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Digitalization of Indian Currency: Post Demonetization

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Abstract

An open system demonstrates greater efficiency and fosters a more inclusive environment, thereby appealing to a broader demographic for both economic and political advantages. The evening of November 8, 2016, profoundly disrupted the economy as the high-denomination currency notes of 500 and 1000 were withdrawn from the nation's financial system. The action was sufficiently audacious to attract ongoing critiques. The immediate consequences were evident as the economy experienced a significant loss of control, leading to the disarray of the unorganized sector and businesses, resulting in substantial financial losses and widespread job displacement. The economy experienced a contraction of 1% in its GDP as a consequence of demonetization. The sole system remaining for individuals was to engage in digital transactions and utilize alternative payment methods. Digital payments are undoubtedly essential in today's context, as transitioning to a completely cashless economy presents significant challenges. However, a reduction in cash usage is always a feasible objective. The rise of digital transactions is experiencing an unforeseen acceleration, driven by the expanding array of online payment options available in India. This research assesses the extent of awareness and the perspectives held by customers regarding digital payment systems. The research further elucidates the array of services provided by digital payment platforms tailored to specific user demographics, offering an in-depth analysis of user preferences concerning various modes of digital transactions as observed by world economy. The implementation of demonetization has led to a notable rise in the adoption of digital payment methods, which is a favourable development an approach to address this pressing issue of cash scarcity in the forthcoming years. The payment system necessitates that the end user possesses a fundamental understanding of smartphones or conventional bar phones. Identifying the essential elements that contribute to the widespread acceptance of digital payments among consumers and the general populace is of paramount importance. This indicates that the objective of the study is to identify the factors that impede the adoption of e-wallets in India.

Keywords: *Digital payments, demonetizations, financial system, high-denomination currency notes, cashless economy.*

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Introduction

Digitization refers to the method of transforming information into a format that is comprehensible to computers, wherein the data is systematically arranged into the decimal units like bits. The outcome is the depiction of an object, image, sound, document, or signal (typically an analog signal) through the generation of a sequence of numbers that

delineate a distinct collection of its points or samples. The outcome is referred to as a digital representation, or more precisely, a digital image for the object, and a digital form for the signal. In contemporary applications, the data is represented as binary numbers, enabling efficient computer processing and various operations. However, it is important to note that digitizing fundamentally refers to the transformation of analog source material into a numerical format; utilizing the decimal system or any alternative numerical system that may be applicable. Digital banking represents a transition to online banking, wherein banking services are provided via the internet. The benefits for financial institutions and their clientele include the provision of more efficient and expedited banking services.

Digitalization in banking sector

The origins of digital banking can be traced to the introduction of ATM machines and cards in the 1960s. With the rise of the internet in the 1980s, early broadband facilitated connections between retailers, suppliers, and consumers, paving the way for the development of initial online catalog and inventory software systems. By the 1990s, the internet had become a staple, and online banking began to gain traction. The advancements in broadband and e-commerce systems in the early 2000s culminated in a landscape that closely resembles contemporary digital banking. The subsequent proliferation of smartphones over the next decade enabled transactions beyond traditional ATM machines. Currently, over 60% of consumers favour their smartphones as the primary means for engaging in digital banking.

The current challenge for financial institutions lies in enabling transactions that link merchants with capital via pathways dictated by consumer preferences. These dynamic forms the foundation of customer satisfaction, which can be cultivated through the use of Customer Relationship Management (CRM) software. Consequently, the integration of CRM within a digital banking framework is essential, as it facilitates direct communication channels between banks and their clientele.

The necessity for comprehensive consistency and services tailored for convenience and user experience is evident. The market offers cross-platform interfaces, facilitating purchase decisions influenced by accessible technology, including mobile devices, alongside desktop or Smart TV options at home. To align with consumer expectations, banks must persist in enhancing digital technology that ensures agility, scalability, and efficiency.

In 1994, online banking was integrated into Microsoft Money. One hundred thousand households commence the utilization of online access to their banking accounts. Stanford Credit Union initiates the provision of banking services through their online platform, paving the way for credit unions and banks nationwide.

Banks in India have experienced a profound transformation from traditional banking practices to a more accessible and user-friendly approach to banking. Today, they are positioned for the swift advancement of digital banking. The necessity for computerization became evident in the Indian banking sector during the late 1980s, aimed at enhancing customer service, bookkeeping, and management information system reporting. In 1988, the Reserve Bank of India established a committee focused on the computerization of banks, chaired by Dr. C. Rangarajan. Banks commenced their utilization of information technology with the advent of standalone personal computers, subsequently transitioning to local area network connectivity. As progress continued, financial institutions embraced the fundamental banking platform. Consequently, branch banking evolved into a more generalized form of banking.
The Core Banking Solution (CBS) has empowered banks to elevate the comfort features available to customers, representing a

significant advancement in enhancing convenience through the provision of banking services anytime and anywhere.
Various Core Banking platforms, including Finacle developed by Infosys, BaNCS from TCS, and FLEXCUBE yiflex, have garnered significant popularity.

The advancement of computerization accelerated with the liberalization of the economy in 1991-92. A significant catalyst for this transformation was instigated by the increasing competition posed by private and foreign banking institutions. Numerous commercial banks have begun to transition towards digital customer services in order to maintain their competitiveness and relevance in the evolving landscape.
Financial institutions have reaped numerous advantages through the integration of advanced technologies. E-banking has significantly diminished costs and has facilitated revenue generation through multiple avenues. The quantity of the customer base has expanded due to the ease of access provided by anywhere banking. The process of digitization has significantly minimized the occurrence of errors. Accessing and analysing the data at any time facilitates the establishment of a robust reporting system. The RBI has served as a pivotal authority for banks, shaping regulations and providing recommendations to attain diverse objectives. In India, commercial banks have embraced technological advancements through the mechanization and automation of banking processes. The introduction of MICR-based cheque processing, electronic funds transfer, interconnectivity among bank branches, and the implementation of ATM channels have collectively enhanced the convenience of banking at any time. Robust measures have been implemented by the Reserve Bank of India to enhance the payment and settlement systems within banking institutions.

The Indian government is fervently advocating for the advancement of digital transactions. The introduction of the United Payment Interface (UPI) and the Bharat Interface for Money (BHIM) by the National Payments Corporation of India (NPCI) represents a pivotal advancement in the realm of payment systems. UPI serves as a mobile interface that facilitates immediate fund transfers between accounts across various banks, utilizing a virtual address without the necessity of disclosing the bank account details. Contemporary financial institutions strive to deliver a banking experience characterized by speed, precision, and excellence for their clientele. Currently, the foremost priority for all banks in India is the advancement of digitization.

Financial institutions have reaped numerous advantages through the integration of advanced technologies. E-banking has significantly diminished costs and facilitated revenue generation through multiple avenues. The customer base has expanded significantly due to the accessibility offered by anywhere banking. The process of digitization has significantly minimized the occurrence of errors. Accessing and analysing the data at any time facilitates the establishment of a robust reporting system. The RBI has served as a pivotal influence for banks in the establishment of regulations and the provision of recommendations aimed at fulfilling diverse objectives.

1. To identify the trends of India in digital transformation on banking system in India.
2. To find out the opportunity of Indian banking system got by switching to digitization.
3. To study the world ranking of Indian banking system with the adaptation of digitization.
4. To know the prospective of Indian banking system due to digital transformation.

Statement of the problem:

Financial institutions have embraced the integration of computer technology and, consequently, the evolution towards digital frameworks, though the degree of adoption varies. Simultaneously, they are channelling resources into both tangible infrastructure and human capital to support these developments. Nevertheless, this investment in isolation does not represent the pinnacle of our aspirations. It is essential to periodically assess the transformation arising from the investment to ascertain whether the expenditure has produced concrete outcomes.

Literature review:

Jarunee Wonglimpiyarat (2006) is focused on the advancements in technology and the competencies within the Thai banking sector. The findings indicate that the application of technology within the mass automation framework extends into the smart automation framework, suggesting that the technological transformation in the banking sector is characterized by an evolutionary rather than a revolutionary nature.

Hema Divya and Suma Vally (2018) in the article entitled "A study on digital payments in India with perspective of consumer's adoption" concentrate on examining the extent to which customers have embraced digital payment systems. Data was gathered directly from a sample of 183 individuals in Hyderabad. The data gathered via the questionnaire were subjected to analysis employing the Chi-Square technique. The research indicated that the implementation of technology for digital payments has enhanced the performance of the banking sector and has successfully advanced the objective of a cashless society.

George, A. and Kumar, G (2016) It can be inferred that mobile telephony is likely to spearhead digital advancement in India, considering the preference of the youth for utilizing smartphones rather than enduring lengthy queues for banking services. The prevalence of mobile accessibility, estimated at approximately 90%, is likely to significantly enhance financial inclusion. The prevailing and predictable ubiquity of smartphones across the nation provides a transformative and accessible platform to enhance the reach of banking and payment services.

Costas Lapavitsas and Paulo L. Dos Santos (2008) contended that advancements in technology have Has played a role in the recent evolution of banking practices and principles, yet its effects have been paradoxical. Initially, the costs associated with monetary transactions have diminished; however, the expenses related to investments have escalated, necessitating the provision of a wider array of services. The financial prudence of banks has yet to show any signs of enhancement.

"China and India boast of the highest percentages (55- 60 per cent) of Gen Y and tech-savvy Customers that use financial services from nontraditional firms (The Hindu Business Line, 2017)".

"The administrations of the two nations persist in emphasizing digital initiatives. Consequently, those with advanced technological proficiency will gain increased significance. Cost-effective, compact yet potent computing devices and various handheld technologies, along with enhanced Internet bandwidth, have progressively enabled seamless access to banking services and streamlined banking transactions (The Banking & Finance Post, 2017). The emergence of call centres and phone banking services has significantly enhanced customer convenience. A significant transformation in banking methodologies was enabled by channelling banking transactions through various electronic platforms and by assisting customers in directly accessing their bank accounts".

In their article, G Shainesh and Avijit Choudhary examine the impact of technological innovations and advancements, particularly through the lens of automated teller machines, internet banking, tele-banking, and mobile

banking. The source provided is not valid. Their findings suggest that engaging customers through diverse channels significantly aids in addressing competitive challenges.

Research methodology:

This study is characterized by its descriptive approach and relies on secondary data sources. The information has been meticulously gathered from a range of sources, including scholarly articles, publications issued by the Government of India, various bulletins from the RBI and verified websites.

Digital banking trends in India: After introduction of 'Digital India campaign 2015' the pace of digitalization has grown rapidly and especially in the banking sector has grown sharply in recent times. Now a days people are more comfortable with digitalized format of money transfer interphase. Some trends in digital banking in India are mentioned below:

Increase in Customers: The government's promotion of electronic wallets has significantly facilitated the adoption of technological solutions in financial transactions among the populace. The utilization of credit and debit cards, alongside electronic wallets, is experiencing a swift ascent, a trend that is poised to persist into the foreseeable future.

Chat bots: Chat bots are the facility provided by various companies to assist the users to help. Several financial institutions have already integrated chatbots into their customer service operations. There is a consistent rise in the deployment of chatbots, accompanied by enhancements in their response speed, interaction quality, and the overall calibre of services provided.

Merge Physical and Digital Process: Numerous financial institutions currently provide a hybrid approach, integrating both physical and digital processes for their clientele. Clients had the opportunity to enter the bank and subsequently utilize devices available to execute their transactions. Within the Indian context, one can anticipate a consistent rise in this type of service, particularly in rural regions.

Mobile Technology: The number of mobile phone users are increasing rapidly around the world as per the reports of 'government of India, Ministry of communications, department of telecommunications as on 15 March 2023 total 850.95 million subscribers are using internet in both the areas urban and rural where 343.82 million users are from rural areas and 507.13 million from urban areas. In 2023 internet penetration grew 8% year on year basis and the smart phone market in India is expected to reach 253.28 million users by 2027'. All these is coupled with the affordable and accessible nature of the internet, and it will be beneficial for banking industry to grab the benefits of environmental change by providing waste variety of banking services with the help of internet. Several financial institutions have developed user friendly applications for clients to manage banking transactions via their mobile devices. This trend is poised to persist indefinitely.

End-to-End Digital Banking in India: A significant number of clients are currently employing devices to manage their banking activities. Financial institutions have acknowledged that embracing digitization is the sole path to progress. Consequently, several banks have embarked on a comprehensive journey toward complete digitization, aiming to offer a wide array of services online, thereby facilitating transactions without the use of paper.

The Indian government is fervently advocating for the advancement of digital transactions. The introduction of the United Payments Interface (UPI) and Bharat Interface for Money (BHIM) by the National Payments Corporation of India (NPCI) represents a noteworthy advancement in the realm of payment systems. UPI serves as a mobile interface facilitating instantaneous

fund transfers between accounts across various banks, utilizing a virtual address without the necessity of disclosing the bank account details. Contemporary financial institutions strive to deliver a banking experience that is not only swift and precise but also of exceptional quality for their clientele. Currently, the foremost priority for all banks in India is the advancement of digitalization.

As part of encouraging cashless transactions and transforming India into less cash society, various modes of digital payments are made available for getting this objective rapidly. Online modes for making payments are:

Debit/Credit Card: debit and credit cards termed as plastic money they used as online/offline merchant sale. Transaction limit set by card issuer bank as per the credit worthiness of the customer. In plastic money transactions the card number, CVV no etc. information required for money transfer and sale activities.

RTGS/NEFT: Appropriate for significant digital transactions. The minimum amount for transaction is set at 2 Lakh rupees, without specified upper limit. To proceed, it is essential to provide all the information properly. Immediate Payment Service (IMPS): Ideal for prompt transactions. Transaction thresholds are established at a maximum of 2 Lakh on a daily basis. To proceed, the following information is necessary: A/C no., password, registration, and IFSC code.

Unified Payment Interface (UPI): This type of money transfer interphase is introduced in the year of 11 April 2016 is suitable for instant money transfer. Transaction limits up to 1 Lakh. Virtual payment ID (VPA) of recipient is required.

Unstructured Supplementary Service Data (USSD): This mode of transferring money was introduced by PM of India on 28 August 2014 which is basically feature phones without internet connectivity. Aadhar number, IFSC or code allotted by banks on registration is required.

E-Wallet: First time E-wallet was introduced by coca-cola in the year of 1997, it best suited for small transactions. Transaction limits are set up to rupees 20,000 per month and for those users who updated their KYC is up to rupees 1 Lakh. To proceed login ID is mandatory.

Growth of digital payments:

As per NIC (National Informatic Centre) report "The growth of digital ecosystem in India has been driven by a number of factors, including the government's push towards digitalization, an increase in internet and smartphone penetration, and the rise of e-commerce. The Indian government has been actively promoting the use of digital technologies through various initiatives such as Digital India, Make in India, and Startup India. These initiatives aim to increase the use of digital technologies in various sectors such as healthcare, education, and agriculture, and also to create a conducive environment for start-ups to flourish. The increase in internet and smartphone penetration in India has also played a major role in the growth of the digital ecosystem. According to a report by the Internet and Mobile Association of India, the number of internet users in India is expected to reach 800 million by 2023. This increase in internet users has also led to an increase in the number of mobile wallet users in India, which is expected to reach 900 million by 2025."

Digital Payments in India: An international rating report:

Within the digital payments, retail electronic payments comprising credit transfers {NEFT, fast payments (IMPS and UPI)} and direct debits (ECS, NACH) have shown a rapid growth over the past ten years at a CAGR of 55% and 43% in terms of volume and value, respectively. e-Money issued in the form of

wallet sand prepaid cards demonstrated an increased adoption with a CAGR of 91% and 56% in terms of volume and value, respectively in the past 9 years. As per the reports by RBI India is now leading in digital transformation as compared to various developed and developing countries. Some of the ratings given by various international financial institutions on numerous parameters are given below:

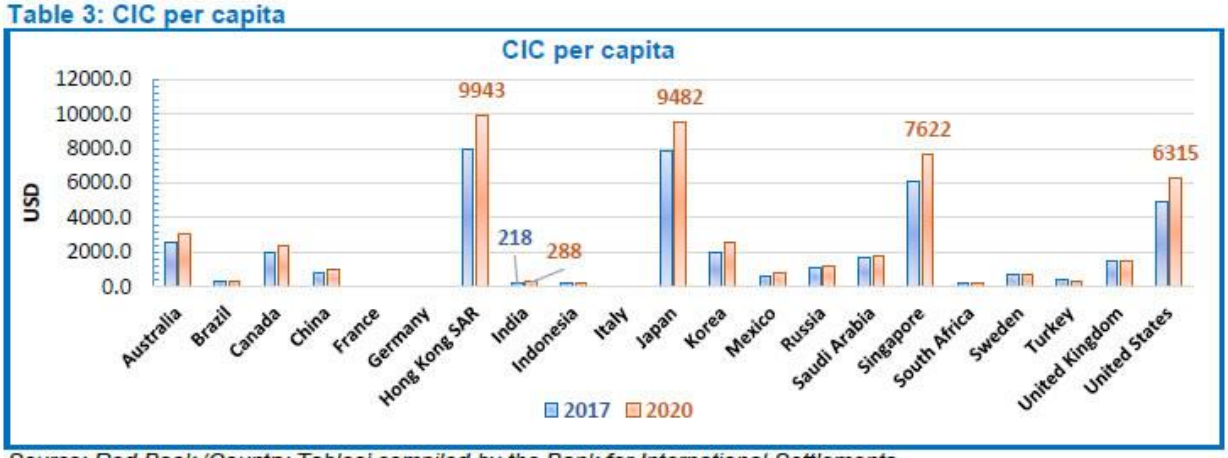
1. **Cash:** cash includes "**Currency in Circulation (CIC) per capita**

   "Key highlights: The CIC per capita in India increased from USD 218 in 2017 to USD 288 in 2020. However, CIC per capita in India continues to be considerably lower than most of the countries included in the benchmarking exercise. The CIC per capita is observed to vary significantly among the advanced economies and emerging economies.

   Benchmark rating: Leader

India's position: 3 / 18

Table 3: CIC per capita



Source: Red Book 'Country Tables' compiled by the Bank for International Settlements

Analysis: CIC per capita provides an indication of the use of cash and hence low levels of CIC per capita imply migration to digital payment modes. However, CIC per capita could also reflect income levels per capita in a country, which is demonstrated by the significant variation in levels of CIC per capita in advanced economies as compared to emerging market economies.

CIC per capita is observed to have increased in most of the countries (except Brazil, South Africa, Sweden, and Turkey) in 2020 when compared to 2017. The increase in CIC per capita in 2020 could be attributed to the holding of cash by individuals due to the uncertainties being experienced during the challenging times of the COVID pandemic.

High level of CIC does not necessarily indicate the usage of cash for payment transactions, and it can represent the use of currency as a store of value. This is demonstrated by the robust demand observed for higher value denomination of currency across jurisdictions, as depicted in table below.

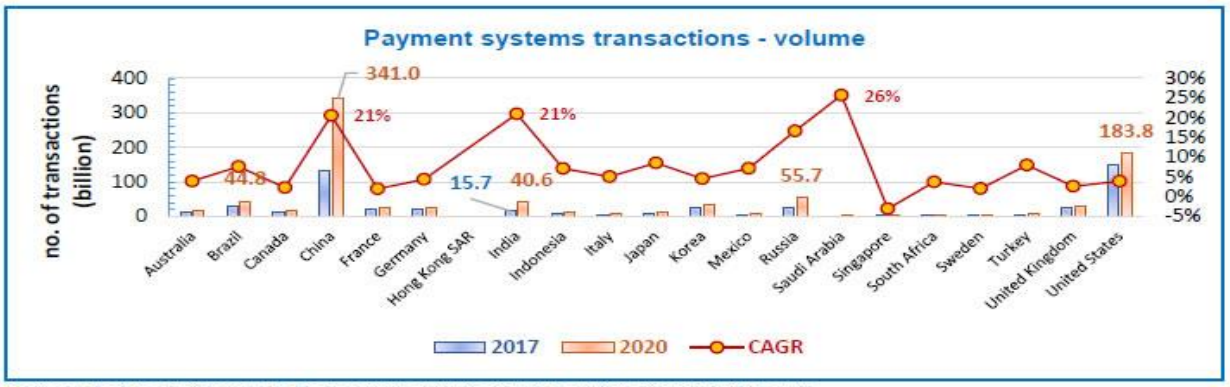
2. **Payment systems transactions:** Payment systems transactions volume and growth

   Key insight: The volume of payment systems transactions in India grew strongly at a CAGR of 21% between 2017 and 2020, indicating rapid adoption of non-cash payment modes. The CAGR observed in India was second highest amongst countries included in the benchmarking exercise, behind only Saudi Arabia (26%).

   Benchmark rating: Volume – Strong; CAGR – Leader

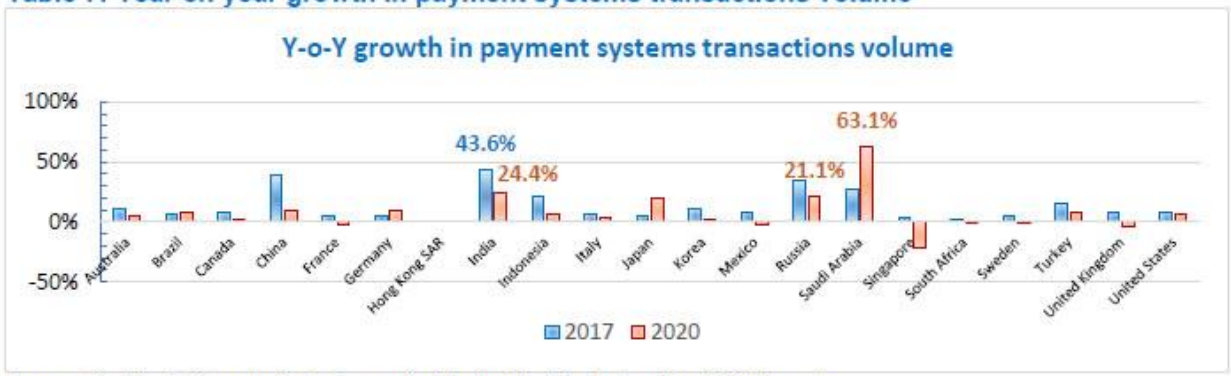
India's position: Volume - 5 / 20; CAGR - 2 / 20; Y-o-Y growth – 2 / 20

Table 6: Payment systems transaction volume



Source: Red Book 'Country Tables' compiled by the Bank for International Settlements

Table 7: Year on year growth in payment systems transactions volume



Source: Red Book 'Country Tables' compiled by the Bank for International Settlements

Analysis: The volume of payment systems transactions provides an indication of the adoption of non-cash payments and movement away from cash. Further, the year-on-year growth provides an indication of the pace of movement to non-cash payment systems transactions.

India's push towards its vision of Digital India combined with the efforts of RBI towards 'Empowering Exceptional (E)payment Experience', has led to a rapid adoption and deepening of digital payments in the last few years. The number of cash-less payments has grown rapidly, to over 40 billion transactions in 2020, with a CAGR of 21% between 2017 and 2020. Payment systems transactions in India grew by 24.4% in 2020 over the previous year. Amongst the benchmarked countries, only Saudi Arabia demonstrated a higher year-on-year growth of 63% in 2020. In the journey of migrating from cash to other modes of payment,

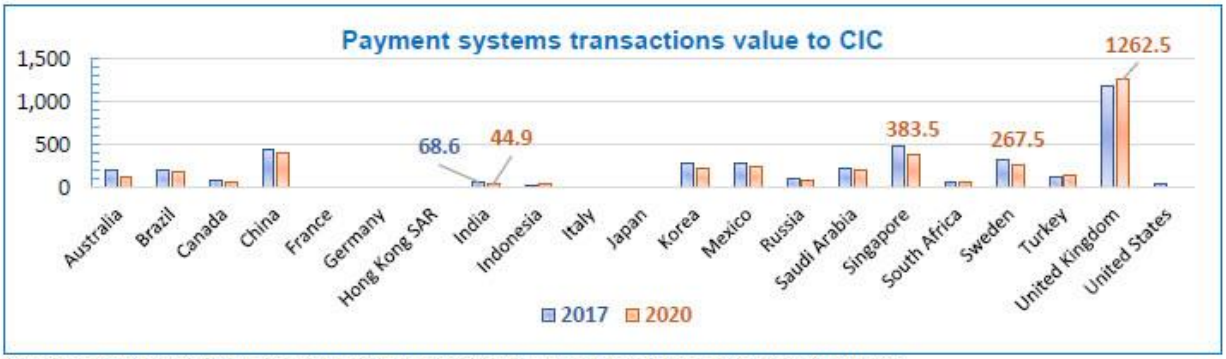
the year-on-year growth in payment transactions across jurisdictions tends to moderate once significant population has embraced payment systems transactions.

In terms of the number of payment systems transactions, Brazil (45 billion), China (341 billion), Russia (56 billion) and United States (184 billion) witnessed higher number of transactions than India in 2020. China's progress in non-cash payments in recent years has been propelled by Alibaba's Alipay and Tencent's WeChat Pay.

Benchmark rating: Weak

India's position: 14 / 16

Table 8: Payment systems transactions value to CIC



Source: Red Book 'Country Tables' compiled by the Bank for International Settlements

Analysis: A higher ratio of value of transactions processed by payment systems to CIC tends to indicate migration of an economy from using cash to payment systems.

India stands at 14th position in the benchmarked countries with the total value of payment systems transactions to CIC standing at 44.9 in 2020. United Kingdom is the leader with a ratio of 1262.5 in 2020, followed by China and Singapore with 414.7 and 383.5, respectively.

In India, retail payment systems drive the volume of payment transactions and the large value system, viz. RTGS, takes the major share in terms of value. RTGS also facilitates customer transactions whose individual transaction value is comparable to other retail payment systems; hence, these transactions have been considered as retail payments. The ratio is low for India as retail payments primarily comprise large volume and low value transactions.

3. Value of payment systems transactions to CIC

Key insight: The value of payment systems transactions to CIC was one of the lowest in India (44.9) in 2020 as compared to other countries included in the benchmarking exercise. Indonesia, South Africa, Turkey and United Kingdom are the few countries that witnessed a growth in the ratio from 2017 to 2020.

4. Cash withdrawal at ATMs per capita

Key insight: The cash withdrawals undertaken per person in India in 2020 was 5, which was the lowest amongst the

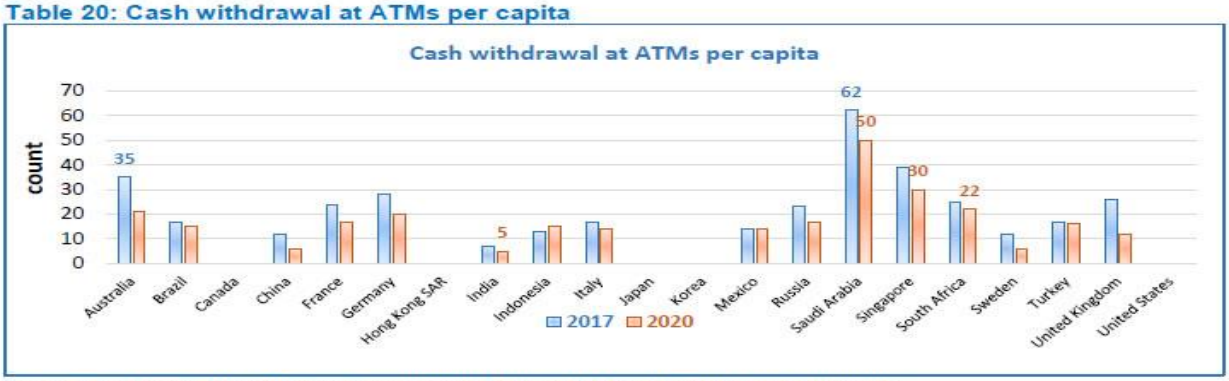
benchmarked countries. This has fallen from 7 cash withdrawals per person in 2017. While this ratio normally indicates lower cash dependency, the reason for a low ratio may be more due to a large population (denominator) having low accessibility due to lesser number of ATMs (numerator).

Benchmark rating: Leader

In addition, there is a limit on the number of times cash can be withdrawn from ATMs without any charges, which acts as a deterrent at times.

India's position: 1 / 16

Table 20: Cash withdrawal at ATMs per capita



Source: Red Book 'Country Tables' compiled by the Bank for International Settlements
Note: Where the cash withdrawals within the country is not available, total cash withdrawals (within the country and outside) are considered.

Analysis: A higher number of cash withdrawals at ATMs per capita indicates higher dependence on cash. However, cash withdrawals are likely to depend on the ATM density as well, and limited availability of ATMs may impact the number of withdrawals. Further, disruptions caused by the Covid pandemic and restrictions in place on public movement have lowered cash withdrawals in most jurisdictions (except Indonesia).

In India, apart from the low ATM density, due to limited availability of ATMs to cater to a huge population there is a restriction on the number of free ATM transactions (financial and non-financial) per month. This is likely to have resulted in lower per capita cash withdrawals at ATMs.

In some jurisdictions, cash is still widely used as a means of payment, which would result in higher cash withdrawals per capita. Singapore and Sweden have made significant progress in reducing withdrawals through ATMs. Cash is mainly used for low-value payments in Europe, while cards are used for larger-value payments.

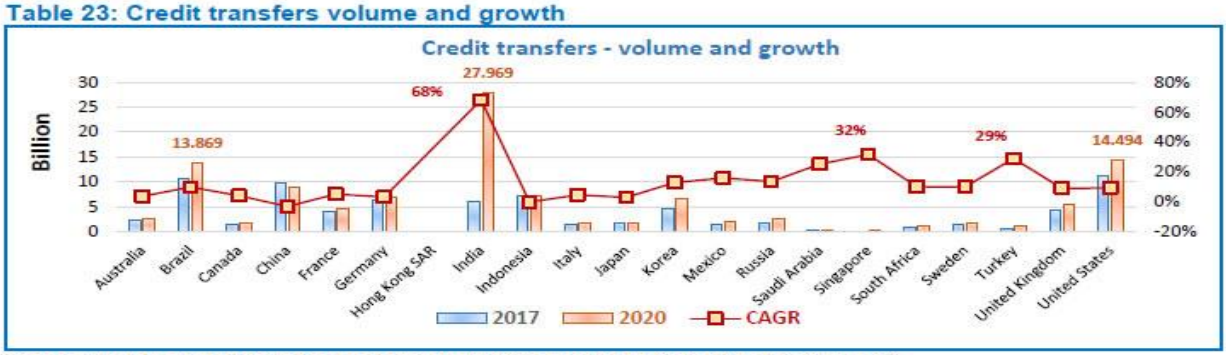
5. **Credit transfers:** Volume and growth of credit transfers

   Key insight: India dominates credit transfers, both in terms of number of transactions in 2020 and CAGR over the 3-year period between 2017 and 2020. This can be attributed to the plethora of credit transfer systems available round the clock facilitating immediate funds transfers.

Benchmark rating: Leader

India's position: Volume - 1 / 20; CAGR - 1 / 20

Table 23: Credit transfers volume and growth



Source: Red Book 'Country Tables' compiled by the Bank for International Settlements

Analysis: India has witnessed a robust growth in credit transfer volumes between 2017 and 2020 compared to the other benchmarked countries. The volume stands at a staggering 27.97 billion during the year 2020 which grew at a CAGR of 68% between 2017 and 2020. In India, retail credit transfers are undertaken through NEFT, NACH Credit, IMPS and UPI.

The growth in credit transfer payments in India can be attributed to the 'interoperable payment systems' which have revolutionised the payments landscape. Interoperability has facilitated use of payments infrastructure by banks and third-party application providers, bringing convenience to the consumers. The credit transfer systems are used for effecting funds transfers to beneficiaries, as an alternative to cash and cards for making payments and also to scan QR codes and undertake merchant payments.

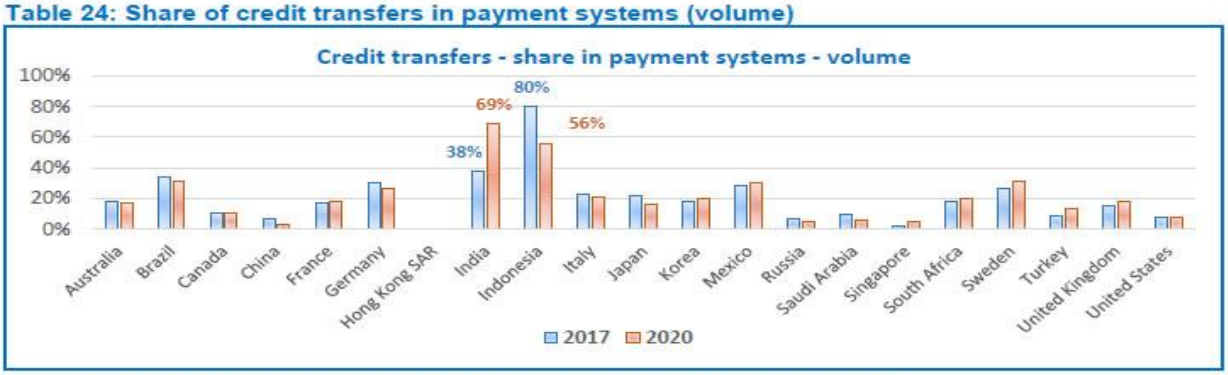
Benchmark rating: Leader

6. Share of credit transfers in payment systems (volume)

Key insight: The share of credit transfers in overall payment systems transactions grew from 37.5% in 2017 to 68.8% in 2020 and is now the highest amongst the benchmarked countries.

India's position: 1 / 20

Table 24: Share of credit transfers in payment systems (volume)



Source: Red Book 'Country Tables' compiled by the Bank for International Settlements

Analysis: A high share of credit transfers in total payment transactions indicates consumer preference for credit transfer systems over other forms of payment systems (direct debits, paper

clearing) and instruments (Cards, e-Money) for making payments.

India has a bouquet of retail credit transfer systems (NEFT, IMPS, UPI, AePS, NACH) with many of the systems (NEFT, IMPS, UPI) available round the clock and facilitating real time payments. This has contributed to India emerging as the leader as far as share of credit transfers in 2020 is concerned. Credit transfers are also observed to dominate the payments in Indonesia, with a 56% share in 2020.

7. **e-Money:** Availability of alternate payment systems

   Key insight: As per the Worldpay Global Payments Report 2022, 45% of the online transactions in India are undertaken using digital / mobile wallets (e-Money). In India, alternative forms of payment, facilitated through UPI third-party applications, are predominantly used for online payment transactions.

   Benchmark rating: Leader

Analysis: The Worldpay Global Payments Report 2022 defines alternative payment methods as payments using methods other than cash or physical cards linked to the global card brand networks. Alternative payment methods include bank transfers, digital and mobile wallets, direct debit, and buy now, pay later (BNPL).

In India, non-bank entities have played a major role in alternate payments with Fintech firms participating in the payment's ecosystem as Prepaid Payment Instrument (e-Money) issuers, Bharat Bill Payment Operating Units (Bill payments) and third-party application providers in the UPI platform. BigTech firms also participate in UPI as third-party application providers and facilitate transactions through their platforms - Google Pay, Amazon Pay, WhatsApp, etc. Non-bank PPI issuers also provide the UPI facility in an interoperable manner to their PPI wallet holders.

In China, alternate payment methods dominate the payment transactions with over 83% share in online transactions and 54% share in retail store transactions. The dominance of alternate payments in China has been propelled by Alibaba's Alipay and Tencent's WeChat Pay.

8. **Volume and growth of e-Money**

   Key insight: India fares well in terms of the volume of e-Money transactions with over 4950 million transactions in 2020. The transactions are undertaken using pre-paid payment instruments in the form of cards or wallets issued by approved banks as well as authorised non-bank issuers.

   Benchmark rating: Volume - Strong; Growth – Moderate

India's position: 2 / 21

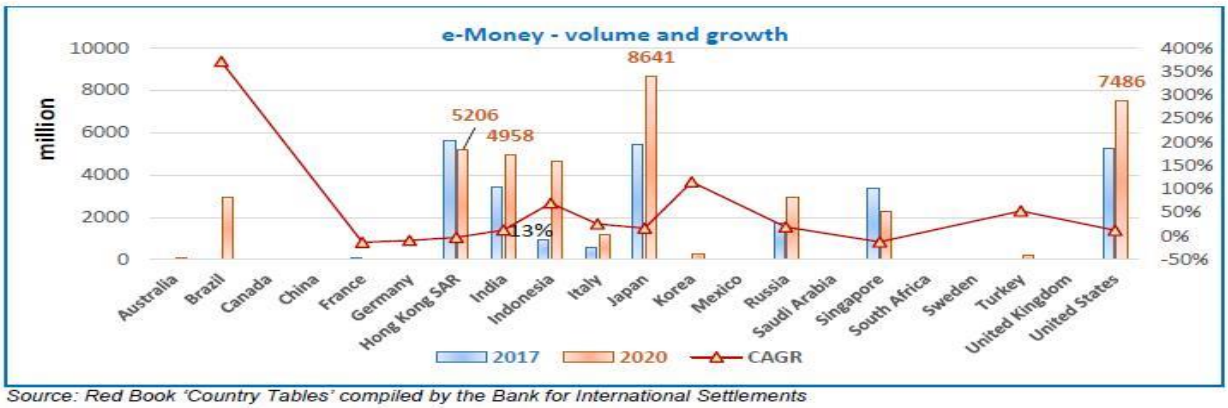
Table 29: Alternate payment methods (2021)

Sl No	Country	Popular alternate payment methods		Share by payment method – e-Money	
				On-line transactions	Retail stores
1	Australia	PayPal	Apple Pay	26	11

2	Brazil	Boleto Bancario	Pix	16	8
3	Canada	Paypal	Apple Pay	22	8
4	China	Alipay	Wechat Pay	83	54
5	France	Paypal	Amazon Pay	25	4
6	Germany	Paypal		29	4
7	Hong Kong	Alipay	WeChat Pay	33	24
8	India	Google Pay	PhonePe	45	25
9	Indonesia	Ovo	Gopay	39	19
10	Italy	Paypal	Amazon Pay	34	10
11	Japan	Konbini	PayPay	12	9
12	Mexico	Paypal	BBVA	27	7
13	Russia	Apple Pay	G Pay	25	9
14	Saudi Arabia	Apple Pay	Paypal	18	14
15	Singapore	Paypal	Apple Pay	29	14
16	South Africa	Paypal		19	5
17	South Korea	NPay	SamsungPay	22	10
18	Sweden	Klarna	Swish	20	13
19	Turkey	Iyzico	BKMExpress	6	8
20	United Kingdom	Paypal	Apple Pay	32	9
21	United States of America	Amazon Pay	Apple Pay	30	11
Source: Worldpay Global Payments Report 2022, NPCI					

India's position: Volume - 4 / 14, Growth - 7 / 13

Table 30: Volume and growth of e-Money



Source: Red Book 'Country Tables' compiled by the Bank for International Settlements

Analysis: e-Money is prepaid value stored electronically, which represents the liability of the e-Money issuer (a bank, an e-Money institution or any other entity authorised or allowed to issue e-money in the local jurisdiction) and which is denominated in a currency backed by an authority. In India, e-Money comprises of PPIs issued as Wallets and

Cards. Security and ease of carrying out a transaction are major factors contributing to the rising usage of digital wallets both by individuals and merchants.

In India, to give impetus to small value digital payments, a "small" PPI was introduced in December 2019 with minimum know your customer (KYC) requirement and amount loaded in a month capped at ₹10,000. Further, in May 2021, the limit for amount outstanding in PPIs with full KYC compliance was enhanced to ₹2,00,000. The introduction of interoperability between PPIs has obviated the need for on-boarding customers separately across various issuers and acquirers and has led to increased access and cost-effectiveness for consumers.

The initiatives have resulted in a steady growth in volume of e-Money transactions between 2017 and 2020. In 2020, with 4958 million e-Money transactions, India was behind only Japan (8641 million), United States of America (7486 million) and Hong Kong (5206 million), out of the benchmarked countries for which data is available. e-Money transactions in India have increased at a CAGR of 13% between 2017 and 2020.

Brazil is observed to be the leader in terms of growth, with CAGR of 372%, in volume terms between 2017 and 2020, primarily because of the low transaction volume in 2017 (28 million). The exponential growth of e-Money transactions during the period was majorly led by rising popularity of e-commerce and the population's familiarity with smartphones.

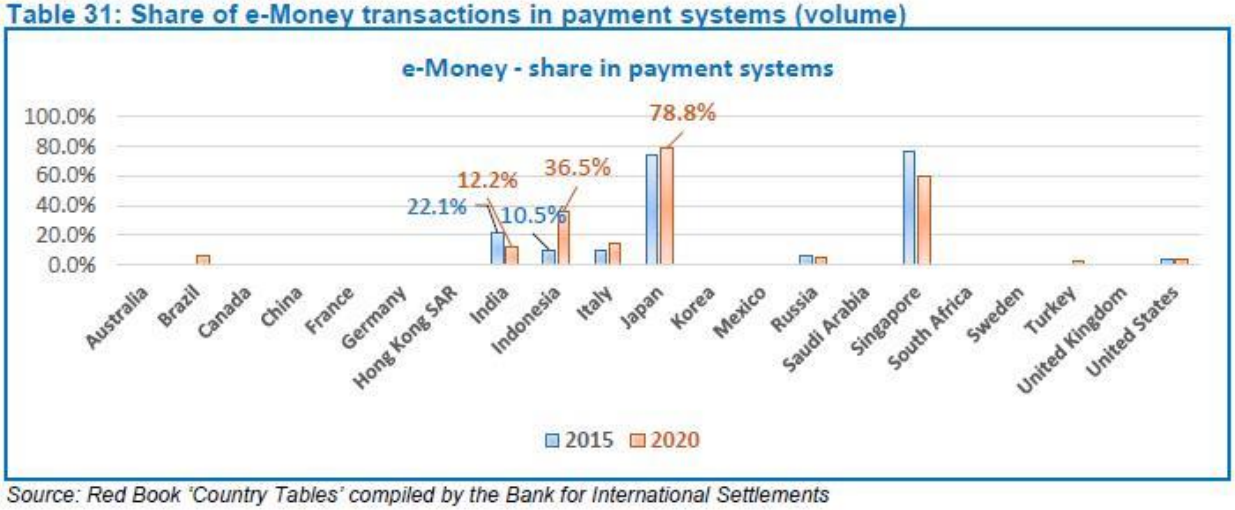
Share of e-Money in payment systems (volume)

Key insight: The share of e-Money payment transactions in India decreased from 22.1% in 2017 to 12.2% in 2020 and is substantially lower than other countries, viz. Japan (78.8%), Singapore (60.1%) and Indonesia (36.5%). The fall in the share may also be read with the increase in other modes such as, UPI.

Benchmark rating: Strong

India's position: 5 / 13

Table 31: Share of e-Money transactions in payment systems (volume)



Source: Red Book 'Country Tables' compiled by the Bank for International Settlements

Analysis: Share of e-Money in payment systems transactions in 2020 was 12.2% for India. While rising availability of mobile infrastructure and interoperability of e-Money

instruments has led to growth in e-Money transactions, the dominance of other forms of alternative payments has resulted in a decline in the share of e-Money transactions.

Indonesia witnessed the highest percentage increase in share (26%) of e-Money in payment transactions during the period from 2017 to 2020. In Indonesia, a cash driven economy with huge unbanked population and high availability of smartphones, e-wallet transactions have picked up significantly and consumers are moving towards the ease of non-cash options.

Singapore's tech-savvy culture and high smart phone adoption rate has aided use of e-Money methods for low-value day-to-day transactions".

Conclusion:

Based on the aforementioned international ratings and data analysis, we can infer that India is at the forefront of digital transformation, not just inside its economy but globally as well. Not only the banking industry, but all sectors of the Indian economy have now undergone digital transformation. The Indian banking industry is regarded as the backbone of the Indian economy; hence, it is essential for India to achieve digital empowerment for comprehensive growth and to emerge as a global force.

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