variables are presented in the Table below. The CR values above 0.70 suggest that the scale has composite reliability for each variable. The AVE values are above the threshold value, i.e., 0.50. This suggested that the scale also has validity.

S.No	Factors	Composite Reliability	Average Variance Extracted
1.	PEU	0.934342	0.780963
2.	PR	0.769699	0.543674

3.	GS	0.938917	0.837193
4.	AE	0.826816	0.704763
5.	PU	0.899889	0.682425
6.	DPA	0.888067	0.626543

Table 6. Total Variance Explained

Confirmatory Factor Analysis

The model was recursive with a sample of 206. The obtained chi-square value was 600.930, with a degree of freedom of 194. The significance level for this obtained value was .000, suggesting that the model fit should be checked in the next steps. The model gained the CMIN/DF value as 3.098. To check further for the model fit, certain values were assessed, whether they touched the benchmark values or not. The values gained for GFI= 0.786; AGFI= 0.721; PGFI= 0.603, RFI= 0.846; TLI= 0.890; CFI= 0.908; and RMSEA= 0.101 suggested the model obtained is a good fit.Confirmatory factor analysis tests the model fit of a measurement model prepared for the study. As the model in this study is good, hypothesis testing can be done in the next steps. If a model does not fit enough, the model is then not ready to test the hypotheses. The path coefficient diagram for CFA is shown in the Figure below.

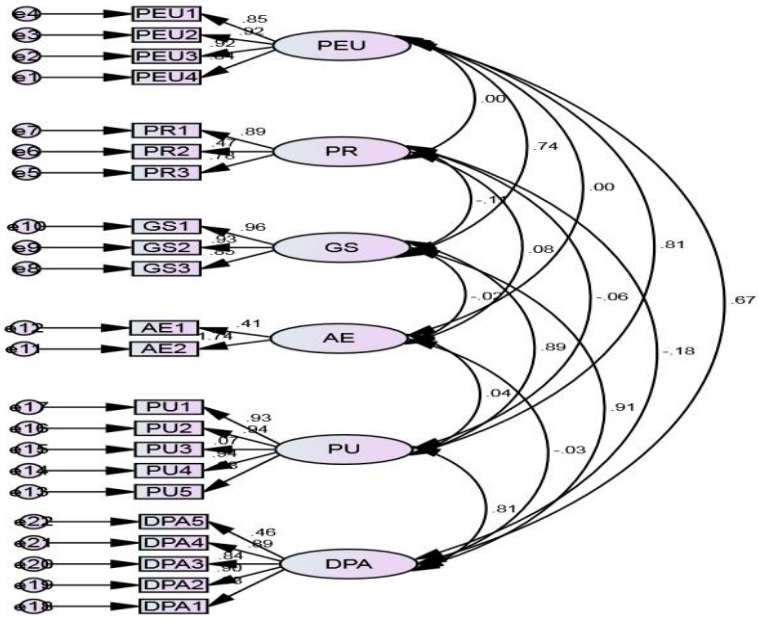

Figure 2. Confirmatory Factor Analysis Results Using AMOS

Testing the Hypothesised Model

To check whether the model was recursive or not, the model was run through SPSS. The model

appeared recursive, and the obtained values for CMIN, DF, and CMIN/DF were 1059.410, 204, and 5.193, respectively. The default model values are 0.780 for TLI, 0.806 for CFI, 0.808 for IFI, and 0.143 for RMSEA, suggesting a good model fit. Therefore, the hypotheses were further tested. The results from the hypotheses are presented in the Table below:

S. No.	Hypothesis	Path Coefficient	SE	Critical Ratio	Findings
H1	**PEU→DPA**	**0.009**	**.039**	**0.234***	**Supported**
H2	PR→DPA	-0.063	.030	-2.080**	Supported
H3	GS→DPA	0.761	.053	14.299***	Supported
H4	AE→DPA	-0.072	.038	-1.877*	Not Supported
H5	PU→DPA	0.197	.040	4.865***	Supported

Table 7. Results of Regression Analysis

For H1, the hypothesis stated that PEU is positively impacting DPA. As per the results from the Table, it can be seen that the path coefficient value is 0.009, suggesting a low positive impact, yet significant. Therefore, H1 is accepted.

For H2, the hypothesis stated that PR is negatively impacting DPA. As per the results from the Table, it can be seen that the path coefficient value is -0.063, suggesting a negative yet significant impact. Therefore, H2 is accepted.

For H3, the hypothesis stated that GS is positively impacting DPA. As per the results from the Table, it can be seen that the path coefficient value is 0.761, suggesting a very high positive impact and significance. Therefore, H3 is accepted.

For H4, the hypothesis stated that AE is positively impacting DPA. As per the results from the table, it can be seen that the path coefficient value is -0.072, suggesting a negative yet significant impact. Therefore, H4 is not accepted.

For H5, the hypothesis stated that PU is positively impacting DPA. As per the results from the Table, it can be seen that the path coefficient value is 0.197, suggesting a positive impact and significance. Therefore, H5 is accepted.

The path coefficient diagram with the standardised values is presented in the Figure below.

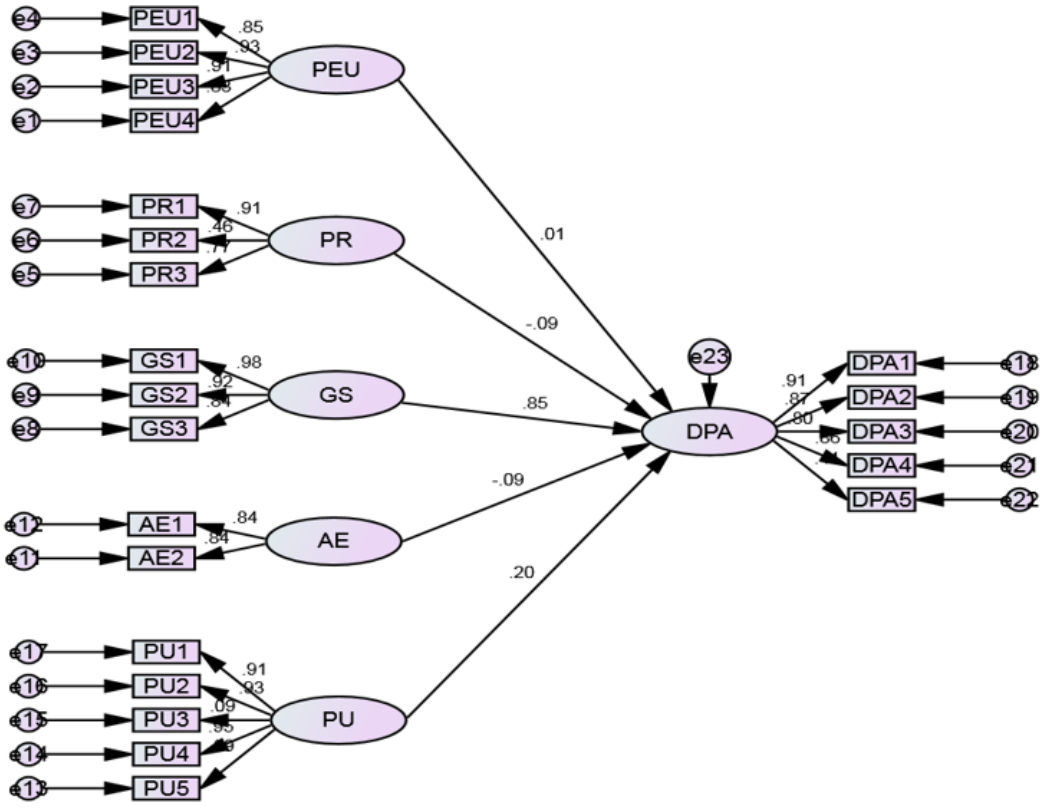

Figure 3. Structural Equation Modeling Results Using AMOS

Discussion

This study aims to investigate, using the Technology Acceptance Model (TAM) framework, the factors influencing Indian consumers' tendency to use digital payment systems. The study thoroughly investigated several ideas, providing significant insights into the factors influencing customer attitudes and behaviour in digital payments. This discussion helps to compile the findings and recommendations for fulfilling the research objectives.

Perceived Ease of Use (PEU) and Digital Payment Adoption (DPA

The first theory proposed that the likelihood of customers using digital payment methods was directly related to their perceived convenience. According to the results, PEU had a small but beneficial effect on DPA (Path Coefficient = 0.009. Despite the small effect size, perceived usability influenced consumers' purchases. This supports a previous study that found convenience motivates the adoption of digital payment (Davis, 1989).

Perceived Risk (PR) and Digital Payment Adoption (DPA)

According to the second hypothesis, consumers are less likely to use digital payment methods that they consider unsafe. This hypothesis is backed by the study's discovery that Public Relations (PR) had a statistically significant negative influence on Daily Physical Activity (DPA), as evidenced by a regression coefficient of -0.063. This demonstrates how important

customers' risk perceptions affect their willingness to adopt digital payment alternatives. According to Pavlou (2003), addressing privacy and security problems is necessary before digital payment technologies are extensively deployed.

Government Support (GS) and Digital Payment Adoption (DPA)

Hypothesis 3 states that when people sense government assistance, they are more likely to engage in online purchases and use digital payment methods. The data significantly supported this prediction, showing that GS had a significant beneficial influence on DPA (Regression Coefficient = 0.761). The government's efforts to encourage broader usage of digital payment systems include the creation of regulatory frameworks, incentive programs, and digital education promotion (Bakos et al., 2001).

Attitude (AE) and Digital Payment Adoption (DPA)

Contrary to predictions, the study discovered no significant relationship between attitude and digital payment usage (Way Coefficient = -0.072). A prior study (Venkatesh et al., 2003) revealed a favourable relationship between personality and the ability to embrace innovative concepts; nevertheless, this surprising outcome contradicts that conclusion. Trust, perceived ease of use, and habitual behaviours are just a few complicated factors influencing how people feel about digital payments. Further research is needed to fully understand these aspects (Fishbein and Ajzen, 1975).

Perceived Usefulness (PU) and Digital Payment Adoption (DPA)

The last hypothesis proposed that consumers would choose digital payment methods if they considered them feasible. The data supported the hypothesis by showing that PU significantly and favourably impacts DPA (Path Coefficient = 0.197). The discovery emphasises the importance of perceived usefulness in influencing individuals' adoption decisions, emphasising the importance of the concrete benefits and value proposition of digital payment systems (Venkatesh& Davis, 2000)

Implications and Recommendations

This study's findings extend to individuals, companies, and governmental authorities in India working to increase the usage of digital payment methods. Increasing the perceived ease of use of complex payment platforms may increase their acceptance among consumers, particularly those with little technological proficiency. This is accomplished through user-friendly features, simple connection ways, and exceptional customer service. To gain consumer trust and confidence, it is necessary to handle the obvious risks associated with digital payments, such as fraud, data breaches, and transaction failures (Komiak and Benbasat, 2006).

Dwivedi et al. (2017) state that governments, financial institutions, and IT companies must work together to create comprehensive security standards, educate the public, and reduce dangers. Government support can boost receptivity by enhancing internet infrastructure, administrator working conditions, and technology knowledge (Rana et al., 2017). Infrastructure modifications, including a stronger foundation and more resilient network, can cut costs and increase accessibility, especially in underprivileged areas (Rana et al., 2016). Although attitudes may not directly affect digital payment volume, educational initiatives, targeted marketing, and incentives may help create a more receptive environment (Grover et al., 2017). Consumers may first resist digital payment systems. Communicating these technologies' convenience, speed, and utility will help overcome opposition (Patil et al., 2017).

An organisation can establish client trust by emphasising digital payment systems' obvious benefits and practical characteristics, such as their capacity to improve operational efficiency, efficacy, and cost-effectiveness (Patil et al., 2019). Promoting clients' understanding of digital payment alternatives and giving individualised help based on their preferences will enhance clients' confidence in your organisation and encourage customer retention (Kapoor et al., 2012). Examining the elements that influence the adoption of digital payment systems in India yields significant benefits and applies to a wide range of stakeholders, including enterprises, individuals, and governmental authorities in real-world settings. This study's findings can give significant information for strategic decision-making, operational process improvement, and customer education efforts aimed at increasing the acceptance of digital payment systems in India.

This study is extremely valuable to government personnel since it explains the effectiveness of present procedures and identifies potential improvements to digital payment systems. Policymakers can alter administrative systems, motivating force programs, and higher education aims to address the evaluation's specific issues as long as they know the elements influencing reception. Government funding was found to significantly impact the development of automated payment receipt systems (Patil et al., 2018). This highlights the crucial need for continued expenditures in frameworks, training, and procedural measures that foster a suitable environment for advanced transactions.

This study suggests that digital payment system participants can gain a competitive edge by understanding customer cognition and behaviour. Knowing practical value, perceived usefulness, and risks can improve product development, advertising, and customer loyalty. Usability, security, and product diversity may foster customer loyalty, trust, and happiness. Market penetration increases with conversion rates (Grover and Kar, 2018). Digital payment systems are essential for economic growth and financial management, especially in developing nations like India (Kapoor et al., 2018). By offering convenient, secure, and transparent payment options, system payment systems serve rural networks, low-income households, and private businesses. This study helps develop financial products and services that meet the needs of all demographic cohorts by revealing the determinants of acceptability.

Modern payment systems offer security, efficiency, and simplicity. Advanced payment methods speed up transactions, improve online shopping reliability, and improve financial management (Singh et al., 2019). This study found that customers' perceptions of digital payment systems' usefulness and simplicity affect their attitudes toward them. This requires intuitive interfaces, structured layouts, and additional features that benefit and meet client expectations. Digital payment system trust must be increased by detecting misrepresentation, security breaches, and fraud (Baabdullah et al., 2019). This study may encourage people to work harder to protect everyone, educate consumers on safety procedures, and reduce the risks of computer-based transactions. Legislators and organisations can reduce fraud and data theft by addressing security issues. Thus, customer interests are protected, and the digital payment system is reliable. Technology helps digital payment systems adapt to changing company and customer needs (Dwivedi et al., 2015). This research aims to help future researchers find new ways to improve digital payment system performance, usability, and compatibility (Siu and Mou, 2005). Identifying and analysing patterns, trends, and determinants of reception achieves this. Digital payment systems like biometric verification, contactless payments, mobile accounts, and blockchain-based platforms could revolutionise transactions. These innovations could boost financial stability, transparency, and efficiency.

Digital payments reduce the need for printing, shipping, and disposal of money transactions (Alalwan et al., 2017; Singh et al., 2019). Businesses and governments can promote digital payments, reduce paper and fossil fuel use in currency management, and adopt energy-efficient technology. The study shows how digital payment acceptance helps achieve development goals like environmental sustainability, asset protection, and responsible use.

Future Research Scope and Limitations

Future research should examine the differences in digital payment reception to understand how social factors affect buyer behaviour. Long-term evaluations of processing design changes may illuminate digital payment system components. Subjective exploration methodologies could disclose complex variables influencing reception, whilst perspectives on social and financial matters could provide insight into the mental components driving reception decisions. Limitations include potential testing bias, the cross-sectional nature of the review, which limits causal derivation, reliance on self-announced measurements, context-specificity to India, and the need for additional elements in the TAM framework.

Conclusion

This study gives a plethora of useful information about the characteristics that encourage people in India to utilise digital payment methods. It makes realistic ideas to businesses, governments, and other influential bodies about expanding the application. To speed the transition to a cashless economy, increase financial service use, and encourage economic growth, stakeholders must confront severe barriers and seize important opportunities. Examining the factors influencing the adoption of upgraded payment systems in India offers policymakers, businesses, and consumers useful guidance and valuable information. Collaborators can promote the adoption and use of digital payment methods by understanding the factors that inspire people to use them and the barriers preventing them. This will help to promote technology innovation, increase financial inclusion, and stimulate financial growth. India has the opportunity to improve its use of digital payments for social advancement, financial transformation, and a bright future by implementing prudent intermediaries, intelligent navigation, and regular audits.

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