

Embracing Contactless Payments: A Study of Adoption, Usage Patterns, and Impact

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Abstract: *In recent years, contactless payment methods—powered by technologies like Near-Field Communication (NFC), mobile wallets, and QR codes—have seen a major uptake and revolution. An overview of the main features of contactless payments is given in this abstract, with particular attention to acceptance, security, technology, and societal impact. Because contactless payments are quick, easy, and in line with the global trend toward digital and cashless transactions, they have become more and more popular. Because these methods are simple to use and eliminate the need for real currency and traditional payment cards, consumers are adopting them more and more. Their acceptance was sped up by the COVID-19 epidemic as people looked for safer and more hygienic cash substitutes.*

Keywords: NFC, Mobile Wallets, QR Code, Contactless Payments

I. INTRODUCTION

Contactless payments refer to a fast and secure method of making transactions, typically for goods and services, where the payment is initiated by waving, tapping, or scanning a contactless payment device, such as a credit card, debit card, smartphone, or wearable, in close proximity to a contactless-enabled point-of-sale (POS) terminal. Contactless payments are distinguished by their smooth, "no-touch" experience, which facilitates speedy and effective transactions without requiring physical contact or money exchanges.

Contactless payment uptake has been accelerated by a number of factors. First and foremost, customers looking for efficiency in their daily lives are drawn to the ease with which they may make quick and simple payments without using cash or real credit cards. Furthermore, users who were previously apprehensive about the security of their financial transactions now feel more confident due to the use of security measures like tokenization and encryption. Furthermore, as consumers looked for hygienic alternatives to handling cash and touching payment terminals, the COVID-19 pandemic hastened the spread of contactless payments.

The impact of this shift extends beyond convenience and hygiene. Contactless payments are reshaping the financial landscape, leading to the decline of cash usage and altering the way businesses and financial institutions operate. Traditional banking services and ATMs are adapting to this change, and the financial industry is exploring innovative solutions to meet the evolving needs of consumers.

In this digital age, contactless payments represent a milestone in the evolution of financial technology. As they continue to gain momentum, it is essential for businesses, consumers, and policymakers to understand and embrace the possibilities and challenges that contactless payments present. This introduction sets the stage for a deeper exploration of this transformative payment method and its implications for the world of finance.

Objective

- To study the adoption and usage of mobile wallet apps and their impact on contactless payment adoption.
- Evaluate the impact of the COVID-19 epidemic on the adoption and use of contactless payments, as well as any enduring modifications in behaviour.

Methods of Contactless Payments

Contactless payments refer to transactions made without physical contact between the payment device (such as a credit card, smartphone, or wearable) and the point-of-sale terminal. There are several types of contactless payment methods, each utilizing different technologies:

Contactless Cards: These are credit or debit cards embedded with a near-field communication (NFC) chip that allows users to make payments by tapping the card against a compatible card reader. The transaction occurs wirelessly, without the need to swipe or insert the card into the reader. Contactless cards typically have a symbol that looks like a series of curved lines, indicating their ability to perform contactless transactions.

Mobile Wallets: Mobile wallets are smartphone applications that store payment card information digitally. They enable users to make contactless payments by holding their smartphone or wearable device near an NFC-enabled terminal. Examples of mobile wallets include Apple Pay, Google Pay, Samsung Pay, and others. These wallets may use NFC technology or other proprietary systems to facilitate payments.

Wearable Devices: Some wearable devices, like smartwatches or wristbands, are equipped with contactless payment capabilities. They function similarly to mobile wallets, using NFC technology to conduct transactions. Users can load their payment card information onto the wearable device and tap it at contactless payment terminals to make purchases.

QR Code Payments: While not based on NFC technology, QR code payments have also become a popular form of contactless payment. Users scan a QR code displayed at the point of sale using their smartphone camera within a payment app to initiate the transaction. The code contains payment information that the app reads and processes to complete the payment.

Biometric Payments: Biometric technology, such as fingerprint or facial recognition, is increasingly being used as a form of contactless payment authentication. Some mobile wallets and payment systems allow users to confirm transactions by using their biometric data, enhancing security and convenience.

These various forms of contactless payments have gained traction due to their convenience, speed, and enhanced security features. The flexibility and multiple options available cater to different preferences and technological capabilities, contributing to the overall rise in contactless payment adoption.

Mobile Wallet

The adoption and usage of mobile wallet apps have undeniably catalyzed the widespread acceptance and utilization of contactless payments. These digital wallets, residing on smartphones and other devices, have revolutionized how individuals manage their payment methods. By providing a centralized platform to store various cards—credit, debit, loyalty, and even gift cards—mobile wallets offer unparalleled convenience and accessibility. Leveraging technologies like Near Field Communication (NFC), these apps enable seamless contactless payments, allowing users to simply tap their devices on compatible terminals, expediting transactions and enhancing the overall checkout experience.

In India, several mobile wallets are widely used due to the country's emphasis on digital payments and financial inclusion. Here are some popular mobile wallet examples used in India:

Paytm: One of the most widely used digital wallets in India, offering a range of services such as bill payments, mobile recharges, ticket bookings, and online shopping. Paytm also offers a payment bank and financial services.

PhonePe: A popular UPI-based (Unified Payments Interface) app that allows users to send and receive money, pay bills, recharge mobiles, and make payments at various merchants. It's known for its user-friendly interface and quick transactions.

Google Pay (formerly Tez): Google's mobile payment app that uses UPI to enable secure money transfers, bill payments, and online purchases. It's known for its simplicity and integration with other Google services.

Amazon Pay: Integrated with Amazon's e-commerce platform, Amazon Pay is used for payments on Amazon and other merchant websites. It also offers cashback and other incentives for transactions.

MobiKwik: A digital wallet and payment platform offering services like mobile recharges, bill payments, peer-to-peer money transfers, and the ability to make payments at various merchants.

FreeCharge: Known for its focus on providing cashback offers, FreeCharge allows users to recharge mobile phones, pay utility bills, and make payments at partner merchants.

Airtel Money: Offered by the telecom company Airtel, Airtel Money allows users to recharge mobiles, pay bills, transfer money, and make purchases.

Ola Money: Associated with Ola, a popular ride-hailing service in India, Ola Money allows users to pay for rides, as well as recharge mobiles, pay bills, and make online payments.

JioMoney: Offered by Reliance Jio, this mobile wallet allows users to recharge their Jio connections, pay bills, send money, and make payments at various partner outlets.

These mobile wallets in India vary in features, partnerships, and the services they offer. They play a crucial role in facilitating digital transactions, contributing to the growth of the country's digital economy.

Impact of Contactless payments

Contactless payments have had a significant impact on various aspects of financial transactions, consumer behaviour, and the overall economy. Some of the notable impacts include:

Convenience and Speed: Contactless payments have revolutionized the way transactions are conducted, offering a faster and more convenient method of payment. Tapping a card or mobile device on a reader significantly reduces transaction time, especially for small purchases, compared to traditional methods such as chip-and-PIN or cash transactions.

Increased Adoption of Digital Payments: Contactless payments have played a pivotal role in the adoption of digital payment methods. The ease of use, combined with their speed and efficiency, has led to a shift away from cash transactions, promoting a more cashless economy.

Hygiene and Safety: The COVID-19 pandemic accelerated the adoption of contactless payments due to their touchless nature, reducing the need for physical contact during transactions. The perceived hygiene benefits drove both consumers and businesses to favour these payment methods, leading to a further decline in cash usage.

Business and Retail Transformation: Many businesses and retailers have adapted to accommodate contactless payments, providing contactless readers and improving their infrastructure to meet the growing demand for this payment method. This has led to more efficient and streamlined checkout processes.

Consumer Preference and Behaviour: Contactless payments have influenced consumer behaviour, leading to increased expectations for seamless and easy payment experiences. Users now seek out businesses that offer contactless payment options, influencing their purchasing decisions.

Security and Fraud Prevention: Contactless payments have introduced additional security measures such as tokenization and biometric authentication, making transactions more secure. While no payment method is entirely immune to fraud, contactless payments have added layers of security, reducing certain types of card-present fraud.

Encouragement of Innovation: The rise of contactless payments has encouraged innovation in the financial technology sector, leading to the development of mobile wallets, wearables, and other devices capable of facilitating contactless transactions. This innovation continues to evolve, offering more convenient and versatile payment options.

Global Impact: Contactless payment adoption has expanded globally, allowing travelers to use their preferred payment methods in different countries, further reducing the reliance on traditional cash transactions.

Impact of Covid-19 on Contactless Payments

The COVID-19 pandemic triggered a remarkable surge in the adoption and use of contactless payments, catalysing enduring changes in consumer behaviour. Faced with health concerns over physical contact with surfaces like cash and payment terminals, individuals swiftly shifted to touchless payment methods for their perceived safety and hygiene. This accelerated adoption was supported by regulatory bodies and governments worldwide, urging the use of contactless transactions to curb the spread of the virus. Consequently, a fundamental shift occurred in how people conduct financial transactions, fostering a long-lasting preference for contactless payments. Businesses also swiftly adapted, upgrading their systems to accommodate touch-free transactions, a move that not only aligned with consumer preferences but also modernized their service offerings. As a result, the pandemic not only accelerated the acceptance of contactless payments but also fundamentally reshaped consumer behaviors, with the convenience, perceived safety, and versatility of these methods cementing their place as the go-to payment option even beyond the immediate crisis. This enduring change has significantly transformed the payments landscape, emphasizing a continued reliance on contactless payments as a pivotal aspect of everyday commerce.

II. LITERATURE REVIEW

(Raenu Kolandaisamy, 2020)

Claims that E-wallets are becoming increasingly popular due to the convenience of using an E-wallet or making a payment in this fast-paced world. Regardless of technological advances, many customers prefer cash in hand to the conventional method because they believe cash in hand is more secure than an E-wallet. This is the perspective of the

older generation in comparison to the younger generation. Everything, like everything else, has advantages and disadvantages. As wise users, we must make the appropriate decisions and be aware of the E-wallet that we use.

(Thirupathi Manickam, Vinayagamoorthi Gomathinayagam, 2019)

The use of digital payment apps is becoming more common in our country, with 440 percentage points increasing since demonetization in 2016. According to the Reserve Bank of India (RBI) and the National Payments Corporation of India (NPCI), cashless transactions have increased in common channels such as NEFT, Mobile Wallets, Mobile Banking, BHIM, Banking Cards, and Internet Banking, among others. Internet, mobile, Android, and iOS are the most important requirements for any digital payment software to conduct any transactions. In recent days, the number of users has been expanding day by day, with more young and adults, particularly the use of digital payment apps by students and employees in the government and business sectors. Overall, all digital payment applications benefit users in terms of speedy payment, avoiding physical cash, saving time, high security payment, receiving discounts and offers, easy recharge, and green payment system, among other things.

(Camara, 2021)

The aftermath of the COVID-19 outbreak has given a significant boost to the world's rapidly rising digital payments. People of all ages appear to be adopting and using contactless payments in order to minimize the transmission of the virus through contact payments. As a result, consumers with contactless payment systems may prefer to make purchases and boost their traffic at establishments who use this technology to avoid physical touch, which is how the coronavirus spreads.

(Chetan Srivastava, 2021)

Contactless payments gained popularity at COVID-19 since they are the safest method of payment. During COVID-19, we used UTAUT2 and protection motive theory to better study user behaviour toward contactless payments. The following factors were investigated as antecedents of user adoption intention: effort anticipation, social influence, trust, perceived vulnerability, perceived severity, self-efficacy, and response efficacy. The study's findings found that, with the exception of social impact, all factors had a substantial effect on the intention to use contactless payments. The study made recommendations for both academics and practitioners.

III. CONCLUSION

The study illuminates a rapid shift towards these innovative payment methods, fuelled by their efficiency, convenience, and hygiene considerations. This evolution is reshaping the traditional payment landscape, fostering an increasing preference for digital transactions and accelerating the move towards a cashless economy. Notably, the study emphasizes the significant impact on consumer behaviour, where contactless payments have become the favoured choice, not only for their ease of use but also for their perceived safety amidst the challenges posed by the COVID-19 pandemic. Moreover, businesses are rapidly adapting to this evolving payment preference, aligning their operations to accommodate contactless transactions, thereby enhancing customer experiences and streamlining their services. Security enhancements embedded within contactless payment methods, such as tokenization and biometric authentication, have bolstered trust and confidence among users, contributing to widespread adoption. The study also points out the emergence of innovative trends in financial technology, promising a future of even more versatile and secure payment solutions.

Ultimately, the study's findings illuminate the far-reaching implications of the contactless payment revolution. Its impact on consumer behaviour, business practices, and the broader economy is undeniable, signalling a transformative shift in the way transactions are conducted. As this trend continues to evolve, contactless payments stand poised to play an increasingly central role in the future of commerce, driving the ongoing digital transformation of financial transactions