A Systematic Review and Research Agenda of Digital Payment System with reference to Unified Payment Interface

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ABSTRACT

Purpose: *India is undergoing a significant transition from a cash-based economy to a cashless or less-cash one. The smartphone and internet adoption paved the way for technological acceptability in many sectors, including money usage. Economic transactions are carried out using an electronic medium. Among the several e-payment options over the last five years, the Unified Payment Interface (UPI) has grown dramatically. Payment is one facet of a country's financial inclusion. The current study intends to provide a thorough evaluation of the literature on digital payments in relation to UPI and financial inclusion. It also examines the factors that influence UPI platform acceptability, continue to use and recommend others to use.*

Design/Methodology/Approach: *A thorough literature study is carried out in order to uncover research literature concentrating on important topics such as digital payment, technology acceptance and usage, digital financial inclusion, and unified payment interface. Using the SWOC and ABCD frameworks, the research need is identified and agendas are reviewed.*

Findings/Result: *According to a survey of the literature, the majority of the research was conducted to evaluate digital payment as a whole. Less study was carried out by concentrating on UPI, especially in relation to the component of digital financial inclusion. The advancement of technology constantly calls for more research.*

Originality/Value: *This is the first study to establish a link between Digital Payment, UPI and Digital Financial inclusion. The policymakers, service providers and researchers can make use of the results to understand and assess the role of UPI in making India a less cash society.*

Paper Type: *Systematic Review of Literature.*

Keywords: Digital Payment, Financial Inclusion, Digital Financial Inclusion, Unified Payment Interface, ABCD analysis

1. INTRODUCTION :

Digital payments have generated a lot of hype, especially since demonetization. It has grown in importance during the last few years. Both the government and the commercial sector recognise its mounting significance and are making maximum use of the fortune tinted by technology. Digital payments have become more common due to the development of new technologies and the desire for worldwide business. The advancement of Information and Communication Technology (ICT) has modified the lives and actions of both people and organisations. ICT has made a tremendous impact on finance and economics, particularly in terms of operational expenses and organisational performance [1]. The explosion of ICT in money transfers and settlement has brought about a dynamic transformation in the banking sector, with transactions increasingly taking place via electronic media, diminishing the use of physical currency banknotes to move towards less cash payment landscape [2].

A cashless payment system is one that uses electronic means to make payments. It was not designed to replace currency, but rather to be a superior alternative to cash and trade barter [3]. With the rising usage of smartphones and internet accessibility, digital payment is rapidly replacing conventional wallets. The payment component does not address security and privacy in the digital era. Moreover, the digital tokens ensure more safety and privacy- in preserving digital payment system. Existing payment service providers (PSP) will operate as an intermediary between payer and payee, claiming confidentiality, shield against possible fraud, and interoperability between 'banks, devices, and service providers' [4]. Mobile phone usage significantly contributes to financial inclusion through adoption of mobile payment. Following demonetisation, India saw an increase in number of electronic payments done using mobile phone [5]. Smartphones are regarded as a secure platform for payment processing. The growing number of smartphone users established a space for the usage of e-wallets. A small merchant can take digital payments even if s/he does not have POS equipment. A big number of people will join the digital economy if it is used appropriately [6].

Financial inclusion is a catchphrase these days, and it has gotten a lot of attention recently. Rural areas are home to more than 70% of our people. Financial inclusion is a must in a country that houses a big proportion of the world's poor. Poverty alleviation, employment, economic growth, and social cohesion all require access to financing by the poor and vulnerable. The disadvantaged and underprivileged populations will get more access to finance through opening a bank account, savings, investment opportunities, insurance products, and borrowings. These factors enable people to combat poverty and improve their level of living. Financial inclusion is the mechanism through which all participants of an economy have easy access to and usage of the formal financial system [7]. Development agencies and funders have certified financial inclusion as the benchmark of branchless banking incentives. Financial inclusion is a broad concept, although it repeatedly refers to linking individuals to "formal" (licenced, regulated, and suitably managed) financial institutions. As a result, proponents of financial inclusion tend to place focus on designing better fintech products. However, branchless banking is another face of financial inclusion. It is not successful because, in order to remain relevant to their consumers, banks must produce creative financial solutions for low-income people. At the same time, branchless banking symbolises more than just financial inclusion because the payment demands of all economic actors extend well beyond their interactions with banks. Individuals, businesses, and governments all benefits when money goes digital [8]. The combination of fintech, philanthropy, and development creates digital ecosystems that map, grow, and monetise digital footprints. The digital revolution brings new face of financial inclusion, providing the state with new tools to increase the inclusion of the 'legible,' and global finance with new ways of 'profiling' poor households as providers of financial assets [9]. The digital financial inclusion can be measured in terms of access, usage and quality [10].

India's digital payment system consists of numerous payments platforms as shown in figure 1. Unified Payment Interface (UPI) which was launched in 2016 is a revolutionary payment solution to enable country to quicken the transformation rate towards less cash economy. UPI is a simple and faster method of transfer of funds from one person to another. The launch of UPI and the Bharat Bill Payment System, as well as zero merchant discount rate (MDR), service tax, an increase in POS devices in rural areas, and encouraging news about the issuing of 'Rupay' cards, have energised the payments landscape [11]. Using a Virtual Payment Address (VPA) instead of entering bank account information and IFS codes has simplified transactions. UPI is not confined to a single mobile application; the service is provided by a number of apps supported by leading organisations throughout the world, including WhatsApp, Google, and WallMart, among others. According to a Cebr Economic Research report, India's instant payments resulted in an additional cost savings of $12.6 billion in 2021 and forecasted that, UPI payments will boost up additional 1.12% in GDP by 2026 [12]. As a result, the digital payment sector is undergoing major and rapid development. Among digital payments, UPI has the most promise for accelerating digital payments and putting them all under one umbrella of digital financial inclusion. Customers' attitudes toward banking goods are continually changing. As a result, it is feasible to investigate user acceptance and attitude toward Unified Payment Interface. As a result, a literature review was conducted in order to identify the current state of India's digital payment system and analyse the gaps in the domain of digital payment with reference to the Unified Payment Interface, with a focus on its pivotal role in enabling the phrase Digital Financial Inclusion.

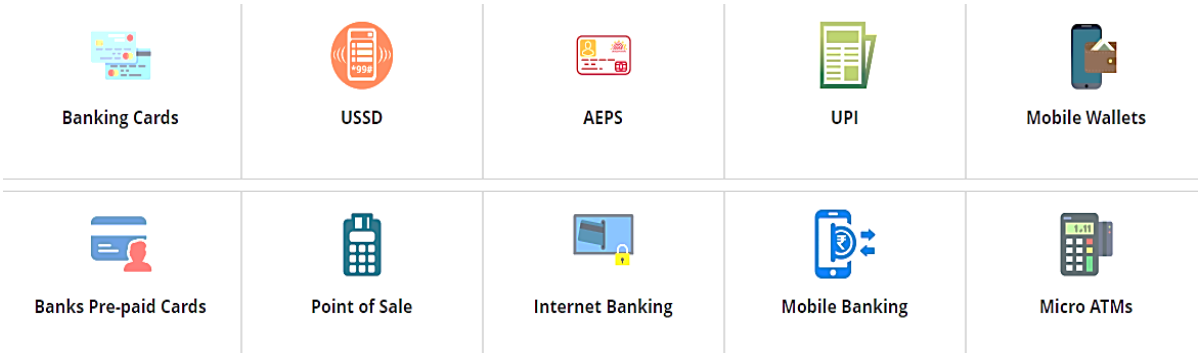

Fig. 1: Modes of digital payment in India.
Source: http://cashlessindia.gov.in/digital_payment_methods.html [13]

2. OBJECTIVES OF SCHOLARLY REVIEW :

The primary objectives of the review paper are:
(1) To comprehend the digital payment system
(2) To understand financial inclusion through digital payment.
(3) To understand digital payment and unified payment interface
(4) To identify the relationship between digital payments, financial inclusion and unified payment interface.
(5) To detect the influencing factors for adoption of digital payment system.
(6) To find the research gap and research agendas by considering previous research studies enabling to propose a research topic.

3. RESEARCH METHODOLOGY :

The review was conducted through literature survey on online database using Google scholar using key words such digital payment, unified payment interface, and financial inclusion. The literatures are chosen on the below criteria:
Criteria 1: Timeline: Literatures published between 2000 to 2022 considered.
Criteria 2: Type: All research literatures in the form of journals, book chapters, books, conference proceedings, and review articles are chosen.
Criteria 3: Language: Only English literatures are considered
Considering the above three criteria in toto, selected literatures were analysed and systematic review was conducted by studying from abstract to conclusion and they were segmented according to keywords used.

4. SCHOLARLY REVIEW OF RESEARCH LITERATURE :

The ICT have drastically altered the banking business by extending new channels of distribution of banking products and services through telephone, computer and transfer of funds at point of sale [14]. Technology has made a significant contribution for establishing an effective and efficient payment system that is free of the "cash and carry syndrome." Economic transactions are conducted electronically, eliminating the need for transacting parties to visit banks in person. Economic interactions have grown simpler, safer, and faster. This has propelled the digital payment system ahead of the traditional cash-based payment system [15]. The daily activities of people are becoming more digital as technology advances. The digitalization process reflects individuals' rising desire for immediacy and is affecting their behaviour, culture, and economic structure. In the financial system, digitization is a prominent key factor. The most noticeable manifestation of digitalization is in the payment system. Retail payments could only be made in cash or by cheque until recently. However, payment options are now available instantly via an app on a smartphone or even a smartwatch, indicating the scope of digital innovation in payments [16]. The growing number of internet users and smartphone users across geographical borders has created a great potential for banks to explore beyond traditional brick-and-mortar branch banking [17].

4.1. Digital Payment System:

According to the definition of 'The Payment and Settlement Act, 2007', Digital payment is an electronic fund transfer executed by the way of authorising the bank to pay or receive money in ones' bank account via point of sale (PoS) machine, automated teller machines, mobile, internet, and card payment[18]. The digital payment is a transaction based on technology in which money is stored, processed, and transacted electronically using digital payment instruments. Payments are traditionally made with cash, cheques, or plastic cards, but digital payments are performed using particular software, payment platform, and e-money. The major components are the fund transfer application, network infrastructure, and governance. To obtain products or services, a variety of payment choices are accessible in the digital payment ecosystem. Human life has undergone various modifications as a result of technological advancements. One of the changes is the simplicity of payment using digital payment methods, which provide numerous benefits such as contactless payment, increased security, real-time payment settlement, and so on. Popular examples include e-wallets, mobile banking, and prepaid payment devices [19].

According to Camenisch et al. (1997), the digital payment system is made up of a set of protocols that interact with three parties: a bank, a customer (the payer), and a receiver (the payee). A withdrawal phase, a payment phase, and a deposit phase are the three phases of a transaction. These three processes occur in distinct transactions in the offline form of payment, but all three phases occur concurrently in the online mode of payment. Different security measures are required by the bank, payer, and recipient, and duplicate spending may be easily monitored. To maintain privacy in the face of prospective government legislation, anonymity should be safeguarded [20]. Covid 19 has created incentives for digital payments in India [21].

Table 1: The list of research publications pertaining to concept Digital Payment System

S. No.	Area and Focus of the Research	Outcome of the research	Reference
1	Concept of Digital Payment/e-payment	An exchange using Data, electrons, or electronic payments, sometimes known as e-payments. The researcher defines e-payment as the digital exchange of monetary worth between two people in return for products or services. An entity might be a bank, a firm, the government, or a customer. Payments that are not made with paper-based instruments such as cash or checks are classified as digital payments.	Tan (2004). [22]
2	Digital payment platform and players	Digital payment system is an integrated framework of platform, technology, and business design. There will be four market players: banks, telecom providers, merchants, and start-ups, all of which are considered disruptors in the payment business. Payment systems have not garnered much attention as a study area in the previous decade, although this is changing. Platform, technology, and business concepts provide a digital payment platform between payer and payee (a multi-sided platform).	(Kazan & Damsgaard, 2013). [23]
3	Access and use of digital payment system	The process connected with bridging of physical, electronical, and psychological clouds is known as financial inclusion. People's financial lives will be able to be interpreted and planned using virtual money held in a bank account. The access and use is granted by Physical and digital clouds and digital and psychological clouds respectively. Connecting impoverished people to the digital finance results in considerable welfare gains, such as access to bank accounts, peer-to-peer cash transfers, payment linkage with institutions, and improved financial services.	(D Karlan et. al. 2014). [24]

4	E-payment definition	Electronic commerce has pushed the usage of e-payment instruments over usage of cash. An e-payment is the electronic transfer of monetary value between payer to payee. It allows users to handle and access their bank accounts online using the electrical gadget.	(Sahu & Singh, 2018). [25]
5	Digital payment via digital tokens for better security	With the rising usage of smartphones and internet accessibility, digital payment is rapidly replacing conventional wallets. The payment component does not address security and privacy in the digital era. In their work, the researchers suggest digital tokens as a safe and privacy-preserving digital payment system. Existing payment service providers (PSP) will act as a intermediary between payer and payee, claiming privacy, security, and compatibility across banks, devices, and service providers.	(Rajendran et al., 2018). [26]

E-payment or digital payment refers to the exchange of economic value via an electronic medium. It is a platform, financial, telecom, and user-centric framework. E-commerce has increased the use of digital payments. The smartphone is being used as a weapon to speed up digital payments. Digital payment is the systematic movement of funds from payer to payee via electronic medium handled by legally regulated payment service providers.

4.2. Adoption of Digital Payment:

Electronic commerce arose as an effect of the global spread of the Internet. It is a corporate environment that allows for the electronic exchange of transactional data [27]. Technology and internet usage caused revolutionary changes in world economy in the areas of finance, operational cost and economics [28]. A digital payment system is to be assessed in the angle of technology, society, the economy, institutions and regulators [29]. Soon after the announcement of demonetisation, India experienced a cash supply and demand imbalance. Paytm and other mobile applications enable individuals to transact in a cashless, contactless, and paperless environment [30]. Demonetisation significantly increased the number of digital payment transactions, particularly at new-fangled modalities of digital payment [31]. With the demonetization of the country's highest currency notes by the government of India, encouraging the people to use digital platform by reducing or curtailing transactions costs, incentives in terms of tax cancellation, rewards, cashback etc., Indians are excitedly embracing digital payments. Alternatively, as the need for digital payments increases, security risks take precedence. It is essentially the obligation of the government and service providers pushing digital currency alternatives to provide proper security for their services, as well as customers to follow good security practises. Over the last few years, India's digital payment landscape has witnessed significant transformation. Payments are now made digitally in a percentage exceeding 40%. In particular, the retail, entertainment, travel, and healthcare industries have seen a steady rise in the share of digital transactions in merchant transactions. According to the BCG-PhonePe Pulse report, merchant payments are likely to be the drivers of digital payments, with digital merchant payments accounting for 65 percent of total payments by 2026. Despite this phenomenal increase, stakeholders must address operational issues such as the technical fall of transactions, which exceeded the 1.4% average in early 2022[32]. Internet usage, smart phone use, government pushes, and other factors have considerably facilitated the move from a cash based payment system to a less cash one. The consumers' competence level determines their utilisation of digital payment methods [33].

Table 2: The list of research publication pertaining to adoption and usage of digital payment system

S. No.	Area and Focus of the Research	Outcome of the research	Reference
1	Effect of demonetisation on use of	The government of India demonetized the country's highest currency notes as part of a planned drive to a paperless economy centred on using paper currency as little as possible and relying	(Rakesh et al., 2018). [34]

	digital payment system	more on electronic transactions. This is only possible if the people of India widely accept credit cards, debit cards, net banking, and e-wallets. However, it was the UPI that proved to be the game changer. It is clear that the use of digital transactions has increased, and it is only a matter of time before the majority of transactions are conducted electronically. This, in theory, opened the door for a more transparent economy.	
2	Digital technology and its costs to use	A shared digital financial system that brings together all stakeholders, from regulators to consumers, to deliver services that benefit everyone in their country. Digital technology has the greatest potential to transform an economy such that everyone benefits by making payment systems simpler and more efficient while lowering transaction costs to encourage access and use by the poorest.	(Peric, 2015). [35]
3	Perception towards adoption of digital payment system	The researcher analysed the customer perception and impact of demographic factors such as gender, age, education, profession and income level on the adoption of digital mode of payment using primary data from 150 respondents. They found education is a key element among all identified demographic factor impacting the adoption of digital payment. They also found metropolitan or urban areas witnessing faster adoption to digital payment methods due to increased smartphone usage and internet penetration.	(Singh & Rana, 2017). [36]
4	Barriers to digital payment system	Transaction costs are a significant impediment to the uptake and utilisation of formal financial services. Transaction costs can be reduced by using digital financial services like ATMs, card payments, digital cash, and smart credit. Lower transaction fees may also aid in the expansion of financial inclusion.	(Bachas et al., 2018) [37]
5	Predictors for intention to adopt digital payment	Wassan Abdullah Alkhowaiter (2020) discovered that confidence, perceived security, performance expectancy, system quality, social influence, perceived ease of use, perceived usefulness, compatibility, perceived risk, relative advantage, and attitude are the best predictors of intention to adopt digital payment and banking methods.	(Alkhowaiter, 2020). [38]
6	Adoption of digital payments	Ethan Ligon et al. explained the reasons for low adoption of digital payment technologies using evidence-based approach. They examined Adoption of digital payments system by businesses is significantly more cost-effective and viable. The low rate of adoption of digital payments is related to demand side issues such as perceived risk, lack of awareness, perception of traceability of transactions over digital mode may attract tax liability, and so on. The study identified four types of digital payments: (i) Internet banking, (ii) point-of-sale (PoS) devices, (iii) mobile payments, and (iv) Unified Payment Interface (UPI). UPI is a revolutionary new digital payment system that was launched in 2016 and has surpassed other payment methods in popularity.	(Ligon Id et al., 2019). [39]
7	Factors affecting the adoption of digital payments	At the macro level, informal labour, a vast shadow economy, cash saving habits, and gender imbalance contribute for rise in digital payments; at the industrial level, high costs, regulatory constraints, and financial literacy contributed for popularity of digital payments in India.	(Goparaju, 2017). [40]
8	Factors affecting the adoption of	"Perceived security, privacy risk, attitude toward sustainability, and poor word-of-mouth" all have a substantial influence on the seller's resistance to the digital device recycling platform in	(Tang & Chen, 2022). [41]

	digital payments	resale commerce (re-commerce), whereas education has the least impact.	
9	Users intention to use digital payment platforms	The researcher while in examining user's perception towards digital payment system, concluded that today's digital world, cash is no longer a medium of exchange. The country is steadily shifting from a cash-based to a digital-based approach. It offers numerous benefits such as reduced cash handling costs, traceability, detecting tax fraud/avoidance, and so on. It will also promote greater financial inclusion and the gradual merger of the parallel economy into the mainstream economy. Mobile wallets are expanding beyond metropolitan/urban areas and gaining traction in semi-urban and rural locations as well. Users' spending behaviour or attitude in a digital payment environment adds salt to the spending pattern	(Sumathy, M., & Vipin, K. P. 2017). [42]
10	Cashless financial system	FinTech (Payment Banks) provides a customised service package that includes shopping coupons, movie tickets, and much more. With the fast-evolving cashless economy, banks must construct a robust digital infrastructure by developing safe, user-friendly mobile applications for payment transfers. The shift from a paper-based banking system to a technology-driven financial system is aided by the demonetisation goals of encouraging cashless transactions	(Gupta, 2017). [43]
11	Digital eco-system	The basic financial digital ecosystem comprises of digital financial services, branchless banking and alternate banking channels. According to the Economic Survey: 2014–15, the trinity framework JAM: JanDhan, Aadhar, and Mobile, was proposed to achieve a digitised financial ecosystem. India has vast potential for achieving financial inclusion by implementing fintech. Government efforts are channelised on the supply side to provide digital payment infrastructure and fintech will address issues from a demand-side approach	(Badruddin, 2017). [44]
12	Digital payment platform business model	Platform based business models have proliferated significantly in emerging economies. Given the accessibility of mobile phones, such programmes deliver cost-effective services to a broader segment of people. People are more inclined to use electronic payment as a result of institutional initiatives. Multiple e- payment systems have emerged as a result of supportive institutional settings and rising public interest in mobile payment usage. Furthermore, competition among numerous payment providers has a favourable influence on customers' continuous desire to utilise mobile payments	(Mukhopadhyay & Upadhyay, 2022). [45]
13	Factors affecting the adoption of digital payments	Developing a digital payment system will be unsuccessful untill it fulfils the demands of the consumer and delivers obvious advantages. Consumers will stick with tried-and-true approaches until a simpler answer to their money management needs emerges. A digital payment platform should be more secure, Interpolable, simple with minimum transaction latency	(Huang & Boucouvalas, 2004). [46]
14	Users' behaviours towards e-payments	According to the author(s) who studied digital payment design, an m-wallet is a personalised digital artefact that includes electronic payment tools such as electronic money and card payments, a compendium for receipts and tickets, authenticity cards such as passports, driving licences, and proof of insurance, and confidential info such as images and wish lists. Empirical research employing a holistic approach on an m-wallet that is	(Olsen et al., 2012). [47]

		more akin to a physical wallet in terms of fulfilling both socio-cultural and socio-technological payment behaviours.	
15	Cashless journey and its indicators	Cashless journey may be evaluated in three ways: (i) share, (ii) trajectory, and (iii) preparation. Non-cash payments between 2006 and 2011, as well as current country characteristics such as accessibility, socio-cultural variables, demand-side impacts, digital infrastructure, and so on, reflect the country's preparedness to embrace non-cash payment methods. specifies a country's requirements for moving to non-cash payment options. To enable transactions with speed, security, privacy, and internationalisation, money must be exchanged digitally in electronic commerce. The foundations of digital enterprise or e-business are digital or electronic payments. Cards, electronic fund transfers, online payments, e-checks, e-bills, and m-payments are the six basic forms of Business to Consumer (B2C) digital payment systems	(Xu, 2014). [48]
16	Factors affecting the adoption of digital payments	Perceived usage, perceived danger, perceived ease of use, and trust are major elements in Vinitha K and Vasantha S's (2017) study on the construction of a conceptual model for assessing factors influencing consumer intentions to use a digital payment system. Even if digital payment methods are widely used, there is much more that can be done to expand their use. Still, some consumers are hesitant to use digital payment methods, and as a result, cash is used in the majority of transactions. It is critical to illuminate the digital payment system. Public awareness may be raised through holding seminars, workshops, training programmes, debates, and so forth. College-aged techies might be selected to help anyone who requires assistance with the digital payment system.	(Vinitha & Vasantha, 2017). [49]
17	Advancement in digital payment at low value payments	Dennis Ng (2018) sees small value payments as the pinnacle of the trek toward a cashless economy. To determine the critical characteristics for a cashless economy, comparison research was done between China and Singapore. Low-value payments, acceptance costs, card type, user interface form, government initiative, routine usage, and consumer behaviour were identified as seven areas. They discovered that cash was remained the dominant payment method in the retail industry, notwithstanding the Merchant Discount Rate (MDR) being a crucial influence in the adoption of electronic payments. Pre-loaded cards with a focus on safer and lower MDR encourage adoption, and an interface that is swift in transferring payments through no-pin utilising QR code and contactless greatly adds to the cashless journey. Mass Transit Cards (MTC), like the popularity of WeChat in China, are a feasible solution for retail spending, linked into the Account Based Ticketing (ABT) infrastructure for usage on mobile phones through QR codes. The leadership of the government may be the keystone to a fully cashless economy	(Dennis, 2017). [50]
18	Factors affecting the adoption of digital payments	Trust and perceived risk have a significant impact on e-commerce purchase behaviour. Consumers' trust in an e-commerce site is influenced by factors such as reputation, privacy, security, and information quality. The third-party seal will have no effect on the consumer's trust. Perceptions of benefit, danger, and trust in an e-commerce business all have a major influence on intent to use. The antecedents of trust and	(Kim et al., 2008). [51]

		perceived risks are observation-based (privacy, safety, security, information quality, and so on); affect-based (third-party seals, recommendations, feedback, and so on); experience-based (familiarity, internet experience, e-commerce experience, and so on); and personality-oriented (disposition to trust, style of shopping, etc.)	
19	Digital payment ecosystem and factors influencing digital payment	The researcher identified ten critical success factors (CSF) for digital payment adoption, including 'compatibility, complexity, customer support, top management support, infrastructure, expert selection, security, cultural factors, government policies, and awareness, and used interpretive structural modelling (ISM) to map the interactional relationships between variables'. They suggested that government and e-payment service providers offer incentives and promotions to entice consumers. They should ensure a convenient, safe, and effective e-payment mechanism because awareness, infrastructure, support, and complexity all have a significant impact on digital payment adoption, whereas government policies, cultural factors, and compatibility have little influence on e-payment system adoption.	(M. Najib, and F Fahma, 2018). [52]

Demonetization has eventually paved the way for faster digital payment uptake. It compelled people to use cashless payments since digital technology has the ability to help both people and the economy as a whole. It has made payments more convenient and secure. The rate of adoption of digital means is heavily influenced by awareness of the use of digital payment platforms and financial literacy. Due to a lack of education and economic standing, most people believe transaction and settlement costs to be a major obstacles to using digital payment services. There are four types of digital payments in India: (i) Internet Banking, (ii) Point of Sale, (iii) Mobile Payment, and (iv) Unified Payment Interface. Various factors influence the utilisation of these available payment choices, including occupation, savings habits, money spending pattern, costs, literacy level, gender imbalance, risk, security, publicity, attitude, and costs. Merchant Discount Rate (MDR) is a critical issue in developing economies striving for a more cashless economy. A JAM (Jandhan, Aadhar, and Mobile) tri-framework has created adequate room for reaching electronic payments/transfer of funds to unreachable. The increase in digital payments, particularly for small value/retail payments, increased the percentage of the economy that is cashless. Because the cashless economy is judged on three criteria: share, trajectory, and readiness.

4.3. Digital Payment and Financial Inclusion;

According to the World Bank Group (2013), a smartphone with an internet connection is essential for Digital Financial Inclusion (DFI), which allows individuals to transition into a cashless world. Since nearly half of the population in developing nations owns a mobile phone, the deployment of DFI has grown rapidly within the banking industry over the years. Digital Financial Inclusion is a development tool that delivers ground-breaking and long-term expansion for banks even during difficult periods such as recessions, pandemics, and so on [53].

Table 3: The list of research publications pertaining to financial inclusion and Digital payment/Electronic Payment/Banking Technology

S. No.	Area and Focus of the Research	Outcome of the research	Reference
1	Technology and Financial Inclusion	In India, there has been a decade of experimenting in the field of financial inclusion. As a mission, there are several government and market initiatives aiming at improving people's financial life through market reforms and the execution of national programmes. In India, technology-enabled solutions are the primary source of financial inclusion expansion. The country's telecommunications	(Ravi, 2019). [54]

		connection has increased significantly. The Aadhar-enabled payment system has offered a once-in-a-lifetime opportunity to expand financial inclusion beyond tier 1 and tier 2 cities to smaller cities, townships, and semi-urban areas. To live a good life in the future, financial inclusion will necessitate more sophisticated and inexpensive products and services.	
2	Role of technology in Banks for financial inclusion	The growing popularity of the internet and its progress Indian banks are transitioning from a cash-rich to a cashless economy. The expansion of digital and branchless banking has been encouraged by government programmes such as Aadhar connected accounts, RuPay automobiles, the National Fibre Optic Cable Network, PMJDY, and the Bharat Bill Payment System. Because there are fewer options for money laundering and tax evasion in the financial ecosystem, digital financial service delivery reduces costs and improves user experience. Digital lockers and digital signatures enhance security on electronic platforms and, when coupled to Aaadhar, give the financial inclusion agenda a technical boost. Digital banking and financial services will transform the future financial ecosystem by providing specially developed platforms that connect via web, mobile, and social media platforms	(Kishnani, 2017). [55]
3	Financial inclusion through branchless banking	Branchless banking is one or the other way efforts of including all under one roof of financial inclusion. Branchless banking emphasises on reaching banking products to the people without the existence of physical traditional bank branches. It provides opportunity to go digital by facilitating all stakeholders including government, consumers, and servicing firms.	(Mas & Sullivan, 2011). [56]
4	Concept of Digital Financial Inclusion	Digital Financial Inclusion (DFI) is referred as the process of making financial services available through technology, such as the internet, mobile networks, cards, digital wallets, and so on. A DFI's mission is to connect underprivileged and financially excluded persons to the formal banking network. According to Global Findex, financial inclusion in India has risen from 35% in 2011 to 80% in 2017. There is room for improvement in the financial inclusion index, where government programmes have a significant impact. Despite all stakeholders' efforts, a sizable portion of the population remains unbanked. The increased use of smartphones necessitates the promotion of digital transactions in order to gain the benefits of financial inclusion through popular awareness and digital literacy.	(Jain et al., 2021). [57]
5	Financial inclusion through UPI	Financial inclusion or access to banking services is a prerequisite for adopting Unified Payment Interface (UPI) services, and thankfully, this prerequisite is gaining traction with the inauguration of the Pradhan Mantri Jan Dhan Yojana on August 28, 2016. Because of the rising use of smartphones and lower internet cost in India, UPI shows potential for making digital payments. In the case of UPI, the banks will create the front-end platform. If	(Chaterji et. al., 2017). [58]

		banks fail to collaborate successfully on this, consumer acceptance of UPI would be more challenging.	
6	Payment technology business models	The tale of Aadhar is the story of a government attempting to harness technology in order to become more efficient and improve the lives of the underprivileged. The Aadhar enabled-payment system, Direct Benefit Transfers, Subsidies distribution, and Unified Payment Interface are the key consequences of Aadhar, which is known as the foundation in the Indian language. Aadhar has created a slew of new opportunities for the most astute entrepreneurs and business leaders who want to use technology to create creative products and reinvent their business models.	(B Chaudhuri & L König, 2018). [59]
7	Digi-Fin service platform	There are three sorts of digital platforms for financial services that are growing in popularity: (i) new entrants into the fintech field; (ii) huge tech corporations; and (iii) Financial institutions. It help to cut expenses and increase financial inclusion. In India, there is greater competition on UPI, however two major technology providers (Phonepe and Google Pay) holds 85 percent of the market for third-party mobile apps by transaction value (amount of transaction), and a comparable proportion by transaction volume (number of transactions).	(Croxson et al., 2022). [60]
8	Concept and goal of DFI	Digital payment systems are creating business possibilities in developing countries that are simpler and more secure, more useful, and faster to establish, among other things. The India's technology-driven financial ecosystem is changing the game for female entrepreneurs. Fund transfers with low transaction costs on a mobile platform accessible to all socioeconomic classes. The goal of digital financial inclusion (DFI) is to establish digital liquidity, hence decreasing physical currency movements. The primary components of a DFI are (i) a platform, (ii) network-connected devices, (iii) merchants, and (iv) additional financial services. Technological advancements spawned a new business paradigm, namely socio-commerce entrepreneurship.	(Andrew, 2021). [61]
7	DFI through digital financial services	In this study, the researcher focused on the usage of digital financial services (DFS) to improve financial inclusion (FI). DFS benefits a wide range of enterprises who provide goods or services. DFS is used by Fast Moving Consumer Goods (FMCG) distributes, agricultural input selling outlets, remote purchases, transportation service providers, and utility corporations. One of the most significant barriers to mobile money adoption is a lack of trust. DFS must be simple and accessible to anyone, which is often provided through agent banking or agent networks for digital payments via mobile phones. The most common feature that may be utilised across all mobile phones is the Unstructured Supplementary Service Data (USSD) menus. It allows the country to reach the very last person in the formal financial system.	(Owens, 2013). [62]
8	Key components of financial inclusion	Quality of service and qualitative use of financial service are the two dimensions which are not easily quantifiable which are generally used by even a disadvantaged group	(Koh et al., 2018). [63]

		to improve their socio-economic well-being. The access and usage are the key issues in financial inclusion. Technology in financial service focused heavily on electronic fund transfers and accelerated financial inclusion by bringing unbanked into formal financial system. This is resulted due to increased mobile usage, innovative payment systems, and participation of private or third parties in payment service platforms. The statement of Bill Gates in 2015, "projected trend of financial inclusion through mobile channel as one of his four mega bets by 2030". Connecting poor and their peers and range of providers is the core objective of digital finance.	
9	Electronic payment system through mobile	Building a strong electronic payment system (EPS) is dependent on technical advancement, which is viewed as a driving element in achieving wider financial inclusion, particularly through non-banking systems. People can use EPS to gain access to financial services in a variety of ways. The retail payment system brings formal financial services to hitherto unbanked segments of society. Access to digital payment networks is required for the investigation of contracts, investments, and business strategies. It provides security, ease of interchange for digital transformation, and low-cost services using these approaches. The development of electronic payment infrastructure is a critical component of digital payment systems. Mobile Money offers a wide range of financial services, including mobile payments, savings, insurance, credit, and banking. P2P (Peer to Peer), C2B (Customer to Business), B2B (Business to Business), and B/G2C (Business/Government to Customer) mobile payment systems may be offered.	(Soejachmoen, 2016). [64]
10	DFI by meeting Maslow's hierarchical needs	With intangible products, digital money offers new earnings avenue, allowing the growth of new businesses. The cost of cash management will be greatly reduced, promoting digital financial inclusion by meeting Maslow's hierarchical needs theory. Concerns regarding transaction legitimacy, legislation, a rising user population, and telecommunication expenses are limiting digital money adoption.	(Braga et al., 2018). [65]
11	DFI initiatives in India	India is a key case study for digital transformation and financial inclusion (FI), with many flagship projects bringing the underprivileged into the financial mainstream. The advancements in distributing entitlement to beneficiaries and assisting them in engaging with the excluded group via a mobile platform. Bringing the agricultural community together, giving nutrition through anganawadis or rural care centres, welfare packages for pregnant and breastfeeding mothers, and other initiatives are noteworthy. The Digital Financial Inclusion (DFI) initiative adopts a community development collaboration strategy that brings together companies and government. India Post Payment Banks and Direct Benefit Transfers are paradigm changers in the financial industry. Any FI	(Siddik & Kabiraj, 2020). [66]

		product must be built on the four E's: effectiveness, efficiency, economy, and the environment.	
12	Role of digital finance for DFI	The emerging concept of digital financial inclusion emphasises the rising relevance of mobile-money-based local payments and cryptocurrency-based cross-border payments in the lives of many developing countries. It also highlights the possibility of a paradigm shift in the concept of financial inclusion, which is largely focused on the development of mobile payment lines for more access to financial services rather than savings- or lending models. The paradigm shift is founded on a greater appreciation for the ubiquitous informal networks of mutual responsibility and indebtedness in emerging countries, as well as their importance in absorbing and modifying financial inclusion programmes. Small shops dealers and stores are critical components of the digital financial innovation process, and their dual responsibilities of mediating and advocacy emphasised the ambiguities that digital financial networks afforded for choice and involvement.	(Rodima-Taylor & W. Grimes, 2018). [67]
13	Adoption of mobile phones for financial inclusion	Through mobile payment uptake, the use of smartphones substantially helps to financial inclusion. India observed a rise in mobile payment use following demonetisation. Pal et al. (2021) investigated the use and continuity of mobile payment choices by finding positive and negative aspects employing the valence framework and technology affordness and constraints theory (TACT). A comparison of current and future usage may yield some relevant policy recommendations. Key regulatory policies, such as safer and speedier grievance resolution, cross-platform transactions, and user-friendly technology design, must be taken into account. The study can be expanded to cover mobile payment usage in multiple merchant industries such as ride sharing, e-commerce, trip bookings, and bill payments and investigating the impact of future intent to use mobile payment utilising longitudinal data in a temporal two-phased study. They also propose for research on explaining the evolution of affordness and its influencing factors.	(Pal et al., 2021). [68]
14	e-payment usage after demonitisation	It is now unthinkable to imagine living without the internet and mobile phones. Bank accounts are carried in people's pockets. Following demonetisation, the term "financial inclusion" has gained tremendous traction. Technological advances cleared the path for the expansion of a wide range of e-payment services. Multiple regression analysis was utilised by the researchers to find the influencing elements for adopting digital payments, and it was discovered that security, flexibility, convenience, and government regulation were all strongly linked with the user's desire to use digital payments	(Dadhich et al., 2018). [69]

Financial inclusion refers to “the process of bridging physical, digital, and psychological clouds” [24]. Access to and use of financial goods through digital platforms contributes to Digital Financial Inclusion (DFI). In fact, the DFI aspires to connect the impoverished and financially excluded into the formal banking network by increasing people's digital financial literacy. In India over the last decade, there has

been a digital transformation of the economy and digital financial inclusion. The digital financial product should be effective and efficient, as well as compatible with the economy and the environment. The digital payments disrupt the financial ecosystem by delivering banking services via online, mobile, and social media platforms, Aadhar enabled payment system is one of the primary platforms pushed out by NPCI to enhance financial inclusion. If money becomes digital, it will undoubtedly benefit all stakeholders, including businesses, individuals, and government. Platform-based business models have gained traction as a result of new opportunities provided by the digital financial ecosystem. Cash has long been known for its liquidity; DFI's ultimate goal is to establish digital liquidity.

4.4. Digital Payments and Unified Payment Interface (UPI):

The NITI Aayog Booklet on Digital Payment (2018) identifies debit cards, Prepaid Payment Instruments (PPIs), Immediate Payment Service (IMPS), and Unified Payment Interface (UPI) as key volume drivers, while Real-Time Gross Settlement (RTGS) and National Electronic Fund Transfers (NEFT) play an important role in the value segment. They divided digital payments into two categories: systemically important financial market instruments (SIFMIs) and retail payments. Except for RTGS and other financial market clearing instruments, all other payment methods used in India are classified as Retail Payments, which include both paper-clearing and electronic clearing, as well as card payment mechanisms. According to this data, retail payments account for a bigger amount of transaction volume, accounting for 99 percent of all digital payments. In terms of value, it contributes for little more than 11% of 2017–18. In 2017–18, electronic payment was the preferred option for digital payments, accounting for over half of total volume and value. UPI has developed at an accelerating rate since there is no service fee for users. To track the success of digital payments, measurement is essential. A thorough research based on globally acknowledged indicators or best - practice, as well as data and standardized indicators, would correctly depict the expansion of digital payments [70].

The dial, keypad, and smartphone interfaces represent the technological revolution in the telephone industry. Biometrics such as face recognition and fingerprint software, which enable greater security and surveillance than PINs, passwords, account numbers, and other (alpha-) numerical identifying codes, will continue to play a larger role in the future of digital payment. In the words of network theorists (and boosters), payment extraction is also more generative than digital data input of PINs and other passcodes. Payments are increasingly being circulated as subsets of individualised information within the enormous sea of big data today [71].

Table 4: The list of research publications pertaining to Unified Payment Interface

S. No.	Area and Focus of the Research	Outcome of the research	Reference
1	UPI and its uniqueness	The most important business areas where information technology has blossomed are digital payments and mobile banking. Customers, like organisations, demand complicated payment methods. The Unified Payment Interface (UPI) is a cutting-edge, technology-enabled payment service platform designed to make money transactions simple, rapid, and painless. Payment through mobile phones is a popular and successful trend, particularly in metropolitan and urban regions where it is as simple as sending an SMS, which is the highlight feature of UPI.	(Dhamija & Dhamija, 2017). [72]
2	Impact on digital transactions in the COVID era	The study carried on users' impressions of digital transactions in the COVID era. They discovered that a huge number of consumers are utilising UPI-based mobile apps to conduct digital fund transfers. They gain from an easy, safer, and trouble-free transfer of funds from one bank account to another. The security and privacy of online transactions, particularly those using third-party applications,	(Jeyapaul & S.T. Christa, 2021). [73]

		piqued people's interest. People want to use the digital payment system because of the distinct benefits it provides	
3	Promotion of mobile payment systems	Through several measures, the Indian government is working hard to transition the cash economy into a cashless economy. Mobile payment systems that use Quick Response (QR) Code technology and the Aadhar Enabled Payment System (AePS) play a significant part in this.	(D. Ghosh, 2021). [74]
4	DFI among BRICS nations	The researcher attempted to analyse worldwide policy on Digital Financial Inclusion (DFI), creative business models, DFI progress and achievement in BRICS nations, and innovative DFI models in India. India lags considerably behind the other BRICS countries in terms of access to financial services. However, as a result of the PMJDY plan, the number of people having bank accounts has increased. The country's digital payments climbed marginally from 16 percent in 2014 to 17 percent in 2017. Due to epidemic hours, there may be a significant growth in the use of digital payment throughout all BRICS countries, particularly in India. The High-Level Policy Guidelines (HLPG) urge that governments achieve financial inclusion (FI) through the use of digital services in conjunction with the G20 committee campaign on DFI. To conduct financial education campaigns, India's real-time payment system, Unified Payment Interface (UPI), the Jan Dhan-Aadhar-Mobile (JAM) trinity, the National Strategy for Financial Inclusion (NSFI), and the National Centre for Financial Education (NCFE) will collaborate. UPI and Bharat Interface for Money (BHIM) have set the norm for a simplified user experience for digital payments, with few clicks and no distractions. The challenge is to simplify the unique payment platform so that consumers can pay more easily and comfortably.	(Roy et al., 2021). [75]
5	Fintech status in India	India is outpacing the United States in Fintech, particularly during the COVID-19 pandemic. The research completed by Bhasin et al. (2021) highlights the obstacles experienced in 2020 as well as the potential for fintech in 2021. During COVID-19 hours, they also emphasised the role of technology and the expansion of fintech. The fintech and banking sectors in India have seen fresh digital disruptions and revolutionary breakthroughs. Artificial Intelligence (AI), Machine Learning (ML), Big Data, and the Internet - Of - things (IoT) are collaborating with conventional financial institutions and Fintech.	(Bhasin & Gulati, 2021). [76]
6	Potentiality of digital payment sector	According to the researcher, electronic payment is payment made without the use of currency or a check. For both clients and banks, a digital payment system simplifies fund transmission and	(Revathi, P, 2019). [77]

		management. There are several payment methods for making electronic payments accessible in India's financial system, but there is a lack of information about their usage due to low literacy levels, privacy hazards, and social and infrastructure constraints in the community. The success of every e-payment system is determined by its security and privacy aspects, as well as how it is commonly handled to acquire user trust. The Unified Payment Interface is one such payment system that is advancing digital payment transactions significantly.	
7	Advancement in digital payment through UPI platform	e-Rupi is a voucher based on a QR code or SMS string that functions similarly to a prepaid voucher and is accessed via beneficiaries' mobile phones. This is built on the National Payment Corporation of India's ground-breaking Unified Payment Interface (UPI) technology. This e-voucher platform aims to improve living conditions and streamline payment procedures, particularly in the fields of medications and nutritional aid, fertiliser subsidies, and so on. The prime minister introduced it on August 2, 2021, with the goal of delivering cashless and contactless payment tools.	(Lamba et.al., 2021). [78]
8	Acceptance of digital payment mechanism	The digital payment mechanism is not a new one; it has been around since the 1980s. K Neema et al. did exploratory research on the UPI-Unified Payment Interface system of mobile payments, detailing its architecture, technologies, operations, and parties engaged in UPI transactions, as well as benefits and problems. It also addressed the various UPI Apps available as well as alternative digital payment systems and how they compare to UPI transactions. They concluded that UPI is a tool with suitable qualities that may make monetary transactions simple and inexpensive for customers, but it still requires the trust and knowledge of customers, the majority of whom are from rural areas.	(Neema & Neema, 2018). [79] (Kazan, 2015). [80]
9	Types of digital payments	Payment cards (Credit cards, Debit cards, and Prepaid Cards); internet payments (Electronic Money Transfers, Bill Payments, and e-check); and mobile applications (Peer-to-peer fund transfers, bill payments, and NFC-based PoS) are the three basic types of digital payments. The security and usability of a digital payment mechanism are critical to its success. SMS provides customers with payment/receipt information such as payer, payee, and transaction amount	(S. Ghosh et al., 2017). [81] (Rapheal et.al., 2017). [82]
10	Role of UPI in digital payment	There are numerous factors such as ease of use, perceived usefulness of the digital payment system, convenience (i.e. payment anywhere and at any time 24*7), fast growing smartphone penetration in the country, growth of non-banking payment institutions (payments banks, digital wallets, etc.), progressive regulatory policies, and escalating consumer readiness to the digital payment platform,	(Sarkar, 2019). [83]

		all of which contribute to the exponential growth of the digital payment platform. Unified Payment Interface (UPI), Aadhar-linked electronic payments, and better-quality digital infrastructure are the game changers in digital payment segment.	
11	Use of Unified Payment Interface	Users benefit from the ease and speed of digital transactions made possible via UPI. It is gaining popularity, particularly in the retail payment business, because it is easier to access through smartphone than other digital payment solutions. Regulators may use UPI to promote maximum financial inclusion in the country. PSPs must establish robust grievance redressal mechanisms in order to handle consumer complaints. The biggest disadvantage of UPI is that it is only available to persons who have bank accounts. The rural unbanked populace is deafeningly silent. The researcher proposed that in the future, user attitudes about UPI and other e-Payment alternatives be examined and the results analysed using systematic behaviour models.	(Mahesh & Ganesh, 2021). [84]
12	Digital Payment Landscape	The advent of the Unified Payment Interface (UPI), an immediate payment settlement platform, has increased the use of digital payment platforms, and a significant change can be seen in the transmission of government benefits directly to beneficiaries via NPCI gateways. In the retail payment industry, UPI is now regarded as a secure, faster, and more cost-effective payment method.	(A Mahesh et al. 2022). [85]

UPI has transformed India's digital payment system. Payment through mobile is a common and trend, particularly in urban places, following demonetisation and around lunch hour. Banks have seen a significant shift in the delivery of banking services via digital platforms. As part of the cashless economy, QR codes and AePS were deployed. UPI has the ability to reach rural individuals, who have lower levels of financial literacy than metropolitan ones. It distinguishes itself by offering a simpler, safer, and trouble-free payment alternative. It is currently a trusted means of digital payment in which funds are transferred quickly from one bank account to another without sharing account passwords. It has taken the lion's share of the total number of digital payment transactions.

4.5. Connection between Digital Payment, Unified Payment Interface and Financial Inclusion:

Digital payment is fund transferring method from one’s account to another using an electronic device such as a mobile phone, POS machine, or computer. A mobile phone is a contemporary digital payment gadget. Among the different digital payment solutions, the Unified Payment Interface (UPI) is India's most well-known platform of digital ways of exchanging money instantly in a safe and simple manner. Financial inclusion encompasses a wide range of financial services, including savings, insurance, and payment and remittance services provided through the formal financial system [86]. Financial inclusion can be seen in three dimensions such as traditional, digital and comprehensive. Digital financial inclusion is also called as FinTech enabled financial inclusion. The "digital" financial inclusion index combines digital payment options made available via mobile phones and the internet [87]. Fintech-enabled digital financial services have become a key component of financial inclusion in emerging and developing countries [88]. The modern information and communication technology can be the driver of digital financial inclusion by providing variety of platforms to access financial services digitally even at remote places [89].

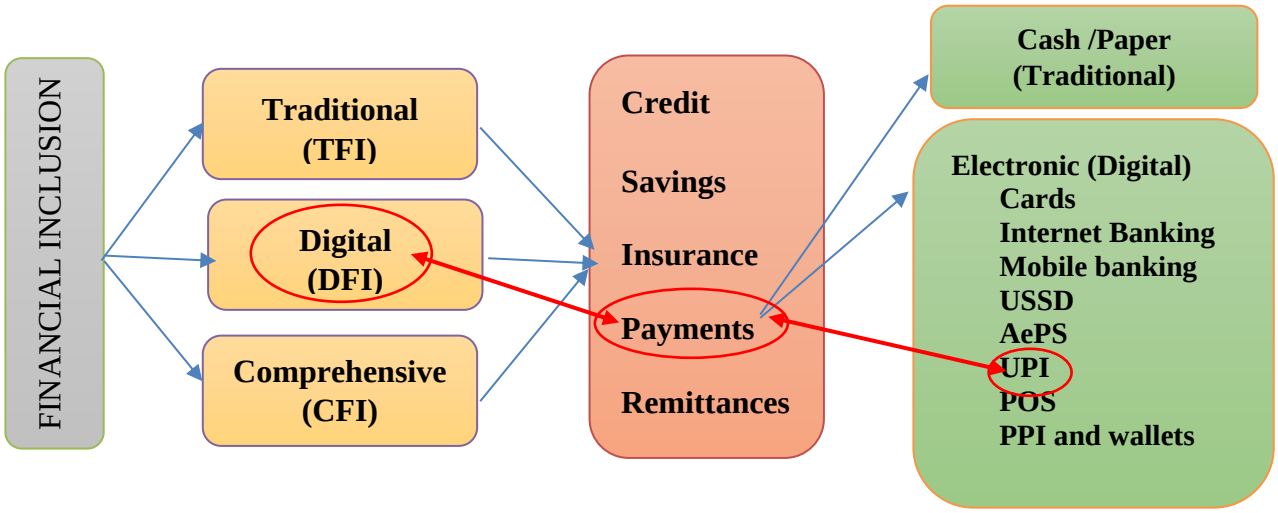

Fig. 1: Relationship between Digital Financial Inclusion (DFI), Digital Payment and Unified Payment Interface (UPI)

Source: Framework designed by researcher

5. CURRENT STATUS AND NEW RELATED ISSUES :

The digital payments have grown in India in the last couple of years. The demonetisation has initiated and pandemic hour has boosted the move towards adoption and usage of digital payment platform particularly Unified Payment Interface. The Digital Payment Index (DPI) stood at 349.30 as on March 2022 showing a significant growth in digital payment sector from 2018 to 2022 (Figure 2). The number of bank accounts opened under the government's main financial inclusion initiative, the 'Pradhan Mantri Jan Dhan Yojana (PMJDY),' had reached 45.60 crore as of June 1, 2022. In September 2022, UPI recorded 6.78 billion transactions totalling Rs 11.16 trillion, a new high for India's premier digital payments platform since its launch in 2016 (Figure 3). Day-by-day people are adopting UPI for fund transfers. The objective of cashless economy is becoming possible through the UPI platform. Still a major portion of the people, are not using digital payment avenues. There are numerous factors stimulates the individuals to adopt digital payment system. According to the RBI's Digital Payments Index and Financial Inclusion Index, India has increased financial inclusion at a CAGR of 5% or higher since the debut of UPI, and the country has more than doubled payment digitization since 2018. UPI technology's effectiveness, agility, and potential have positioned it as a defining force and solidified it as India's family gem of payment-systems. An empirical analysis of the status of UPI adoption and its contribution to digital financial inclusion is given below. A rigorous analysis could reveal the influence of UPI in making India a less cash society. It aids in the identification of impediments and the formulation of potential solutions.

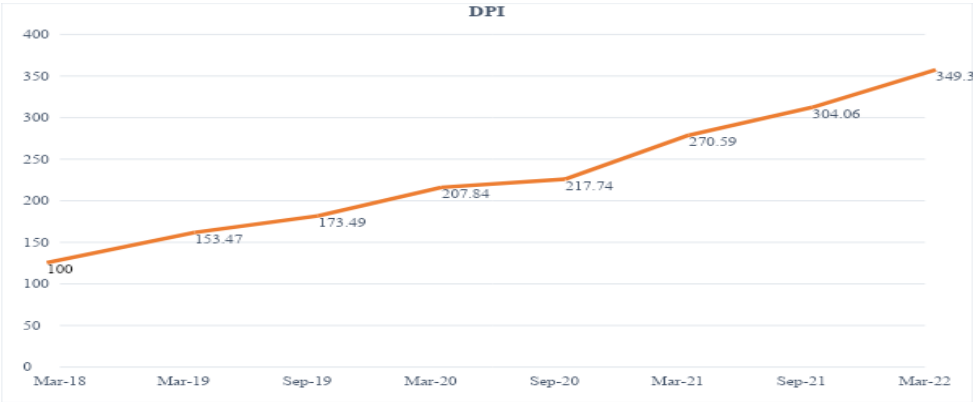

Fig. 2: Trend of Digital Payment Index from March, 2018 to March, 2022.

Source: Reserve Bank of India Press release dated July 27, 2022 [90]

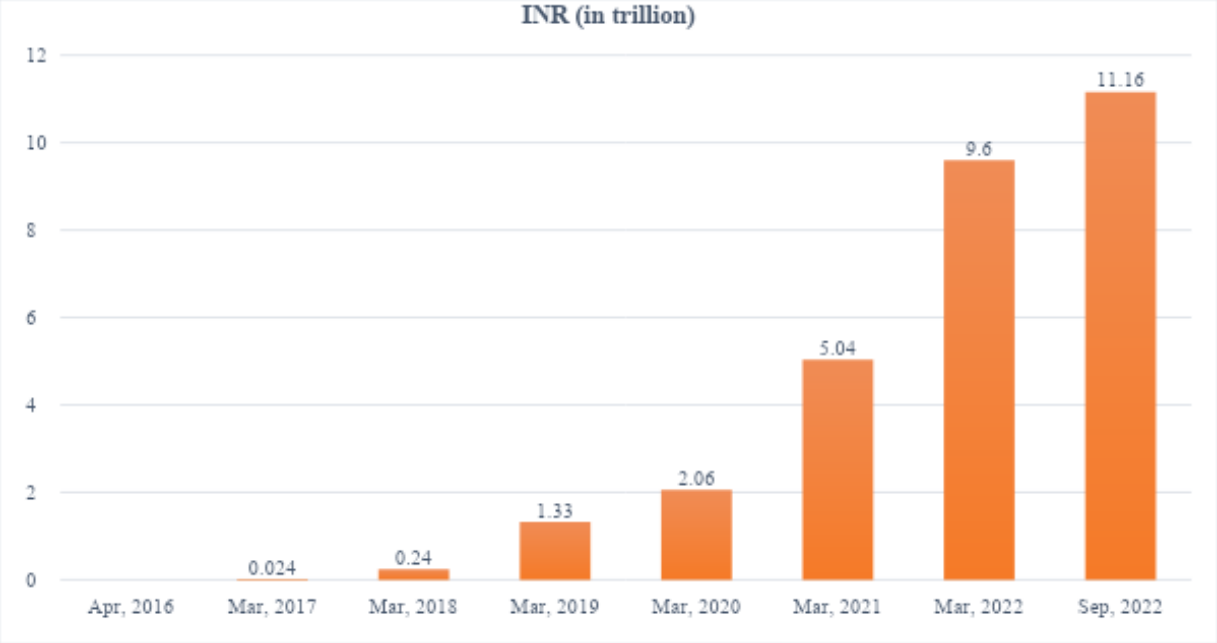

Fig. 3: Growth of Unified Payment Interface (UPI)
Source: NPCI UPI – Product statistics [91]

6. IDEAL SOLUTION, DESIRED STATUS & IMPROVEMENTS REQUIRED :

The demonetisation of high denominated currency affected the economy and also guided the research work in terms of its impact on country's financial/economic aspects.

According to Chodorow-Reich et al (2020), before to the execution of demonetisation, ATM withdrawals, electronic cash, and point of sale payments (POS) demonstrated no rise. ATM withdrawals fell by half after demonetization, while the use of e-wallets and the installation of POS machines increased. A most obvious suspect of these adjustments, they believe, seems to be the demonetisation tremor. They developed a demonetisation framework, that predicts those regions experiencing acute liquidity crisis will embrace substitute money transfers relatively fast. A cross-sectional technique is used to empirically validate the model. Empirical evidence shows that areas that suffered a significant decline in cash usage used e-wallets and POS more quickly [92]. According to Crouzet et al. (2022), coordination issues may significantly hinder the adoption of emerging technologies. To show that only areas that have high initial widespread adoption (well before intervention) experience protracted adoption influences, they develop a model and then use data from the Indian currency devaluation. This shows that while which around interventions can confront coordination challenges, they have limited effectiveness. Places with higher initial adoption rates have a longer-term advantage over other locations in terms of adoption due to more infrastructure, proximity, access, and so on. They conclude that demonetisation in the Indian context reduced coordination issues, which was followed by a surge of adoption [93]. Lahiri's (2020) analysis indicates that digital payments already had surpassed conventional payments prior to demonetisation. It underlines the fact that, since 2017, electronic payments have continuously outpaced conventional transactions in terms of volume and economic growth. Additionally, during the past decade, digital transactions have expanded more quickly and at a higher value than cash based transactions [94]. The demonetisation has its effect on adoption of digital payment method but there are other issues which also affect largely on using e-payment methods. Fahad (2022) examined at the variables influencing the diffusion of UPI in developing markets using the Diffusion of Innovation (DOI) theory. Users recommend UPI for contactless banking, and adoption intentions are strongly correlated with relative benefit, intricacy, and reliability [95]. Kuriakose et al. (2022) developed the model by expanding on the previous UTAUT2 model by include 'Relative Advantage,' 'Add-on Services,' and 'Promotional Benefits' as additional constructs in addition to the existing UTAUT2 structures [96]. The Covid 19 epidemic has altered UPI adoption among baby boomers, followed by society and performance [97].

The literature survey identified that, the adoption and use of technology are influenced by many factors ranging from demographic to economic factors. The government is focusing a lot of emphasis on attaining full financial inclusivity with the aid of digital integration. The main element of financial inclusion is the credit facility, but the goods could only be delivered if there were adequate financial infrastructures for payments and remittances. No research was identified by the literature survey which focuses the technology acceptance and usage in a conglomerate area, where the economic transactions are much higher after the metropolitan cities. It is absolutely important to do research on the adoption of digital payment systems that focuses on the Unified Payment Interface and includes both customers and merchants, a topic that hasn't been covered in earlier literature.

7. RESEARCH GAP :

A thorough review of the literature indicated that Unified Payment Interface (UPI)-focused digital payment service research has lagged for a significant amount of time. The following research gaps are identified by this survey, and the proper treatment is suggested to fill them.

- **Research Gap 1:** India's payment methods have been thoroughly investigated and reviewed. Digital payment mechanisms are also constantly evolving. Almost no study has been done on digital payment methods for the retail payment. There is ample opportunity to shed light on the situation and fill the gap.
- **Research Gap 2:** RBI's role in regulation of digital payment pertaining to retail sector.
  Previous research did not analyse digital payments on a sector-by-sector basis. Retail payments are increasing on a daily basis. E-payment solutions are being used by consumers to make retail payments. As a result, the RBI plays a critical role in encouraging digital payments in all sectors. Consequently, there is a chance to assess how the RBI is regulating the digital payment system in the retail payment segment.
- **Research Gap 3:** The concept and procedure of Unified Payment Interface (UPI).
  The UPI is a pioneering payment method that is continually evolving. Payment methods and service availability vary accordingly. At the moment, there is a need to grasp the UPI payment technique.
- **Research Gap 4:** Adoption and usage of Unified Payment Interface (UPI) by merchants and consumers
  The acceptance and usage of digital means of payment is examined in various regions and location at large. Less research has been done in comparison between consumers and merchants. Therefore, there is a possibility to conduct research on target population in adoption and usage pattern specifically with respect to UPI.
- **Research Gap 5:** Role UPI in Digital Financial Inclusion and accelerating cashless economy
  In India, digital financial inclusion is mostly determined by the payment side rather than the supply side. People will benefit from digital financial inclusion as a result of the digitised payment system. As a result, there is a potential to link UPI with Digital Financial Inclusion. A cashless economy is only conceivable when transactions take place without the use of physical cash. The nation can go cashless thanks to digital payment methods. In order to ascertain UPI's contribution to the decline in paper-based transactions, an investigation might be carried out.
- **Research Gap 6:** Factors that influence UPI adoption and usage
  Factors influencing FinTech product uptake vary according to time and location. An in-depth examination of the factors that influence user behaviour is to be studied. It can be probed in two perspectives one, which factors will make them to adopt and use UPI and two, which factors will influence them to continue to use UPI?
- **Research Gap 7:** Obstacles and challenges in adoption of UPI among merchants and consumers
  Adopting and using a digital payment instrument always carry some barriers and there will be a challenge among people due to various factors. Identifying these make sense and valid.

8. RESEARCH AGENDAs :

[1] To review the evolution of India's digital payment system and the range of digital payment modalities available in the retail sector.

[2] To investigate the RBI's engrossment in the regulation and streamlining of digital payments in retail payments.

[3] To Understand the concept and process of the Unified Payment Interface.

[4] To study the awareness, adoption and usage of consumers and merchants about Unified Payment Interface.
[5] To study the influence of demographic factors on the awareness and use of Unified Payment Interface.
[6] To examine the role of the Unified Payment Interface in India's Digital Financial Inclusion and the acceleration of the cashless economy.
[7] To investigate the factors that drive consumers and merchants to continue using Unified Payment Interface.
[8] To identify the barriers encountered by customers and merchants in adopting and using of Unified Payment Interface.

9. SWOC ANALYSIS OF RESEARCH AGENDAS :

The comprehensive picture of all rewards and drawbacks of a technology can be identified by performing an analysis of all the "strengths, weaknesses, opportunities and challenges" (SWOC) [98][99]. It serves as the starting point for determining intrinsic capabilities and constraints and takes into account all favourable and unfavourable elements both within and outside the environment [100]. Strengths and weaknesses are internal factors influencing a business strategy/model and opportunities and challenges are form external. Strengths provide a competitive advantage. On the other hand, weaknesses are those hindrances that business needs to overcome. Opportunities are those key areas, that shows ample amount of potential and challenges are the breadth to achieve desired goals. The SWOC analysis performed on this research proposal yielded following outcome:

Strengths:

[1] The proposal may be the first to look at how digital payment platforms are adopted and used, with a particular emphasis on UPI.
[2] The study agenda focuses on UPI as a retail payment digital payment platform, guaranteeing a clear picture of its usage pattern among the target population.
[3] The comprehensive analysis includes both the key stakeholders' customers and merchants who are UPI end users.
[4] The proposal is ready to assist policymakers in developing policies for the country's digital payment mechanism.
[5] The agenda attempts to connect the current situation's three magical phrases: digital payment, unified payment interface, and digital financial inclusion.
[6] The cost of research is really low. As a result, it is cost effective.

Weaknesses:

[1] The precision of the data gathering source influences the correctness of the study output.
[2] The objectives described above are judgemental and time-bound.

Opportunities:

[1] Assess the performance of Unified Payment Interface in selected region
[2] Identifying the variables that influence how digital payment systems are adopted and accepted in order to enhance the UPI platform.
[3] Expand the service quality provided on UPI platform with greater security.

Challenges:

[1] The validity of the study findings is determined by the data that has been presented and is publicly available.
[2] Any other fresh ideas, discoveries, or improvements in the sector might jeopardise the agenda's fulfilment.

10. FINAL RESEARCH PROPOSAL/PROBLEM IN CHOSEN TOPIC :

Following a comprehensive review of the literature and consideration of the study possibilities mentioned in this document, the following is offered as a final research proposal.

10.1. Title:

An empirical study on adoption and usage of Unified Payment Interface (UPI) with reference to Mysore Conglomerate

10.2. Purpose:

As shown in the current state segment, the adoption of a tech-enabled payment system is impacted by a variety of factors. The greatest factors to people going cashless are demonetisations and COVID - 19. The smartphone has evolved into a debit card and payment mechanism. UPI is a payment system that is accepted by Indian customers and retailers in both hands. Service providers compete against one another to attract new clients to their platforms. Comprehensive research on adoption and use patterns in a conglomerate will undoubtedly help stakeholders with their decision-making narrative.

10.3. Research Objectives:

[1] To review the evolution of India's digital payment system and the range of digital payment modalities available in the retail sector.
[2] To investigate the RBI's engrossment in the regulation and streamlining of digital payments in retail payments.
[3] To Understand the concept and process of the Unified Payment Interface.
[4] To study the awareness, adoption and usage of consumers and merchants about Unified Payment Interface.
[5] To study the influence of demographic factors on the awareness and use of Unified Payment Interface.
[6] To examine the role of the Unified Payment Interface in India's Digital Financial Inclusion and the acceleration of the cashless economy.
[7] To investigate the factors that drive consumers and merchants to continue using Unified Payment Interface.
[8] To identify the barriers encountered by customers and merchants in adopting and using of Unified Payment Interface.

10.4. Proposed Methodology:

Population and Sample:

Survey method of research will be carried out among the drawn samples chosen from the total population of Mysore conglomerate. In order to determine the minimum sample size, solvin's formula $n = \frac{N}{1+Ne^2}$ shall be employed.

Instruments:

A separate structured questionnaire consisting of questions relating to fulfil research objectives will be administered to chosen consumers and merchants. The primary part of the questionnaire on profile of respondents, while the second section will focus on the adoption and awareness of Unified Payment Interface (UPI) and identifying factors affects the intention and continue to UPI. The technology acceptance is assessed using technology adoption and usage theories/models.

10.5. Results and Findings:

The outcomes and discoveries of the outcome will be provided in diagrammatic, tabular, and figurative formats for the scholarly depictions.

10.6. Final Conclusion and Implications:

In order to demonstrate how the arguments or findings fit together to address the research agenda and achieve the study's overall goals, the conclusions would highlight the problem of the study, go through the research objectives, and offer a synthesis of the justifications or findings. The implications of the conclusion for interested stakeholders will also be highlighted. The scope for further research work will also be revealed to enable for continue research.

10.7. Research Ambit and Constraints:

The research proposal is limited to one digital payment instrument, the Unified Payment Interface, and does not extend to other payment instruments throughout the world. The sample size is restricted to 800 due to time restrictions (400 consumers and 400 merchants). Any new revolutionary payment ideas, innovations, or inventions may not be disruptive to the agenda.

11. ABCD ANALYSIS OF RESEARCH PROPOSAL :

This methodology enables us to approach the literature study on UPI acceptance and use from many perspectives, focusing on its role in promoting financial inclusion. ABCD analysis is systematic tool to examine individual features, system attributes, concepts, ideas, or the effectiveness of the strategy, choices, and business models [101]-[103] Advantages, Benefits, Constraints, and Disadvantages are abbreviated as ABCD [104].

Advantages to Users, Policymakers, Service Providers and Researchers:

[1] The aforementioned proposal is important in comprehending India's digital payment system, with an emphasis on retail payments made via the UPI platform.
[2] Research seeks to uncover demographic parameters that are highly linked with UPI acceptance and usage.
[3] The research enables us to better comprehend UPI's role in increasing digital financial inclusion.
[4] The research would assist service providers in identifying business prospects in the digital payment area by leveraging FinTech.
[5] The finding is critical for policymakers to establish policies on digital payment mechanisms to ensure a cashless economy.

Benefits to Users, Policymakers, Service Providers and Researchers:

[1] UPI consumers, regulators, and service providers may find the study helpful in comprehending the role of UPI in a wider perspective.
[2] The basic and model-based study will give a successful framework for evaluating and determining the most important element in adopting and continuing to utilise the UPI platform for digital payments.
[3] The research findings will help service providers or businesses extend the services available on UPI applications.

Constraints towards Users, Policymakers, Service Providers and Researchers:

[1] The proposal is time bound. Hence the sample size is limited to the figure arrived as per solvin’s formula.
[2] The study intends to cover only one digital payment instrument UPI, and not extended to any other available electronic payment solutions.

Disadvantages applicable Users, Policymakers, Service Providers and Researchers:

[1] Any new invention, discovery, or ideas applied in the filed might compromise the proposal's implementation.
[2] The idea is limited to the UPI platform. UPI is one of the digital payment systems, however other e-payment techniques may also contribute considerably to DFI.
[3] The idea contains personal preconceptions. The analysis's conclusions are sometimes sensitive to the investigator's own observations and experience, and thus may lack general application.

12. SUGGESTIONS TO IMPLEMENT RESEARCH ACTIVITIES ACCORDING TO THE PROPOSAL :

1) **Study Population:**
   The study population comprises the population of Mysore conglomerate published or estimated by Mysore City Corporation.
2) **Study Methods and Methodology**
   The data will be gathered from respondents using self-administered survey-based research. Mean, median, standard deviation, and variance will be utilised as descriptive statistics. The structured questionnaire data will be processed and analysed using SPSS to evaluate the hypotheses posed. The Pearson correlation coefficient is used to investigate the link, and regression analysis is performed to determine the degree of influence.
3) **Perform and Collect data:**
   The secondary data is gathered through published literature, RBI press release, IMF reports, Government circulars, NPCI website and reports, UPI Apps statistics, etc.
4) **Execute data analysis:**
   Basic statistical analysis of the collected data is carried out using descriptive statistics, such as average, median, and standard deviation. SPSS software is used to perform data analysis for correlation between variables and regression for level of influence.
5) **Result Interpretation and Conclusions:**

The outcome of the research will be published in diagrammatic, tabular, and figurative forms for academic representation.

6) **Bibliography and References:**
Related literary works, publications, and websites will be mentioned in order to support and enhance the research's results and suggestions.

13. CONCLUSION :

The research as a whole has critically analysed prior existing studies related to digital payment and its acceptance. The article also emphasised and analysed previous studies, focusing on three main elements: digital payment, UPI, and financial inclusion. According to the study, no research was undertaken to evaluate the impact of one e-payment platform to digital financial inclusion. The exploration also reveals, UPI is seeing tremendous success, which may be one path for bringing all untouched areas of society inside the financial inclusion umbrella in terms of adoption and use of digital financial infrastructure. Literature survey highlighted that demographic factor influences the acceptance and usage of technology among people. The adoption and usage of Unified Payment Interface is examined in only one literature using extended UTAUT2 model of technology acceptance and usage. There is an opportunity for researcher to assess the adoption and usage level of UPI in any region or segment using various models like Technology Acceptance Model (TAM), Theory of Planned Behaviour, Diffusion of Innovation theory etc. A research proposal has been framed to investigate the status of UPI performance and its role in enabling users to use financial products. It will add knowledge in the domain of digital payment system and framing policies to regulate payment infrastructure.

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