

## E-Payment: Growth and opportunities in India

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### Abstract

E-Payment has transformed the way of monetary transactions across the world. From being secure and convenient, it reduces processing cost, boosts e-commerce and improves financial inclusion. Open banking and real time real time payment system is made possible with the introduction of e-payment. Government of India and different stakeholders such as banks, fintech and IT companies have put their efforts in converting India into a cashless economy. Many new mechanisms of e-payment have been launched in recent past such as UPI, Bharat QR and BHIM Pay etc. to facilitate use of e-payment in India. This paper highlights different mechanism of e-payment and its growth in term of volume and value of transaction. The study finds that new technological adoption, and different initiatives taken by Government of India and RBI resulted into greater acceptability and deeper penetration of e-payment in India.

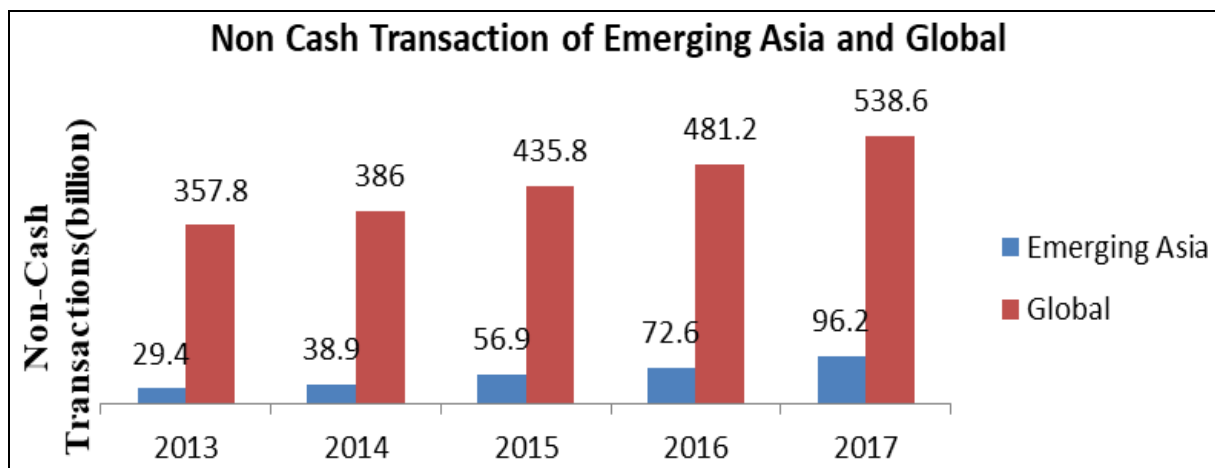
**Keywords:** E-payment, cashless, E-banking, digital, E-commerce

### Introduction

E-Payment is the exchange of money in electronic form over an electronic platform. With the developments in ICT there is a shift in business environment from traditional to online business. There is a change in world business environment with the advancement of ICT and digital innovation, whereby there is a shift in business transactions to electronic ones from cash based transactions (Al-Laham *et al.*, 2009) [2]. Electronic payment can be defined as a platform that is used for making payments of goods or services purchased online through the use of internet (Roy & Sinha, 2014) [19]. Growth and up gradation of electronic payment system (EPS) led to expansion of e payments to new heights, and facilitated in expansion of e commerce Shon and Swatman (1998) [22] define e-payment as exchange of funds through an electronic communication channel. E Payment is integral part of e commerce and there is delivering of payment in most convenient, fast and secure way. E-payment facilitates small payments, reduce processing cost, and boost e commerce. E-payment systems

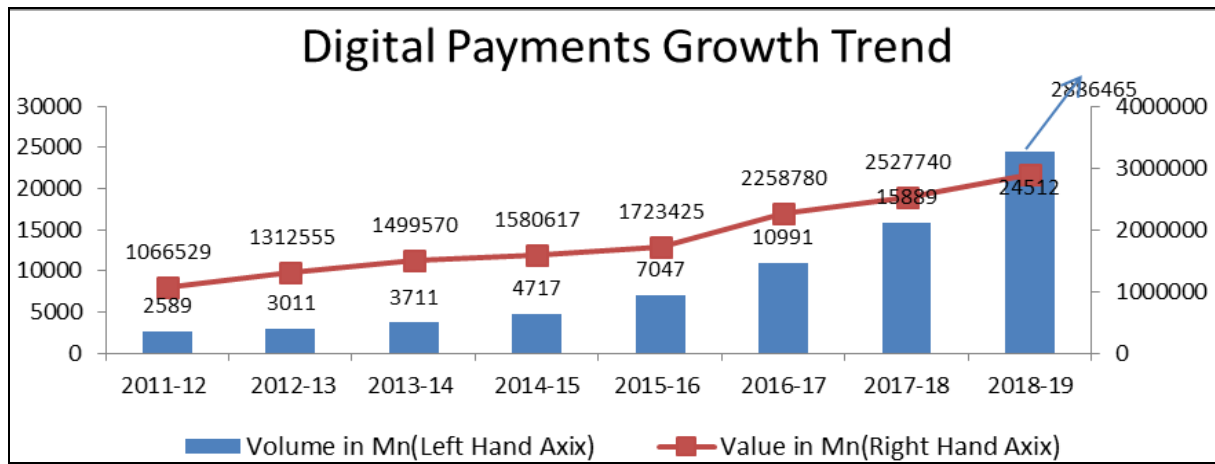
are important mechanisms used by organizations and individual as a convenient and secure way of making payments (Slozko & Pelo, 2015) [21]. Government and regulatory bodies are encouraging for e-payment adoption and are developing safe, secure and reliable ecosystem for the same. E-payment adoption is increasing in public sector from direct benefit transfer to beneficiaries as well as in business organisations for making online payments. Growth drivers in e-payment sectors include ease of payment, internet and smartphone penetration.

India is evolving as one of the leading country in term of growth and expansion of e-payment. According to Capgemini's World Payment Report (2019), emerging Asia that include India, China, Hongkong and other Asian markets contribute to record 32% growth in global non cash transaction volume during 2016-17 to reach 96.2 billion, at a CAGR of 34.5 per cent Graph [1]. While globally it grew from 357.8 billion to 238.6 billion at a CAGR of 10.8 per cent during 2013-2017.



Source: Capgemini's World Payment Report, (2019)

Fig 1: Non-cash transaction of emerging asia and global



Source: RBI Annual Reports (Various Issues)

Fig 2: Digital Payment Growth Trend in India

The volume of overall payments shows a significant increase in India over the period 2011-12 to 2018-19, recording a compound average annual growth rate (CAGR) of over 39 per cent. Graph [2] indicates the trends in Digital Payments over the period of 2011-12 to 2017-18. In the year 2016-17 volume of overall payments increased by over 56 per cent, highest during the period, moderate in 2017-18 with growth rate of 45 per cent and again a surge of 54 per cent in 2018-19. Value of overall payments from 2011-12 to 2018-19 increased at CAGR of 15.28 per cent. Annual growth was highest at 31 per cent in 2016-17, highest in this period and subsequently in year 2017-18 it slowdown to growth rate of 11.9 per cent. In 2018-19 there is again a surge in growth rate from previous year to 14.19 per cent. This reflects that customers are shifting toward e-payment at a faster rate.

For India, digital payment transaction turnover vis-a-vis GDP (at market prices-current price) in the year 2018 increased to 8.42 from 7.85 in 2017 and is expected to increase 14.80 in 2021 (RBI, Payment & Settlement Systems in India: Vision-2021). RBI High Level Committee on Deepening of Digital Payments find that Annualized Per Capita Transaction Volume in India increased from 2.38 in March, 2014 to 22.42 in March, 2019, further RBI and Government aim this to reach 220 with right enabling measures by Mar 2021.

### Objectives of the Study

To know the different mechanism of e-payment methods in India.

To study the growth of e-payment system in India.

### Research Methodology

This study is based on secondary data and data has been extracted from sources like government publications, research journals, periodicals, magazines, websites and newspaper articles.

### Review of Literature

E-payment is any form of fund exchanged through the use of internet, or payment system used for buying and selling of goods offered through internet (Peter & Babatun, 2012)<sup>[12]</sup>. It refers to transactions associated with cash and implemented through electronic means (Humphrey & Hancock, 1997)<sup>[5]</sup>. Premchand and Choudhary, (2015)<sup>[13]</sup> argue that e-payment system provide many electronic mode

of payments such as online banking, debit card, credit card and mobile banking that financial institute offer to its customers, and improve liquidity and credit. They also argued that adoption of e-payment significantly improved the scale of goods and services. Fetu, (2019)<sup>[4]</sup> conclude that e-banking provide numerous benefits to banks including attracting new customers, reducing burden on employees, cost reduction and increase in revenue. They also concluded that time saving, 24- hour banking access and convenience are among the benefits that e- banking provides to customers. ICT rapid changes has made e banking the best channel for banking services to consumers, and due to strong impact of online banking on business performance, profitability and customer satisfaction, its quality has become a major attention area among researchers and bank (Alhaji *et al.* 2014). Belay *et al.* (2016)<sup>[3]</sup> revealed in their study that e-banking is beneficial for the banks to retain their customers for long time and improve their public image. They suggested for creating awareness about the use of e-banking and improvement in security technologies also. E-Payment improves payment efficiency by reducing transaction cost and enable trade in goods and services of low value, increase convenience by making payment swiftly and remotely (Wondwossen & Tsegai, 2005)<sup>[24]</sup>. Roy and Sinha (2014)<sup>[19]</sup> find a tremendous growth of e- payment in India, but to increase its usage a lot has to be done yet. They also found incentive, innovation, convenience to customer and legal framework are the factors that strengthen e-payment system. A lot of efforts including reforms and sensitization by Government, financial institutions and non-bank payment service providers of low income consumer is required to shift payment system to cashless society (Nwankwo & Eze, 2012)<sup>[12]</sup>. Mathur (2017)<sup>[8]</sup> concluded that, Individuals have greater freedom of paying in e-payment, and, while making e-payment people are not much aware of security concern. Therefore different stakeholders must conduct awareness programme regarding this. Sujith and Julie (2017)<sup>[20]</sup>, find that mobile network expansion, internet and electricity are contributing in expansion of digital payments to remote area. Despite benefits of e-payment, adequate knowledge of ICT among users and security breach remain the concern among individual, organisations and IT experts (Khirun & Yasmeen, 2010). Whereas, lack of consumer trust in initiatives, lack of skilled manpower and frequent disruption of power are among the main hindrances in e-payment development (Wondwossen & Tsegai, 2005)<sup>[24]</sup>.

## Major e-payments options in India

### Banks Cards

Banks cards are the plastic cards issued by banks that enables the customers to access their own fund (e.g. ATM card for saving account) or using a fund up to approved credit limit (e.g. Credit Card) electronically. Earlier

magnetic strip were used in these cards for swapping now these cards are embedded with EMV chips with increased level of security. These cards are widely used for e-commerce purchases by the customers and customers are offered different incentives from banks to use them.

**Table 1:** Growth of Debit Card and Credit Card

Year	Credit Cards Vol (Mn)	Credit Cards Value(bn)	Debit CardsVol (Mn)	Debit Cards Value(bn)
2013-14	509.1	1,540	619.1	955
2014-15	615.1	1,899	808.1	1,213
2015-16	785.7	2,407	1,173.50	1,589
2016-17	1,087.10	3,284	2,399.30	3,299
2017-18	1,405.20	4,590	3,343.40	4,601
2018-19	1,762.60	6,034	4,414.30	5,935
2019-20	2,177.3	7,309	5123.9	8,049

**Source:** RBI Annual Reports, Various Issue

Data of debit card and credit card transaction illustrate that there is an increase in use of bank cards in the past years where credit card volume jumped from 509.1 million to 2177.3 million at a CAGR of 27 per cent from 2013-14 to 2019-20 with a increase in value of transaction from ₹1,540 billion to ₹7,309 billion at a CAGR of 30 per cent respectively during this period. The volume for debit card transactions jumped from 619.1 million to 5123.9 million at a CAGR of 42 per cent during the period 2013-14 to 2019-20 with transaction value increase from ₹955 billion to ₹8049 billion respectively at a CAGR of 43 per cent during this period, indicating that growth of debit card is high as compare to credit card. Table [1] also reflect that transaction per card of credit card was always greater than transaction per card of debit card, suggesting that debit cards are used for low value transaction and credit card for high value

transaction. In the year 2019-20 transaction value of credit cards surpassed debit cards transaction value.

### Unified Payments Interface (UPI)

UPI is banking system where instant real-time fund transfer between two bank accounts can take place on a mobile platform. This interface was developed by National Payments Corporation of India and is regulated by Reserve Bank of India. It is an easy and quick way to send or receive money. Services can be activated on a Smartphone with internet connection, bank account registered mobile and debit card for re-setting MPIN. A range of services like send / Pay Money, account management, transaction history and adding account among many other are provided by bank on this platform.

**Table 2:** Growth Trend of UPI and Debit Card

Year	UPI Vol (in Mn)	UPI Value (in bn)	Debit CardsVol (Mn)	Debit Cards Value(bn)
2016-17	17.9	69	2,399.30	3,299
2017-18	915.2	1,098	3,343.40	4,601
2018-19	5391.5	8,770	4,414.30	5,935
2019-20	12518.6	21,317	5123.90	8,048

**Source:** RBI Annual Reports, Various Issue

No. of Banks lives on UPI increased from 21 in august 2016 to 216 in March, 2021 ("UPI product statistics," n.d.). Transaction volume increased from 17.9 million in the year 2016-17 amounting ₹ 69 billion to 12518.6 million transactions, amounting ₹21,317 billion in the year 2018-19. During the year 2019-20, transaction volume and value of UPI surpassed transaction volume 5123.90million and value 8,048 billion of debit cards, indicating that customers are preferring use of UPI than debit cards.

### NETC

National Electronic Toll Collection NETC was developed by National Payments Corporation of India (NPCI) for interoperable nationwide electronic tolling in India. It offers customer a FASTag that enable him to use it as a payment mode for toll tax at any toll plaza across India. FASTag uses Radio Frequency Identification (RFID) technology for making toll payment directly from the account which is linked to FASTag. It saves fuel and time as the digital payments are made while the customer is in motion and need not to stop at toll plaza.

**Table 3:** Growth Trend of NETC

Month & Year	No. of Banks Live on NETC	Tag Issuance (In Nos.)	Volume (In Million)	Amount (In Cr)
Dec-20	28	22950023	138.41	2303.79
Dec-19	24	11666372	64.33	1256.84
Dec-18	22	3821564	24.21	534.11
Dec-17	12	915205	12.29	319.82
Dec-16	4	208761	3.19	88.12

**Source:** NPCI, NETC Product Statistics

There is a significant increase in number of FASTag issued, from 208761 in December 2016 to 22950023 in December 2020. Govt. of India has also made it mandatory to use FASTag at toll plaza from December 2019, that will boost e-payment with lower fuel wastage and less traffic jams at toll plaza.

### BHIM (Bharat Interface for Money)

**Table 4:** Growth Trend of BHIM

Month	No. of Banks live on BHIM	Volume (in Mn)	Amount (Rs. in Cr.)
Dec-16	31	0.043	1.85
Dec-17	65	9.066	3083.21
Dec-18	109	17.06	7,589.19
Dec-19	128	17.82	6,316.37
Dec-20	165	24.71	7734.19

Source: NPCI, BHIM Analytics

Number of banks live on BHIM increased from 31 in Dec-2016 to 165 in December 2020. There is a significant increase in volume of transaction from 0.043 million to 24.71 million transaction from December, 2016 to December 2020 with an increase in value of transaction from ₹1.85 Cr. to ₹ 7734.19 cr. during the same period.

### Mobile Banking

Mobile banking is a service provided by bank that allows the customers to avail banking facilities at a remote location using a mobile device. Banks provide a banking app for Window, Android and iOS mobile platform.

### IMPS

IMPS is an emphatic tool that offers electronic fund transfer round the clock within bank across India through internet, mobile phone and ATM. It enables the customer to make payments by just using mobile number of beneficiary in a safe and economical way.

**Table 5:** Growth Trend of IMPS

Year	IMPS Vol (Mn.)	IMPS Value (in Bn.)
2013-14	15.4	96
2014-15	78.4	582
2015-16	220.8	1,622
2016-17	506.7	4,116
2017-18	1,009.8	8,925
2018-19	1,752.9	15,903
2019-20	2579.2	23,375

Source: RBI Annual Reports, Various Issues.

Despite increase in other e-payment mechanism Immediate Payment System (IMPS) has shown a continuous growth. Number of member banks for IMPS increased from 59 in Dec-2013 to 638 in March 2021("ProdIMPS volumes | NPCI - National payments Corporation of India product statistics,"n.d.). No. of IMPS transaction increased from 15.4 million amounting to ₹ 96 billion in value to 2579.2million transactions amounting ₹23,375billion value from 2013-14 to 2019-20.

### Internet Banking

Internet banking or e-banking is a banking plat form that enables the customers of bank to conduct a range of banking services using internet from bank's website.

BHIM is a UPI based mobile payment app, developed by National Payment Corporation of India (NPCI) that facilitate e- payment transactions to anyone through bank account, QR code, Mobile Number or by creating Virtual Payment Address (VPA). From sending and receiving payments it provides a range of different features like consolidating payment and receivable in single app, two factor authentication, pay by scanning, and available in different languages etc. naming a few.

### NEFT

National Electronic Fund Transfer is a scheme under which individual, corporate and firm can electronically send money from one bank to any individual, corporate and firm having account in any bank participating in the scheme across India. In NEFT bank facilitates one to one fund transfer to the customers of bank as well as walk in customers who have not account in that bank but their NEFT limit is maximum ₹50000 per transaction.

**Table 6:** Growth Trend in NEFT

Year	NEFT Vol (Mn)	NEFT Value(bn)
2013-14	661	43,786
2014-15	927.6	59,804
2015-16	1,252.90	83,273
2016-17	1,622.10	1,20,040
2017-18	1,946.40	1,72,229
2018-19	2,318.90	2,27,936
2019-20	2744.50	2,29,455

Source: RBI Annual Reports

NEFT system showed a significant increase from 661 million transactions to 2.3 billion transactions at a CAGR of 27 per cent from 2013-14 to 2019-20 the growth in NEFT value rose from ₹ 43786 billion to ₹228 trillion registering CAGR of 32 per cent during the same period. From 2013-14 to 2019-20 percentage increase over the previous year in NEFT volume is increasing at a decreasing rate with highest increase of 40 per cent in 2014-15 and in 2019-20 NEFT register a growth rate of 18 per cent, while growth in term percentage increase over the previous year of NEFT value was highest at 44 per cent in the year 2016-17 and lowest at 1 per cent in 2019-20.

### Unstructured Supplementary Service Data (USSD)

Unstructured Supplementary Service Data (USSD) allows mobile banking transactions without a smartphone or data/internet connection and by using only basic feature mobile phone without any mobile application. It enable to use mobile banking services such as account balance checking, fund transfer, mini bank statement generation and OTP generation among other uses through the \*99# code to every common individual. Banking services can be used by dialling \*99# across all Telecom Service Providers (TSPs). It enable rural area people with no smartphone or internet connection to use e-payments.

### Aadhaar Enabled Payment System (AEPS)

AEPS is a bank led model that allows online interoperable financial transaction at PoS (Point of Sale / Micro ATM) through the Business Correspondent (BC)/Bank Mitra of any bank using the Aadhaar authentication (NPCI). By opening new account in a bank and providing KYC information and Aadhaar linking with bank services like Cash Withdrawal, Cash Deposit, Balance Enquiry, Aadhaar to Aadhaar Fund Transfer, Mini Statement and Best Finger Detection can be availed through this model.

### Micro ATM

Micro ATM is a device that is used for basic banking services by a business correspondent/ bank mitra who act as a bank for customer. Micro ATM operated by BC is usually a low cost device that is connected to banks across the country. Micro ATM perform the transaction like deposit and withdrawal, fund transfer and balance inquiry of funds even if BC is not associated to that particular bank by just identity authentication of customers using customer's UID.

### Mobile Wallet

A mobile wallet is a virtual wallet to carry cash in a digital format by storing information of payment cards on a mobile device. It is an app that can be existing built-in feature of a smartphone or can be installed on a smart phone. Money can be stored in wallet by online money transfer to wallet or by linking debit or credit card information to wallet. Mobile wallet such as Paytm, M-Pesa, Freecharge, SBI Buddy, Mobikwik, mRuppee, Airtel Money, Oxigen, Jio Money etc. provide a wide range of banking services to the customers and plays a vital role in expansion of e-commerce.

### Prepaid Cards

Prepaid card is issued by a financial institution and is not linked to a bank account. You have to load the money in advance into prepaid card before spending through it. Sometime banks offer credit (including overdraft) on prepaid card by covering a fee and making you to repay the same if you opted in to bank's overdraft program. Different types of prepaid cards such as gift card, meal card, travel card etc are offered by banks to their customers.

### Conclusion

Improvement in technological adoption, digital infrastructure and launch of new payment system such as UPI and Aadhaar based payment system and NETC etc. led to growth of e-payment to new heights in India. There is a significant shift from cash to e-payment in term of volume and value of transaction, indicating increase in customer base. Government and regulatory are pushing towards use of e-payment and are developing a safe, secure and reliable ecosystem for the same. This will led to expansion of e-payment and a step forward towards cashless society in India.

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