

# Advancement of Mobile Payment System in India: A Collaborative Efforts of Government & Stakeholders

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## ABSTRACT

Mobile payment systems have established themselves as a transformational force in India's financial scene, offering millions of people easy and safe digital payment options. This study attempts to investigate the crucial contributions made by the state and other stakeholders to the development of mobile payment systems in India. The study uses a mixed-methods approach, combining the available secondary data with qualitative insights gained through the review of literature. The study looks at the stakeholders' significant contributions to increased digital literacy, grassroots advocacy, social acceptance and trust, innovation and entrepreneurship, digital ecosystem and infrastructure, etc. The findings demonstrate the government's proactive engagement in promoting mobile payment systems through programmes like Digital India, demonetization, and the rollout of the Unified Payments Interface (UPI). The study also highlights the important contributions made by several parties, including financial institutions, technology firms, telecommunications corporations, and retailers. Their joint initiatives to create reliable payment infrastructure, create user-friendly applications, and form alliances have significantly improved the usability and dependability of mobile payment systems.

The challenges faced by mobile payment systems in India are also covered in the study. In order to realize the promise of mobile payment systems in India, the research emphasizes the necessity for continued cooperation, policy support, and investment in research and development. India can further solidify its position as a global leader in digital payments, promoting economic growth, financial inclusion, and societal development, by utilizing the capabilities and knowledge of both the government and stakeholders.

**Keywords:** *Digital payment, Mobile payment system, Government, Stakeholders.*

## **INTRODUCTION**

The information technology has advanced quickly in the past decade, which has fueled the expansion of the global digital economy and the gradual emergence of a digital society among people. Digital payments have assimilated into today's society and revolutionized how people conduct business and handle their finances. The electronic transfer of funds between parties via digital platforms and technology is referred to as a "digital payment."

Digital payment methods come in many different forms, such as mobile wallets, online banking, peer-to-peer (P2P) payments, contactless payments, crypto currencies, QR code payments, and internet banking, among others. Cross-border transactions are now simpler thanks to digital payment options.

In contrast to conventional techniques like wire transfers, individuals and businesses can conduct international trade and send money to many nations with lower rates and quicker processing periods. However, it's crucial to maintain the security of your financial and personal data while utilizing digital payment methods. In general, the use of digital payment systems has altered the financial transactions and provides convenience, speed, and security in today's networked environment. According to a study by Capgemini, the global non-cash transaction volumes grew by 10.1% in 2019, reaching 708.5 billion transactions. The study projected a further increase in digital transactions in the coming years. It has transformed the way people conduct business and is gaining popularity all around the world. A number of variables, such as technology development, shifting consumer expectations, and the demand for simple and safe payment options, have contributed to the advent of digital payment.

**Technological Developments:** The implementation of digital payments on a global scale has been greatly aided by the quick development and wide use of digital technology. Digital payment systems are flourishing because of the growth of smart phones, the expansion of internet connectivity, and improvements in encryption and security procedures.

The International Telecommunication Union (ITU) estimates that approximately 5.3 billion people or 66 per cent of the world's population are

using the Internet in 2022. This represents an increase of 24 per cent since 2019, with 1.1 billion people estimated to have come online during that period, constituting a sizeable user base for digital payment services. Additionally, it has become simpler for people and organizations to conduct digital transactions because to the availability of high-speed internet connections and the growth of mobile applications.

**Consumer Preferences Are Changing:** The widespread use of digital payment systems has been greatly aided by consumers' growing reliance on digital gadgets and their demand for ease. As e-commerce, online shopping, and the sharing economy have grown in popularity, customers have embraced the speed, simplicity, and efficiency that digital payment platforms provide. **Requirement for Accessible and Secured Payment Methods:** The introduction of digital payments has been fueled by the need for accessible, safe, and convenient payment methods worldwide.

Cash and checks, two common forms of payment, have drawbacks in terms of security, traceability, and practicality. Digital payment systems offer improved security features including tokenization, encryption, and two-factor authentication, lowering the risks of fraud and deceptive entrance.

In recent years, digital payment in India has undergone a tremendous expansion and transformation. The Indian government has been actively promoting digital payments as part of a larger initiative to transition away from a cash-based economy. A number of initiatives and regulations have been put in place to promote the use of digital payment options.

**Governmental Initiatives:** The Pradhan Mantri Jan Dhan Yojana (PMJDY) to provide financial inclusion, the Goods and Services Tax (GST) to simplify taxation, and the demonetization drive in 2016 to reduce the circulation of high-value currency notes and promote digital transactions are just a few of the initiatives the Indian government has launched to promote digital payments.

It's crucial to remember that India's digital payment landscape is constantly changing, with new tools and services appearing all the time. To build a strong and secure digital payment ecosystem in the nation, the government, regulatory agencies, banks, and fintech firms are collaborating.

The primary method of payment in a digital society will be mobile devices (Ford and Khan, 2019). Additionally, mobile payments have enormous potential and are gaining attention on a global scale as a cashless option (Liébana-Cabanillas et al., 2020). A digital payment method known as "mobile

payment" makes use of wirelessly capable mobile devices like smart phones and personal digital assistants (PDAs). Mobile payments have been gaining traction, with studies indicating a shift towards mobile wallets and apps. The Worldpay Global Payments Report 2020 revealed that mobile payment usage grew by 36% globally in 2019.

Both consumers and businesses can directly profit from using mobile payment systems. Customers can take advantage of quick mobile payment services and practical payment ways by using mobile payment services. Mobile payment services are anticipated to boost consumer loyalty, lower transaction costs, and enhance transaction volume for merchants (Slade, Williams, and Dwivedi, 2013). Despite these advantages, customer uptake and use of mobile payment systems continue to be problematic (Kaur Dhir, et al., 2020).

In 2020, Statista surveyed people worldwide and discovered that 57% of them preferred utilizing mobile payment applications or digital wallets for in-store purchases, underscoring the rising acceptance of these payment options. Especially among younger generations who are more accustomed to using digital technology, the simplicity of paying with a smartphone or digital wallet has garnered a sizable user base.

According to the Global Findex Database 2017 published by the World Bank, there are around

billion adults worldwide who do not have access to a bank account but do own a mobile phone. Some important information on the expansion of mobile payments in India shows that mobile wallet services are increasingly common. The total amount of mobile wallet transactions in India went from roughly 55 billion Indian rupees in 2016 to roughly 1.49 trillion Indian rupees in 2020, according to a Statista analysis.

In India, the Unified Payments Interface (UPI) has become the industry standard for mobile payments. According to the National Payments Corporation of India (NPCI), UPI had experienced enormous development as of September 2021, with the number of transactions jumping from over 918 million in December 2018 to over 3.6 billion in August 2021. This finding suggests that digital payment systems have the potential to close the financial inclusion gap. Individuals in underserved areas can access financial services and engage in the digital economy by utilizing mobile and digital technology.

## **OBJECTIVE OF THE STUDY**

The study aims to identify:

1. To understand the concept of digital payment system with reference to Mobile payment.
2. To emphasis on the contribution of India's government & other stake holders for the successful implementation of Mobile payment in India.

## **METHODOLOGY**

This is a qualitative research study that includes the exploratory approach to analyze the growth path of the Indian mobile payment sector. The data is collected from academic publications, news articles, government websites and other online sources. Further the data is compiled to prepare a comprehensive framework that is mentioned in figure 1, 2 and 3 which is elaborated further.

## **LITERATURE REVIEW**

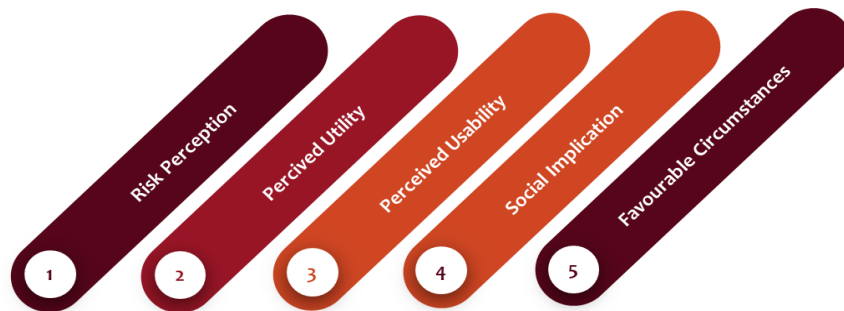
In recent years, the use of digital payment alternatives for in-store transactions, bank-to-bank transfers, and internet purchases has dramatically increased. UPI's popularity is a result of its straightforward interface and zero Merchant Discount Rate (MDR) policy (Salunkhe, H. A., & Hinge, P.N.D.P., 2019). India is seeing a steady rise in electronic transactions, and as a result, there have been more FinTech investments made due to factors including transparency, speed, internet penetration, a rise in smart phone users, low internet prices, and other factors. In the retail sector, electronic fund transfers account for 95% of all digital transactions while card payments make up only 5%. A cutting-edge kind of payment in the financial services industry is digital payment. Technology advancements and the globalization of the internet have both sparked positive changes in payment and settlement systems. Banking transactions are made simpler and more comfortable when technology is used in place of stacks of paper on shelves (Gokila, K., & Rajini, P., 2016). Bill Gates, co-founder of Microsoft has expressed support for digital payment systems, emphasizing their role in financial inclusion. In his annual letters and public speeches, he has discussed how digital payment platforms can empower individuals in developing countries who lack access to traditional banking services. Gates sees mobile payments as a tool to improve financial access and promote economic development.

With a strong market share in both developing and developed nations, mobile payment is one of the recent technological revolutions (Humbani and Wiese, 2019). A cutting-edge technology that takes the role of conventional cash

payments is mobile payment (Shao, Zhang, Li, and Guo, 2019). This service was defined by Kim, Mirusmonov, and Lee (2010) as any payment mechanism that initiates, authorizes, and confirms the exchange of monetary value in exchange for products and services using wireless technology and mobile devices. Mobile payment, according to Lu, Yang, Chau, and Cao (2011), is a synthesis of several mobile technologies that can enable users to conduct financial transactions.

### **FACTORS THAT INFLUENCE MOBILE PAYMENT**

Several studies on consumer behavior towards mobile payment adoption have used different constructs. The current study analyzed the literature on mobile payment and enlisted the risk perception, perceived usability, perceived utility, social implication and favorable circumstances as the research framework in order to examine the adoption and use of mobile payment services by consumers.



**Figure 1: Factors that Influence Mobile Payment**

#### **1. RISK PERCEPTION**

Risk perception has consistently been the primary driver of mobile payment acceptance and use in previous study (Pal et al., 2019). It is a crucial idea that must not be overlooked (Rakhi & Mala, 2014). The popularity of mobile payment services is growing as a result of the practical transaction methods they offer consumers. However, mobile payment transactions may run the danger of data and financial loss in an era where cybercrime is becoming more and more pervasive. Therefore, it is crucial to comprehend how risks influence users' inclinations to adopt mobile payment (Pal, Herath, De, and Rao, 2020). Risk perception was described by Park, Amendah, Lee, and Hyun (2019) as users' security concerns during mobile payment transactions. According to Shao et al. (2019), users of mobile payments are vulnerable to identity and money

theft as well as financial losses brought on by failed transactions and security flaws.

Thakur (2016), Chopdar, and Sivakumar (2019) conceptualized the structure of risk perception as security risk, privacy risk, and financial risk in their related research on perceived risk and mobile shopping.

According to Pal et al. (2020), a security risk is one that results from inadequate security measures or flaws in such measures. When customers use mobile payment services, they are concerned about whether the transaction process includes enough identity verification and security protection methods to ensure that it is conducted in a secure manner. Although mobile payment services can offer a variety of security layers, such as biometric passwords, regular application updates with the most recent security features, adequate notifications, and failure support, Pal et al. (2020) pointed out that there is a significant gap in the security measures of the majority of mobile applications, which results in risks in transactions.

According to Rana, Luthra, and Rao (2018), privacy risk is defined as a personal loss resulting from the use of mobile payment that could reveal personal information. According to Rocca, Garcia, and de la Vega (2008), the transaction procedure may communicate private user information such as the credit card number, bank account, transaction amount, transaction time, etc. According to research by Gao, Waechter, and Bai (2015), privacy and security concerns have a detrimental effect on mobile shoppers' confidence and happiness.

Money risk was described by Pal et al. (2020) as the possibility of money loss as a result of errors, theft, and transactional problems. In addition, it covers the potential for monetary losses brought on by transaction errors and failures (de Kerviler, Demoulin, and Zidda, 2016). Risk has a big negative impact on the desire to use something, according to Pal et al. (2020), hence it's important to take effective security precautions to avoid financial risks.

## **2. PERCEIVED UTILITY**

According to Davis (1989), perceived utility is the extent to which a person thinks implementing the system will enhance his or her ability to perform at work. Numerous studies have demonstrated that customers will use mobile payment systems when they find that they are beneficial for their transactional requirements or financial issues (Kim et al., 2010). Because consumers can complete payments using their portable mobile devices, mobile payment is

more convenient than traditional payment methods, which emphasizes the technology's utility (Flavian et al., 2020; Shao et al., 2019). Numerous payment methods can be substituted with mobile payments. Customers thus view mobile payment to be useful due to the increase in transaction speed (Khalilzadeh et al., 2017; Schierz, Schilke, and Wirtz, 2010). According to Flavian et al. (2020), when individuals think that technology may enhance or help daily life, they will find it useful. Because mobile payment is a contactless transaction technique that avoids direct human touch, hygiene is another important consideration when using this technology (Rafdinal and Senalasar, 2021). Consumers may thus recognize the value of mobile payment and recognize the advantages of safety and hygiene.

### **3. PERCEIVED USABILITY**

Perceived usability is the most significant and frequently utilized criteria in assessing the acceptance rate of mobile payments, according to Dahlberg, Guo, and Ondrus (2015). The degree to which a person thinks utilizing a specific system would be effortless is known as perceived usability (Davis, 1989). According to Ramos de Luna et al. (2019), it is regarded as the most significant construct that affects users' decisions to accept new technology. According to Kim et al. (2010), the system needs to be simple to understand and use in order to avoid the low utilization rate of mobile payments. The majority of mobile payment platforms in India use mobile devices with payment apps for payment operations nowadays. As a result, consumer perception of the usability of mobile payment systems is also reflected in their experience with mobile payment apps.

The mobile payment systems and apps should have a straightforward and user-friendly user interface. Smooth functioning is necessary, and not many specialized talents are needed. Additionally, customers have higher expectations for achieving the requisite performance when they perceive mobile payment to be simple to use and not requiring much effort (Venkatesh et al., 2012).

### **4. SOCIAL IMPLICATION**

According to Venkatesh et al. (2003), social influence is the extent to which a person believes that significant individuals think they should utilize the new system. Mobile payment users are particularly sensitive to social implication, and Koenig-Lewis, Marquet, Palmer, and Zhao (2015) noted that they will take their friends' expectations into account when using the technology.



Businesses and technology suppliers have noticed that how consumers use and value technology has an impact on others. In other words, user recommendations will influence whether other users are encouraged or repelled to try new technology. Additionally, people are very interested in the forthcoming trend of recommending technology to others (Singh et al., 2020). According to Khalilzadeh et al. (2017), consumers are more inclined to utilize mobile payment if more of their peers do so. In other words, consumers will be more ready to adopt a new technology or product if more people are using it.

Social media has been used to advertise goods and services across a variety of businesses in the age of the digital economy (Alalwan, Rana, Dwivedi, and Algharabat, 2017; Kapoor, Tamilmani, Rana, Patil, Dwivedi, & Nerur, 2018). Customers utilize social media to communicate with others and share ideas before deciding whether to continue using an application (Chopdar & Sivakumar, 2019). The adoption of consumer products is also positively impacted by social media advertising (Alalwan, 2018; Syawaluddin, Joni, and Erwin, 2019). On the other hand, websites and app stores for mobile devices offer rating and commenting features. Through these ratings and comments, customers can learn about other customers' opinions of the application and the service (Malik, Shakshuki, and Yoo, 2020; Tavakoli, Zhao, Heydari, and Nenadi, 2018). Therefore, reviews from other users of an app may affect whether or not new users decide to download it.

## **5. FAVORABLE CIRCUMSTANCES**

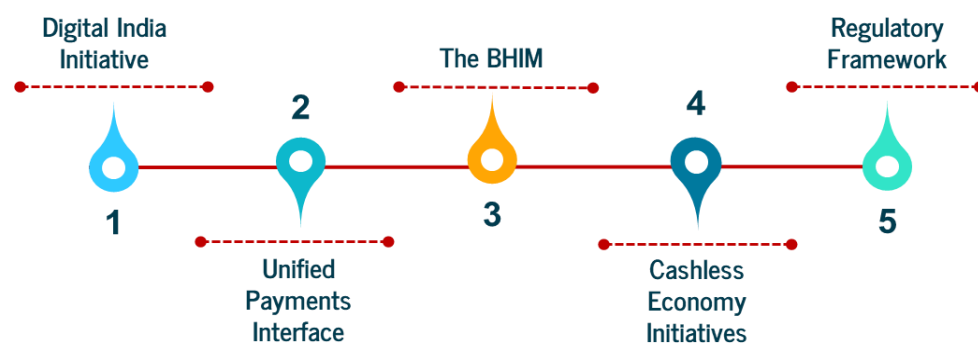
According to Venkatesh et al. (2003), the degree to which a person feels that an administrative and technological framework is in place to facilitate the usage of the system is one of the favorable circumstances. According to Molina-Castillo et al. (2020), the idea of favorable circumstances in the mobile environment is seen as a critical factor in determining the use of mobile services and has a significant impact on consumer acceptance of mobile payment. The availability of infrastructure and resources will favorably influence customers' propensity to use mobile shopping applications, according to Chopdar and Sivakumar (2019).

India's mobile network architecture and signal coverage had improved considerably during the previous ten years, and it was standard practice for people to use their mobile phones to access the Internet. As a result, in recent years, the development of mobile payment providers has concentrated on boosting the rate of retail penetration and financial institution integration.

Financial institutions, mobile payment service providers, retailers, and customers are just a few of the many parties involved in mobile payment services (Johnson, Kiser, Washington, and Torres, 2018). The quality of mobile payment services will improve with greater stakeholder involvement. Near Field Communication (NFC), QR codes, SMS, and other technologies can all be used for mobile payments (Ramos de Luna et al., 2019; Singh et al., 2020). The kind of transactions that each mobile payment platform offers may also vary. The consumer's inclination to use mobile payment will also rise as a result of these favorable circumstances.

### **Contribution of Government & Other Stake Holders in the Success of Mobile Payment System in India:**

- ❖ *The growth and promotion of mobile payment systems in India has been significantly aided by the Indian government. The government's major contributions include the following:*



**Figure 2: Success Factors of Mobile Payments in India: Government's Contribution**

**1. Digital India Initiative:** The government's Digital India initiative aspires to make India into a society that is empowered by technology. In order to promote financial inclusion and lessen reliance on cash transactions, the government has actively supported the adoption of digital payment methods, particularly mobile payments.

**2. Unified Payments Interface (UPI):** The National Payments Corporation of India (NPCI), a government initiative, launched the UPI. Users can make instant payments by connecting their bank accounts to mobile applications through the real-time payment system known as UPI. The extensive use of UPI has been encouraged and supported by the government, making it a well-liked mobile payment system in India.

**3. The BHIM (Bharat Interface for Money):** The app, which is based on the UPI platform, was released by the government. Users can transfer and receive

money straight from their bank accounts using BHIM's user-friendly and secure mobile payment interface. The BHIM app has been widely marketed by the government to promote cashless transactions and ease digital payments throughout the nation.

**4. Cashless Economy Initiatives:** The government has undertaken various measures to promote a cashless economy, which includes incentives for merchants to accept digital payments and subsidies for the adoption of point-of-sale (POS) machines and other digital payment infrastructure. These initiatives have created an enabling environment for mobile payment systems to thrive and have resulted in increased acceptance and usage.

**5. Regulatory Framework:** A strong regulatory framework for mobile payment systems has been established by the Reserve Bank of India (RBI), working with the government. This covers policies and rules to guarantee the safety, privacy, and dependability of financial transactions made through mobile payment platforms. Users now trust mobile payment systems more because of the government's role in creating these regulations, which has aided in their widespread acceptance. In general, the development and promotion of mobile payment systems have benefited greatly from the efforts of the Indian government. The government has played a critical role in promoting mobile payments usage and a digital economy in the nation through programmes like Digital India, UPI, BHIM, and numerous cashless economy policies.

❖ *The social contributions of numerous stakeholders have greatly influenced the adoption of mobile payment systems in India. Here are some significant contributions of various stakeholders of society that made mobile payments successful in India:*



**Figure 3: Success Factors of Mobile Payments in India: Stakeholders Contribution**

**1. Increased Digital Literacy:** Non-governmental organizations (NGOs), community groups, and private enterprises have actively pushed to raise the general public's level of digital literacy. To inform individuals, particularly in rural regions, about the advantages and application of mobile payment systems; awareness campaigns, training programmes, and workshops have been held. These projects have promoted the use of mobile payments by equipping people with digital literacy skills.

**2. Grassroot Advocacy:** Local influencers, community leaders, and social entrepreneurs have all been instrumental in advancing mobile payment systems at the local level. Through their efforts, they have increased understanding, fostered trust, and illustrated the usefulness and security of mobile payments in their neighborhoods. Their advocacy has played a significant role in promoting the adoption and use of mobile payment systems.

**3. Social Acceptance and Trust:** Indian society's acceptance and trust of mobile payment systems has been a major factor in these systems' success. As people experience the ease, security, and efficiency benefits, they become advocates for mobile payments in their social networks, raising awareness and supporting them. It is because of this favorable social acceptance that mobile payment systems have grown naturally and gained universal support.

**4. Innovation and Entrepreneurship:** Indian startups and entrepreneurs have been instrumental in creating and promoting mobile payment solutions. User-friendly mobile payment platforms and apps have emerged as a result of their technological progress. Mobile payments have been successful because of these locally developed solutions, which address specific demands and problems in the Indian market.

**5. Digital Ecosystem and Infrastructure:** India's advancement of a strong digital ecosystem and infrastructure has aided in the expansion of mobile payment solutions. The widespread availability of inexpensive smartphones, the growth of mobile internet access, the emergence of digital wallets, and the emergence of payment gateways have all contributed to the creation of an ecosystem that makes mobile payments possible. A larger populace can now use mobile payment systems thanks to the ongoing development of the digital infrastructure.

**6. Consumer Demand and Behaviour:** Indian consumers have embraced mobile payment methods because of their comfort, simplicity, and time-saving advantages. The need for mobile payments has been fueled by our growing

reliance on smartphones and our desire for a frictionless payment experience. Consumer behavior has greatly influenced the development of mobile payment systems, including consumer desire to experiment with new technologies and acceptance of digital lifestyles.

The knowledge, confidence, and ease of use of mobile payment systems in India have all been significantly aided by these contributors of the society. These initiatives have improved the accessibility and value of mobile payments for all societal groups by removing barriers and empowering individuals, hence fostering a more diverse and digitally enabled economy.

## **CONCLUSION**

Digital payment systems have expanded quickly across the globe, revolutionizing how consumers conduct purchases. These systems allow consumers to conduct financial transactions online utilizing a variety of tools, including mobile wallets, internet banking, and contactless payments. Digital payments are increasingly being used because of how easy and secure they are. PayPal, Alipay, WeChat Pay, and Apple Pay are major players in the worldwide digital payment ecosystem. Governments and financial institutions are supporting digital payment networks as a way to increase financial inclusion and decrease dependency on cash.

Digital payment systems are anticipated to keep growing and change the way that people transact financially in the future as a result of the proliferation of smart phones and rising internet usage. Mobile payment systems in India have become a practical and secure method for carrying out transactions with cell phones. They have seen incredible growth as a result of several circumstances. These systems, which were first presented as mobile wallets, have developed into extensive digital payment platforms.

The advent of mobile payment systems in India, along with elements like government incentives, technology breakthroughs, and user-friendly interfaces, has spurred their expansion and altered the way money is exchanged in the nation. The joint efforts of the government and society as stakeholders are responsible for the success of mobile payment systems in India. Through legislative efforts and regulatory frameworks, the government has played a critical role in fostering an environment that is conducive to the expansion of mobile payments. The National Payments Corporation of India (NPCI) changed the game when it introduced the Unified Payments Interface (UPI), providing a standardized platform for easy and secure transactions. The

government's Digital India initiative has also increased understanding of and encouraged the use of digital payment methods, promoting financial inclusion and lowering reliance on cash.

Involvement of society as a whole has been crucial to the development of mobile payment systems. Mobile payment apps have been growing as a result of consumers' and businesses' growing acceptance and use of them. The widespread use of mobile payment systems has been facilitated by society's confidence in and readiness to accept digital payment solutions. A further factor driving mobile payment providers to continuously innovate and enhance their services is the desire from society for convenience, usability, and secure transactions. In India, the development of mobile payment systems has been aided by cooperation between the government and the general public as stakeholders. A supportive environment for the expansion of digital transactions has been established through the government's regulatory initiatives, infrastructure improvement, and societal acceptance and adoption. Future improvements to India's mobile payment systems' accessibility, security, and dependability will depend heavily on continuing collaboration between the government, industry stakeholders, and the society.

Even after mobile payment systems in India achieved tremendous success, there are still a number of obstacles preventing their widespread adoption and utilization. The existence of a digital gap, in which a sizeable percentage of the population still lacks access to smart phones and dependable internet connectivity, poses a serious obstacle to their ability to engage in digital commerce. Additionally, many groups' low levels of digital literacy make it challenging for them to comprehend and utilize mobile payment services efficiently. Maintaining user trust requires addressing security issues like fraud and data breaches, which pose another difficulty. Mobile payment systems may not operate as smoothly as they could due to infrastructure restrictions, such as poor network coverage and connectivity problems.

Assuring platform compatibility and promoting merchant acceptance, particularly among smaller enterprises, are further ongoing concerns. And last, the Indian economy's pervasive reliance on cash continues to be a barrier to the adoption of digital payments. In order to overcome the current obstacles and fully realize the potential of mobile payment systems in India, it will be necessary for the government, regulators, financial institutions, technology providers, and the general public to work together to improve infrastructure,

encourage digital literacy, strengthen security measures, reward merchants, and drive financial inclusion.

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