

## DIGITAL PAYMENTS IN INDIA- A COMPREHENSIVE ANALYSIS

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### Abstract

*Digital payments are a way to transfer money or digital currency between two parties using a digital device or platform. They can be made online or through mobile devices. Digital payments have revolutionized the way we transact, making it easier, faster, and more secure than traditional cash-based methods. These payments involve the electronic transfer of funds, typically using a digital device like a smartphone, tablet, or computer. This paper attempts to understand the basics of digital payments in India with an insight of all the basic terms and concepts including the widespread of digital payments in recent times. It can be absolutely concluded that this new age technology transforms the financial sector globally.*

### Introduction

The transmission of funds via a digital device or channel from one payment account to another is known as a digital payment, commonly known as an electronic payment. Digital payments are electronic financial exchanges that take place via the Internet or other electronic devices, displacing physical currency and enabling both individuals and businesses to send and receive money. Electronic payment systems, smartphone apps, and other web platforms are used to enable these transactions. Using a digital device or platform, digital payments are a means of transferring money or digital currency between two parties. Mobile devices or the internet can be used to make them. Digital payments have completely changed how we conduct business, making it simpler, faster, and more secure than traditional cash-based methods. These payments involve the electronic transfer of funds, typically using a digital device like a smartphone, tablet, or computer. In our ever-changing world, digitalization is transforming payment transactions at a rapid pace, thanks to innovative digital payment technologies. Could anyone has predicted ten years ago that we would be making payments using advanced digital payment solutions through our phones or watches? Over the years, digital payments have progressed significantly, moving from traditional methods to advanced, technology-driven solutions.

### **Key participants in digital payment systems**

- The consumer
- The merchant
- The issuer bank (the consumer's bank that issues their credit or debit card)
- The acquirer bank (the merchant's bank that receives the funds from digital transactions)

During a digital transaction, payment gateways verify the customer's balance or credit limit associated with their bank account to process a payment request.

### **Advantages of Digital Payment Methods**

The emergence of digital payment methods has significantly transformed the payment and banking experience for consumers, contributing to the development of a cashless economy. Here are some of the primary benefits of utilizing digital payment methods:

1. Digital payments offer a convenient way to settle payments for goods and services, granting users the flexibility to conduct banking activities round the clock and eliminating the necessity of handling physical currency, which are clear advantages. Users perceive digital payments as a safer alternative to cash, mainly due to the reduced risk of losing money to theft or pickpocketing. (Agarwal, et al.). 2019, March
2. Expedite Financial Inclusion- Digitalization of payment systems accelerated the process of financial inclusion the government and RBI's initiative to offer basic electronic banking services to all the citizens of the India as a part of financial inclusion (Roy, 2017). Remote areas can receive financial services with the help of mobile technology and e-wallets (Sinha & Shanakar, 2017).
3. Driving Cashless Economy- The initiative of cashless India will not only boost the economic growth but also a drive to restrict the circulation of black money and fake currency (Garg, & Panchal, 2017)
4. Maintaining expenditure records, tracking payments, and planning the budget of the user is made easier with digital payment methods. Users are offered discounts and cashbacks by the government to encourage the use of digital payment methods.
5. Rewards are being provided by the government to promote the adoption of digital payment methods, including discounts and cashbacks.

### Challenges of Digital Payment Methods

Challenges are the part of every technological advancement. In implementation of technology in banking sector has many prominent challenges are:

1. The security of the digital payment landscape is crucial. Establishing stringent regulations is necessary to build trust in the use of technology in banking and encourage the expansion of digital banking (Vally & Divya, 2018).
2. Trust- Using devices like desktops, laptops, and smartphones for banking is hindered by a lack of basic knowledge, trust in technology, and security concerns, which are the main obstacles in digital payment methods. (Barik & Sharma, 2019).
3. Literacy level and digital literacy- Barriers to the adoption of digital payments in India's remote rural areas include low literacy levels and the slow development of digital infrastructure (Manju, 2017 and Singh & Malik, 2019). This indicates dire need to re-think about the program and rearrange priorities to realise the dream of digital India (Rana et al., 2018).
4. As the country shifts towards cashless transactions, cyber security is becoming increasingly important. The rise in online fraud, information theft, and virus threats has increased the vulnerability to cyber-crimes. Those involved in digital payment systems are particularly concerned about cyber security. It is essential for the RBI and the government to guarantee a strong security system for digital transactions (Ashwani & Nataraj, 2018). All citizens of India have access to electronic banking services as part of financial inclusion. The use of mobile technology and the rise of e-wallets now allows for the provision of financial services in remote areas.

### Types of Digital Payments in India

**1. Banking Cards:** With a number of features for user convenience and security, banking cards are a popular digital payment method in India. They can be saved in mobile applications for convenient access when making payments for services, and they offer the flexibility to support a variety of digital payments. Debit and credit cards can be used for a variety of digital transactions, including those made through PoS terminals, online stores, and mobile apps that allow users to pay for services like reserving a taxi, groceries, healthcare, and airline tickets. The most widely used cards are issued by payment processors including AMEX, VISA, MASTERCARD, and RuPay.

**2. USSD (Unstructured Supplementary Service Data):** USSD stands as a well-liked digital payment method, allowing cashless transactions via mobile without requiring a banking app installation. One of the advantages of USSD is its functionality without the need for mobile data. Its primary purpose is to encompass individuals in society who are currently excluded from mainstream services.

One noteworthy feature of USSD is its Hindi language accessibility. The following kinds of activities can be carried out using the USSD:

- a. Starting financial transfers
- b. Asking questions about balance
- c. Obtaining the bank records

**3. AEPS (Aadhaar enabled payment system):** AEPS can be used for any type of banking activity, such as checking balances, making cash withdrawals and deposits, and transferring funds from one Aadhaar to another. A financial correspondent facilitates these transactions, which require Aadhaar verification. The person's Aadhaar must be connected to the bank where they have an account in order for them to use this service.

**4. UPI (Unified Payment Interface):** The latest digital payment standard is UPI, which allows anyone with a bank account to send money to any other bank account via UPI-based apps. Payments using UPI are accepted around-the-clock, every day of the year.

To use UPI services, one must have a bank account and a mobile number registered with that bank account. Payments can be made using a Virtual Payment Address (VPA).

**5. Mobile wallets:** They are a well-liked method of payment where customers load money from debit or credit cards into their virtual wallets to be used for online purchases. Mobile wallets such as PayTM, Mobikwik, and PhonePe are widely recognized.

**6. Point of Sale Terminals :** PoS terminals, which allow users to pay with debit and credit cards, are frequently seen in shops and stores. PoS systems are available in two varieties: mobile PoS and physical PoS. The need for a physical device is removed by the mobile PoS.

**7. Mobile Banking:** Customers can do digital transactions by using the smartphone apps that banks provide for mobile banking. The variety of mobile banking services that are now offered has significantly increased with the advent of UPI and mobile wallets. A variety of services available via smartphones or mobile devices are referred to as mobile banking..

**8. Internet Banking:** Internet banking is using a desktop, laptop, or mobile device with an active internet connection to conduct financial transactions from the comfort of your home. You can use internet banking to perform all main transaction kinds. Online banking is a

preferred choice for digital transactions because its services are accessible around-the-clock, 365 days a year.

### Review of Literature

- 1. Villasenor, West and Lewis (2023)** indicated that the majority of India Post's branches were located in rural areas and that the company had already been effective in raising consumer awareness and fostering a sense of trust among its patrons. Small savings plans, money transfers, and more are just a few of the services that India Post provides. As a bank, they also offer more extensive financial services. Therefore, giving customers access to a digital platform and educating them about the trends in digital services will be of added value to them. Educating the populace that is still outside the financial inclusion net is the main task facing the Indian government and RBI. Advocating for the unbanked through financial literacy initiatives has become an urgent necessity.
- 2. Marina Dsouza (2023)** The emergence of four distinct methodologies has led to the evolution of Fintech in the Indian ecosystem, which is not a miraculous phenomenon. The Unique Identification Authority of India (UIDAI) formalized Aadhaar as a means of granting residents' identities as the first stage. Second, the government's PMJDY (Pradhan Mantri Jan Dhan Yojana) program, which aims to provide bank account facilities to every household and bring all financial segments under one roof. The National Payment Corporation of India, or NPCI, then created the IMPS digital transaction platform. Permitting banks and other financial institutions to innovate through platforms such as Unified Payment Interface was the fourth essential strategy. Due to these strategies, Fintech emerged in India as a cutting-edge digitalization platform.
- 3. Malaquias (2023)** clearly states that the automated payment system created as a result of demonetization is helping to create a biological system that is allowing people to stop using cash. Innovation must happen quickly, financial transactions must be transparent, and benefit providers must take responsibility. The recorder emphasizes that a nation's financial stability arises from the intersection of financial consideration, financial education, and customer assurance.
- 4. Deloitte (2023)** According to the article "Banking Outlook Accelerating the Transformation," banks need to give competitive item offerings, reliable computerized interactions, and sophisticated information analytics in order to target customers successfully. In order to optimize consumer satisfaction and meet their evolving financial demands, sophisticated intelligence must be viewed as the primary point of reference.

**Mishra and Purohit (2023)** The Indian government and Reserve Bank of India's decision to establish Installment Banks as a step toward financial inclusion through mobile phones was noted in their work on "Payment Banks - A Progressive Step in India for Monetary Inclusion," which would encourage people to embrace m-banking and e-commerce in the near future. The experts used Paytm as an example and said that payments made using the Paytm wallet were accepted at corner stores and tea cafes to ease the concerns of the general public. Due the requirement of computerized biological system for vendors as well as consumers in India, 97 percent of the retail transactions are still conducted in cash

### **Research Methodology**

This research is based on the information of sources of data available from various secondary sources.

### **Objectives of the study**

1. To understand the basics of digital payments
2. To elucidate the widespread of digital payments in India
3. To understand recent trends and future of digital payments in India

### **Sources of data:**

The present paper mainly uses secondary data as the research is explicit in nature. A descriptive study was employed in the paper for which qualitative data is made use of.

### **Limitations of the study:**

1. There is no primary data collection made
2. It concentrates only on digital payment system in India

### **Process of making a digital payment**

- When initiating a digital payment, the process usually starts with a customer initiating a transaction, whether it involves buying goods or services online or selecting a digital payment method like credit cards or a mobile device with wallets.
- After the transaction is initiated, the payment information is securely transmitted to the payment processor or acquiring bank for authorization.
- Upon authorization, the transaction is processed by the first payment network or processor, debiting the client's payment account. This step may require communication between various parties, including banks, payment networks, and merchant service providers.

- Settlement typically involves the transfer of funds from the issuer bank to the merchant's bank.
- Once the settlement is completed, both parties receive confirmation of the transaction.



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## Key factors contributing to growth of digital payments in India

### 1. Digital India Program

Launched by the Modi government in July 2015, the Digital India (DI) program aims to use Information Technology (IT) to integrate digital technologies into the public service system, thereby transforming India into a digitally empowered society. The aim was to arm India with cutting-edge technologies and propel the nation into the forefront of the knowledge-based economy. "Digital infrastructure as a fundamental service for every citizen, on-demand governance and services, and digital empowerment of citizens" were the three main vision areas that the DI project concentrated on. The adoption of digital payment options, user awareness, and digital transactions have all benefited from the DI campaign. The Indian government approved the DI initiative's expansion in August 2023, with a total budget of Rs. 14,903.25 crore.

### 2. Rapid Internet Adoption

Internet usage is becoming commonplace in India across all socioeconomic groups thanks to the Digital India program. Having surpassed China as the world's largest internet user base, India quickly adopted financial technology. India's internet sector is dramatically changing the country's economy. Since the development of necessary digital infrastructure and reasonably priced data plans, the nation has fully shifted to the digital economy. The number of internet connections expanded significantly from 610 million to 832.2 million between



2014 and December 31, 2022. Between 2015 and 2021, internet memberships increased by a whopping 200 percent in rural areas and 158 percent in metropolitan areas. Ensuring that every citizen has easy access to high-speed internet was the main objective. The triumph of "Digital India"2030 focused on achieving comprehensive technological development in India..

### **3. Bank Accounts to Every Citizen**

Initiated in August 2014, the Pradhan Mantri Jan Dhan Yojana (PMJDY) is a National Mission for Financial Inclusion aimed at granting inexpensive access to financial services such as Savings and Deposit Accounts (banking), Remittance, Insurance, Credit, and Pension. The goals of PMJDY are to maintain the core values of the program, make financial goods and services accessible at reasonable prices, and use technology to increase reach and cut expenses. A total of 51.04 crore PMJDY accounts with a deposit amount of Rs. 2,08,855 crores were opened as of November 29, 2023. The significant rise in bank accounts is a step in the right direction for the nation's marginalized populations, who include women, those who are not in the workforce, street sellers, people with lower levels of education, and those who are economically disadvantaged. As the Covid-19 epidemic progressed, the

### **4. Use of Mobile Phones**

Currently, India has 600 million smartphone users and over 1.2 billion active mobile phone users. It is anticipated that 1.55 billion people in India will own mobile phones by 2040. Rapid smartphone use has produced a suitable environment for digital payment services, making UPI, QR codes, mobile wallets, mobile banking, and other mobile apps more accessible to India's expanding user base. By connecting bank accounts, Aadhaar, and mobile phone numbers, the Jan-Dhan-Aadhaar-Mobile, or JAM trinity, makes it easier for users to receive direct cash transfers of subsidies. Through this mechanism, recipients have had about Rs. 34 lakh crores, or more over US\$400 billion, immediately deposited into their bank accounts to date. The JAM trio possesses

### **5. FinTech Innovation**

FinTech businesses offer a range of simple options to users, including mobile wallets and P2P and P2M payment platforms. They have also created revolutionary digital payment solutions like RuPay and UPI. FinTech has improved India's Digital Public Infrastructure (DPI), popularly referred to as the India Stack, a public-private partnership-established unified software platform. During the Covid-19 pandemic, the CoWin app allowed the government to provide over 220 crore doses of the Covid vaccine nationwide, making it possible for them to



carry out the greatest immunization campaign in history. FinTech use helps to improve transparency, encourage inclusivity, lessen corruption, and boost public trust in government. Interestingly, India has an acceptance rate of 87% for FinTech, compared to the global average of 64%, showing

## **6. Digital Literacy Campaign**

The Indian government has been concentrating on teaching digital literacy to all residents since 2014, especially those living in rural areas. The goal is to employ digital technologies to enhance people's lives and speed up the adoption of digital technology. Between 2014 and 2016, two programs, the "National Digital Literacy Mission (NDLM)" and the "Digital Saksharta Abhiyan (DISHA)," were implemented with the goal of training 52.50 lakh people. Of those, 53.67 lakh received training, with 42% coming from rural areas of India. Approved in 2017, the "Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA)" program sought to teach 5.68 crore people, enroll over 6.62 crore people, and cover 6 crore rural households. The expansion of digital payments in India has been greatly aided by this effort for digital literacy. The RBI has been carrying out regular

## **7. Availability of Digital Resources across the Country**

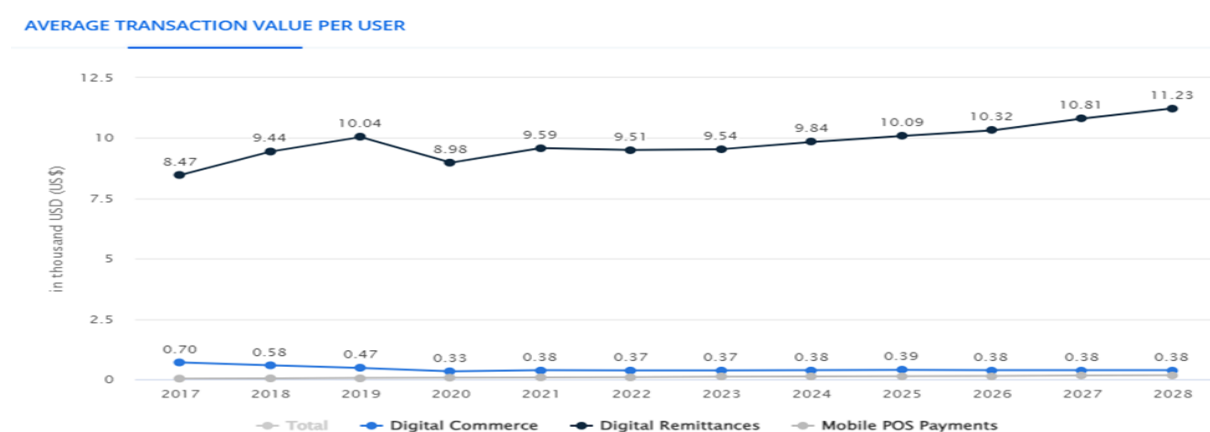
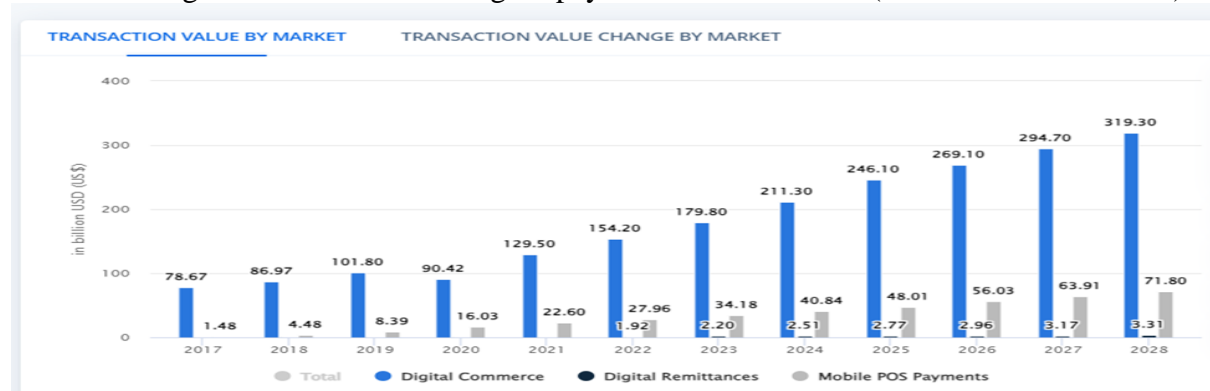
The aim of the 2015 launch of the Digital India initiative was to provide digital infrastructure as a basic service for all Indians. Through cooperative efforts between the government, private sector, startups, and academia, this initiative led to the development and implementation of the India Stack, a collection of digital platforms that include the Aadhaar scheme, DigiLocker, E-Hospitals, E-Pathshala, DigiYatra, UPI, and other technologies. The development of a digital economy and the growth of digital payments in India were greatly aided by the ubiquitous availability of this digital infrastructure across the country. People and companies can now transact in a "faceless, paperless, and cashless" way thanks to the digital economy. Thus, building digital infrastructure across the country to guarantee a practical digital transformation is essential to India.

## **8. Faster UPI Adoption in India**

UPI has revolutionized digital payments in India since its inception in 2016, especially P2P and P2M transactions. In recent years, there has been a notable increase in both transaction volume and value (see Table 1). With a compound annual growth rate of 147%, the volume of UPI transactions increased from 92 crores in FY 2017–18 to 8,375 crores in FY 2022–2023. In FY 2023–2024, the volume reached a peak of 13,115 crores. UPI transactions increased at a CAGR of 168% from Rs. 1 lakh crore in FY 2017–18 to Rs. 139 lakh crores in

FY 2022–2023 in terms of value. [ In FY 2023–2024, the total value of UPI transactions reached Rs. 199.87 lakh crore. In March 2024, 572 banks joined UPI, making it the most widely used.

Chart showing transaction value in digital payments over a decade (amount in billion USD)



Most recent update: Mar 2024

### Table showing users of digital payments

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
<b>Digital Commerce</b>	112.00	148.90	217.40	273.30	338.20	414.50	486.00	555.00	635.70	702.10
<b>Digital Remittances</b>	0.07	0.09	0.11	0.14	0.17	0.20	0.23	0.25	0.27	0.29
<b>Mobile POS Payments</b>	49.76	105.80	152.50	236.80	281.10	300.50	323.20	344.80	366.20	387.30
<b>Total</b>	112.00	149.00	217.50	273.50	338.40	414.70	486.30	555.30	635.90	702.40

### The Digital Payment Technologies

Several digital payment technologies play a crucial role in the operation and security of

digital payments, including:

### **Machine Learning and Artificial Intelligence**

For digital payments to operate and be secure, a variety of digital payment systems are required. These include artificial intelligence and machine learning, which help businesses identify potential fraud by tracking transaction patterns. Furthermore, AI-driven technologies enhance user experience by understanding purchasing patterns..

### **NFC (Near Field Communication)**

NFC enables contactless transactions and easy communication between devices in close proximity while promoting secure communication between them.

If a customer has a smartphone and wants to pay for their coffee, for example, they may do it with ease using Near Field Communication (NFC). This allows the user to send payment information securely through the terminal and complete the transaction without needing to use cash or physical credit cards.

### **MST (Magnetic Secure Transmission)**

Mobile wallets and conventional card readers can communicate with one another thanks to MST technology, a digital payment system that works by using a magnetic signal. Thanks to this technology, digital wallets are now more compatible with both contemporary chip-based card readers and conventional magnetic stripe card readers. For instance, digital wallets may easily interact with classic magnetic stripe card readers thanks to the magnetic signal produced by MST technology, enabling users to conduct safe transactions at both traditional and chip-based card terminals..

### **Predictive analytics**

Utilizing previous data—often in substantial quantities—statistical algorithms are used to produce accurate projections of future performance. This can involve projecting the number of transactions or the likelihood of running into bad debt.

### **Generative AI**

Generative technology driven by artificial intelligence (AI) can generate text, graphics, or other kinds of information, usually from user input. The payments sector uses AI-driven conversational technology to run customer service chatbots and virtual agents, effectively offering helpful support at a little cost..

## Recent Trends in Digital Payments System

### 1. Biometric authentication

Artificial intelligence (AI)-powered generative technology may produce text, pictures, and other types of information, typically from user input. The payments industry effectively provides useful support at a minimal cost by using AI-driven conversational technologies to power chatbots and virtual agents for customer service.

### 2. The EMV technology

Customers now have access to more sophisticated and safe payment options thanks to the growing acceptance of EMV technology (Europay, Mastercard, Visa).

The security of bank accounts is greatly increased by the use of dynamic codes for every transaction in EMV and other forthcoming payment technologies.

This example of a digital payment shows how codes affect bank account system management.

### 3. Mobile point-of-sale (mPOS)

Accepting payments anywhere and at any time will be a major factor driving the use of mobile point of sale (mPOS) systems by 2024. With the use of current payment systems like digital wallets, businesses can easily receive payments from customers using mobile devices like smartphones and tablets using mPOS. Digital payment cards, mobile wallets, wearable technology, and QR codes are just a few of the cutting-edge digital payment methods that mPOS suppliers are combining into small, portable designs. By integrating with accounting and invoicing software and offering offline mode functionality, mPOS enables businesses to process credit card transactions from any location.

### 4. Contactless payments

With contactless payment, customers may pay faster and more conveniently than with cash or a card swipe by just waving their cellphones or cards across the reader. By giving customers contactless-enabled cards, Visa and Mastercard are encouraging the use of contactless payments..

### 5. Buy Now, Pay Later (BNPL)

Because it is affordable and has an easy payback process, the Buy Now, Pay Later (BNPL) option is becoming more and more popular. It allows customers to purchase goods now and pay for them later. By applying BNPL, merchants can enhance sales and revenue, which is an advantage. BNPL is an easy way to help customers, retailers, and lenders alike, and it benefits everyone...

## 6. Real-time payments

Real-time payments revolutionize traditional banking operations by enabling instantaneous fund transfers around-the-clock. This presents an opportunity for organizations to improve customer satisfaction, expedite administrative processes, and manage cash flow more effectively.

## 7. Cryptocurrency adoption

As an alternative to cash, cryptocurrencies like Ethereum, Bitcoin, and others are gaining traction. Because of cryptocurrencies' decentralized structure, lower transaction costs, and promise for faster cross-border payments, both individuals and businesses are adopting and using them as their preferred form of payment..

## 8. Central Bank Digital Currencies (CBDCs)

Central Bank Digital Currencies (CBDCs) have become a significant trend in the world of digital payments. The central bank issues and regulates digital versions of a country's official currency, known as CBDCs. Unlike cryptocurrencies like Bitcoin, CBDCs are acknowledged as legitimate for transactions and are centralized. Enhancing financial inclusion, reducing transaction costs, and providing more control over monetary policy are the main goals of CBDCs.

## Artificial Intelligence (AI) In Digital Payments

Digital payments use artificial intelligence (AI) to improve the efficiency, speed, and security of financial transactions. Artificial Intelligence (AI) uses machine learning, algorithms, and data analytics to spot fraud, automate tasks, and personalize customer experiences.

Artificial intelligence applications in digital payments might vary greatly depending on the features and systems that buyers and sellers use to complete deals. However, AI always prioritizes process automation and increased productivity, regardless of the particular function, following best practices in accounts payment and receivable.

### 1. AI for invoice management

The effectiveness of your accounts payable department can be greatly increased by implementing AI in payment processing. AI is able to extract relevant information from incoming bills and cross-reference it with internal documents like delivery receipts and purchase orders. Additionally, automated workflows can manage payment reconciliation, direct payment requests through required approval processes, and help with reporting duties.

## **2. AI for fraud prevention**

A significant risk that can swiftly reduce earnings and harm your company irreversibly is presented by fraudulent bills and invoicing scams. However, using AI-powered detection technologies offers a big benefit when it comes to confirming the authenticity of incoming invoices. Payment requests that are clearly fraudulent, exaggerated, or duplicate that may have gone unreported in the past can be flagged by these techniques.

Beyond a single invoice, these investigations may also reveal fresh or recurrent trends of unusual spending or buying habits. Since most platforms have learning capabilities built in, AI-driven anti-fraud solutions may more easily adjust to the newest strategies and attack techniques used by fraudsters.

## **3. AI for customer service**

AI or AI-related technologies are frequently utilized in the payments industry for chatbots that provide customer assistance. By helping with typical questions, these chatbots free up the time and resources of your personnel. They can confirm payment details and routing information, allow users to raise issues for further investigation, and update shipping or invoice statuses on a regular basis..

## **4. AI for forecasting**

It is now much easier to make educated guesses about what will happen in the future when predictive analytics is applied. AI is good at finding patterns in your historical payment and sales data that you might not have seen in the past. With the help of this insightful information, firms may increase the efficiency of their focused marketing campaigns and eventually increase earnings. Additionally, the capacity to forecast payment patterns might offer insightful information when deciding whether to grant credit, resulting in more precise risk management..

## **5. AI for process optimization**

Bottlenecks in process optimization can quickly accumulate, disrupting payment procedures and sometimes halting operations. Finding the primary reason for these delays can be difficult. Fortunately, AI is able to identify these underlying problems and offer recommendations for how to change or adapt these procedures in order to expedite the payment process.

## **6. AI for security compliance**

Ensuring secure transactions in accordance with the Payment Card Industry Data Security Standard (PCI DSS) is crucial if you want to continue taking credit card payments. Artificial

intelligence can enhance internal security protocols and lower the likelihood of fraud by being integrated into payment systems. In order to improve know-your-customer (KYC) initiatives, AI may also automate verification procedures. This guarantees that people acting in an ethical manner and providing correct identity confirmations, including customers, agents, consultants, and distributors.

### **RBI Guidelines for Safe Digital Transactions**

The Reserve Bank of India (RBI) has issued comprehensive guidelines regarding digital payment security measures for all banks and regulated entities, ensuring that they implement necessary controls to safeguard the confidentiality and integrity of customer data.

In order to promote secure digital transactions among the general public, RBI has emphasized the importance of users refraining from sharing their card details, passwords, PINs, OTPs, CVVs, UPI-PINs, etc. Furthermore, users are advised to avoid conducting financial transactions through publicly available free Wi-Fi networks and refrain from storing critical banking data on their mobile devices, email, electronic wallets, or purses, as stated by Shikhar Aggarwal, Chairman of BLS E-Services.

- 1) Adding new payees requires specific OTPs from a secondary channel, enhancing the security of the process.
- 2) High-value transactions necessitate new OTPs, thereby bolstering security for significant financial transactions.
- 3) There is strict management of the time limit for OTPs to minimize the risk of misuse.
- 4) The utilization of digital signatures and Key-based Message Authentication Codes (KMAC) is implemented to identify and prevent unauthorized transactions.
- 5) Customers are educated about their rights under the Consumer Protection Act and are made aware of the responsibilities and risks associated with internet banking.
- 6) Customers are informed through an alternate method for transactions exceeding a value specified by the customer.
- 7) Customers are instructed on how to respond to SSL or EV-SSL certificate alerts to prevent falling victim to phishing. An SSL certificate error occurs when a web browser is unable to verify the installed SSL certificate on a website.
- 8) Systems are being introduced to analyze transaction patterns and flag any unusual activities, ensuring that transactions align with the customer's typical behavior.



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