

Effects of Covid-19 Pandemic on Digital Payment Ecosystem

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Abstract—The current review paper aimed to comprehend the role of Fintech and Innovative Payment Systems during the Covid-19 pandemic. For this purpose, several articles, journal papers, and other secondary data are collected to draw crucial inferences. The findings of the study suggested that the Covid-19 crisis has had an influence on consumers' access to banking products and services in recent years. Furthermore, contactless payments, such as mobile banking and other FinTech innovations, have a significant impact on the nation's economic structural status and growth indicators. Artificial intelligence has also been crucial in achieving technological advancements to mitigate the impacts of the Covid-19 pandemic. Additionally, the rapid development and expansion of digital platforms and digital payments have helped in enhancing financial inclusion by providing safety, accountability, cost-effectiveness, and speedy transactions. However, there exist several challenges pertaining to the adoption of fintech, innovative payments and digital payments in modern times like lack of awareness and knowledge, compliance, regulations and risk of fraud and scams.

Keywords— Covid-19 pandemic, digital payments, fintech, innovation, payment systems

I. INTRODUCTION

The Information and Communications Technology (ICT) industry has grown exponentially in the previous two decades, becoming a defining feature of countries' economic progress. The popularity of mobile phones, the major development in the electronics industry, evolving consumer expectations, and the availability of financial assistance from authorities and policymakers have all contributed to the rise of the ICT Industry. As a result, ICT prepared the way for a transformational change in the financial industry [1]. In advanced countries, the financial services industry offers a range of functions, namely enabling business and monetary processes. Throughout crisis situations, financial institutions are recognized as one of the most crucial promoters of socioeconomic resiliency. ICT has changed the financial business in the past few decades, allowing for easier and more creative delivering services. Accessibility to financial resources is made easier for vulnerable groups, especially in developing nations, due to digital finance advancements. Financial technology (Fintech) provides innovations to the financial sector and customers that make operations less economical, more efficient, and reliable. FinTech innovations have received \$40 billion in worldwide investments from banking firms and technology companies in 2019 [2]. This surge in investments in FinTech and enhanced use of digital payments systems can be attributed to the ongoing Covid-19

crisis which has disrupted the World's economy to a massive extent and has forced policymakers to identify potential solutions to revive the global economy [3].

II. BACKGROUND

The COVID-19 outbreak is hastening the world's transition to a cashless economy. Individuals are aiming to reduce the use of currency in financial transactions and operations, during times of pandemic, which has strengthened the tendency toward financial technology exchanges. Consumers today are seeking alternate cashless payment techniques that will allow them to conduct these transactions digitally and without the need for human participation. In the positive context, the Covid-19 outbreak has encouraged consumers to go cashless, with banks and Fintech businesses collaborating to manage and expedite the objective of innovative payment transactions for the customers. This indicates that the banks must digitize their banking services using the most up-to-date technology managed by the Fintech space. Moreover, an extensive collaborative partnership between banks and Fintech firms will assist in disregarding competition and meeting one of the most popular market demands for cashless transactions [4]. As suggested by Giudici [5], financial technology's transparency, combined with new regulations to safeguard clients and enterprise investors, has resulted in "financial service disintermediation" [6]. Consequently, financial Technology newbies can immediately reduce intermediate costs and capital needs that are often linked with traditional banking services [7]. Additionally, the utilization of massive volumes of data analytics and scientific evidence has changed how data is stored, processed, and analyzed, lowering costs significantly [5, 7]. This exhibits that FinTech is among the innovations that have the potential to revolutionize several sectors. FinTech has grown rapidly in a variety of scenarios, most likely driving innovation and new concepts based on cutting-edge technology [8]. Due to the immense traction that Fintech, innovative payment systems, and digital payments have received in the previous few years and the rise in fintech investment especially during the current Covid crisis, the current study will review the implications of digital payments in the present scenario.

III. LITERATURE REVIEW (2000)

A. Overview of Fintech Payment Innovations

Financial technology (FinTech) is revolutionizing virtually every aspect of the financial services industry. Savings,

mortgages, lending, financing, leasing, financial advisory, capital, insurance, risk evaluation, adherence, settlement, cash management, stocks, and money transfers are all on the list, as well as financial advice [9]. Financial institutions are basically about verifying identity and value, transferring valuation, preserving value, extending value, trading value, financing and depositing value, administering and protecting value, and reporting for value. FinTech has disrupted or innovated in all of these industries. Artificial intelligence (AI), blockchain, big data analytics, IoT, encryption, and cloud services are examples of current and developing technological advancements that have progressively become an important and indispensable aspect of today's financial sector [9].

The debut of cheques as a payment mechanism in 1945 may be attributed back to the beginnings of technological innovation in the financial industry. Following that, Bank of America produced the first credit card in 1958, and ATMs were launched in 1967 to help in the execution of fund transfers. This was accompanied by the issuing of a debit card as a transactional instrument. Moreover, Internet banking was introduced in the 1990s, aided by the advent of the Internet, and Fintech innovations such as mobile payments and crowdsourcing were launched in the 2000s [10].

In the present times, clients' accessibility to banking goods and services has been impacted by the Covid-19 crisis. Electronic payments, such as mobile banking and other FinTech technologies, are major influencers of the economy's structural stance and development metrics [11]. Electronic payments are also a distinctive dataset for short-term prediction, making them valuable in analyzing the effects of severe events, like the continuing Covid-19 outbreak, on customers' purchasing habits and decisions [12]. The quickest developing Fintech business is the growth of the mobile payment sector, which is headed by simple payment services. Apple's invention of "Apple Pay" sparked the development of the mobile simple payment sector. Fintech is a sector of the IT business that employs mobile-based IT to improve the stability of the financial system. The term "fintech" is a combination of the words "finance" and "technology," and it alludes to the industrial transformations that have resulted from the confluence of financial services and information technology. In respect of monetary services, it is an innovative service that uses technological advances such as smartphones, social networks, and IoT to deliver unique banking services [13].

Digital inclusion has increased dramatically in both advanced and emerging economies over the last two decades, owing to the rapid rise in smartphones and internet use. As a result, mobile payments and e-wallets are a more accessible and user-friendly substitute for traditional payment methods. For instance, by 2017, the entire number of e-wallet transactions was predicted to reach \$350 billion, with the figure likely to increase by over 1.6 trillion by 2022 [14]. Unlike cards, digital wallets (such as PayPal) do not necessitate the use of POS devices or the revelation of bank account details. Consumers can use net banking to put money into e-wallets, as well as physical servers at specified banking institutions, and pay merchants by detecting the vendor's Quick Response code or utilizing apps (i.e., Uber for taxi services). Digital wallets are planned to combine a variety of

available transaction alternatives, including boarding passes, peer-to-peer transfers, and passes to automobiles and hotels, in the long term [15].

B. Digital Payments during the Covid-19 pandemic

Artificial intelligence has played an important part in the breakthroughs achieved in the struggle against the Covid 19 pandemic. The financial system and electronic transfers are two instances where artificial intelligence has had an influence on how they offer their operations. Because of technological advancements, it is now feasible to pay at malls using a Q.R. code instead of cash. A QR code is a barcode that is detected and interpreted using the smartphone camera to offer information about an amount paid in a mall. Contactless payments are improved as a result of this progress [16].

Various payments company's services to assist customers in dealing with the COVID-19 scenario are also expected to undertake digital payments advancements. Many financial institutions have cancelled some service charges and associated charges, while others have eased the dollar restrictions on electronic transfers that have in turn motivated the customers to keep their bank funds and consequently make digital payments. The operations of nonbanks may also persuade financially disadvantaged clients to open accounts with them, allowing them to send and receive payments using digital modes. Numerous banks and credit unions have immediately eliminated transaction, maintenance, and overdraft charges to help clients impacted financially by the crisis. For instance, Ally Bank has abolished unnecessary transaction fees and overdraft fees for its savings and credit account users. Nonbanks have also made it simpler and less expensive for unbanked and underbanked people to post cheques through mobile applications [17]. Customers with a PayPal Cash Mastercard, for instance, could have their Electronic Interbank Payments automatically deposited into their PayPal accounts, whereas Netspend customers could have their electronic payments automatically deposited into their Netspend prepaid debit cards and extract the money almost instantly. These initiatives may incentivize financially unsound clients to open accounts with these businesses, enhancing their ability to use electronic services. Some firms in the payments sector have also created new products or services to assist businesses in adapting to COVID-19 regulations and responding to users' surge in popularity for electronic or contactless payment options [17].

Nasutian et al. [18] proposed that a specific form of online payment instrument can be designed to eliminate COVID-19 communication to every card user customer as a payment method in the offline context. Facial recognition software is a slashing technology that uses a 3D digital image to identify or validate a person's face. When using biometric methods, it is no longer vital to emphasize the Personal Identification Number (PIN) and/or passcodes since this security device is the entity itself, allowing everyone to make payments everywhere without actually bringing an e-money card and avoiding the communication of COVID-19 to each card user customer as a payment method in the marketplace since face id does not require touching. This indicates that several innovations have taken place during the Covid-19

pandemic which can prove to be essential for future generations [18].

C. Opportunities of Fintech and Digital Payments

The fast rise of FinTech has had an impact on the economic policy and regulatory approaches of incumbent banking firms. Traditional financial institutions are responding to market needs to keep up with contemporary trends and compete with their rapidly increasing counterparts. Financial innovation might be fueled by both supply and demand-side variables. Consumers, particularly younger generations, want quick, simple access to credit services that are available at any time and any place. Instead of utilizing conventional financial services, people are more likely to utilize online payments, internet payments, FinTech loans, or even other DLT-based goods and services [19]. FinTech contracts, BigTechs, and third-party players are seen to be the primary pathways via which FinTech might alter the marketplace and, as a result, economic support. Financial innovations driven by technology enable increased decentralization, product offerings variety, and quicker, more visible, economical, and larger access to financing, all of which contribute to financial inclusion [19]. Moreover, Huang [20] displayed fintech's role in e-commerce and money transactions by cross-country comparisons. Fintech payments advantages from the portal economy's unique properties, such as big data, large client bases, and multi-purpose technologies. These facilitate e-commerce, overall fintech/financial innovation, and financial inclusion by making retail transactions more rapid, accessible, and comprehensive.

Furthermore, Klapper and Singer [21] assert that the rapid development and expansion of digital platforms and digital payments can help enhance financial inclusion by providing rapidity, safety, accountability, and cost-effectiveness. Digitization aids in overcoming the financial and physical constraints that have hampered otherwise worthwhile financial inclusion initiatives. When accompanied by a proper financial consumer protection regime, online technologies provide the possibility to swiftly ramp up access to financial opportunities via smartphones, retail point of sale, and other widely available network connections. Furthermore, the researchers suggested that female empowerment may be aided by digital payments, which allow for higher account ownership and asset development, as well as more economic involvement. Authorities and employers, in contrast, can use digital payments to provide the privacy and simplicity that women want in financial offerings. Payments made through an institution can be the first step toward financial intermediation for a woman [21].

Moreover, Klapper [21] affirms that entrepreneurs may also use digital payment services to interact with banks, workers, distributors, and emerging businesses for their commodities in a simple and cost-effective manner. By minimizing travel time and costs, these technologies help speed up business permits and payments for company licensing. Accessibility to bank deposits and lending can also be improved with the use of digital banking. The researcher suggested that digital salary payments to workers can improve security while also cutting down on time and expense.

Additionally, Digital payments offer their own set of advantages, such as the cashback received as a result of purchases made. The more an individual pays, the more reward points the individual receives, which may then be exchanged for items. Another significant benefit of digital payments is that they assist in improving the credit score, which is important in banking. A good credit score can help in building a good reputation with banks, which will in turn help in securing loans or borrowings [23].

D. Challenges of Fintech and Digital Payments

As a result of digitization, all enterprises and economic sectors confront challenges. The development of fintech initiatives, which are widely regarded as one of the most significant breakthroughs in the financial industry, has been obviously fueled by the expansion of the digitalization. These initiatives are being propelled forward by the digitalization, management, and technological infrastructure. Fintech provides a variety of services, spanning financing, payment (particularly electronic wallets), e-aggregators, e-trading, and e-insurance, as well as for cryptocurrencies such as Bitcoin; nevertheless, studies in this subject reveals the problems and trends facing the industry [24]. For instance, Klapper [21] believes that to enable digital payment services, a solid financial infrastructure is required, which includes network connections such as mobile phones which is at times absent in economically weaker segments. Furthermore, several entrepreneurs and workers lack the documentation necessary to access digital services, like government-issued identification cards or birth records. Entrepreneurs and workers lack adequate financial literacy and the ability to reflect numerically, making it difficult for them to make effective use of online payments services [21].

Moreover, Velde [25] believes that the fintech business presents regulatory agencies with unique problems. Because of their rapid growth, authorities must anticipate and examine the best measures for ensuring regulatory oversight and addressing capital adequacy concerns. In aspects of controlling these fresh entrants, a reasonable balance must be maintained in order to prevent disturbing advancements that may be explicitly or implicitly interest consumers (in the introduction of changes in services and cost reductions due to increased competition with existing players), as well as the economic system more broadly (since they provide a novel means for economic financing).

Additionally, Wang et al. [26] stated that Mobile banking has grown in popularity in various geographic locations due to its ease of use. Nevertheless, it faces several hazards and security issues. Malware is one of the most severe threats to m-payment. Users of m - payments must enhance their security knowledge to avoid malware on portable devices. SSL/TLS vulnerabilities and data leakage are two more important concerns with m - payment encryption. Malware detection, authentication systems, data breach protection, and scam identification and control are all issues that mobile payment confronts. Mobile payment customers and network operators must both take legal steps to ensure data protection and avoid security breaches to mitigate mobile payment concerns [26].

The creation of new means of payment because of technological advancements has appealing advantages such as

faster transactions and reimbursements. However, as asserted by Singh, Supriya, and Joshna [27] there are several drawbacks of electronic payments like the misuse of financial information, private details, and false consumer refusal. Moreover, technological advances increase the possibility of criminals tampering with the funding of unlawful activities and financial fraud outside of established oversight and legislation. In addition, new financial fraud risks are developing presently. Furthermore, consumers of virtual currencies incur risks intrinsic in any payment scheme, such as counterparty risk due to the recipient's secrecy, economic risk, and the danger of financial fraud, particularly due to the lack of visibility. Legislative regulation methods and procedures allow for the application of specified, stringent economic norms as well as government agency oversight of their observance [28].

IV. RESULTS AND ANALYSIS

The current review paper aimed to comprehend the role of Fintech and Innovative Payment Systems during the Covid-19 pandemic. The review of the literature indicated that the Covid-19 dilemma has had an influence on consumers' access to banking commodities and services in recent years. Contactless payments, such as mobile banking and other FinTech innovations, have a significant impact on the nation's economic structural status and growth indicators. Moreover, artificial intelligence has also been crucial in achieving technological advancements to mitigate the impacts of the Covid-19 pandemic. The banking system and electronic payments are two examples of how artificial intelligence has influenced the provision of their services to consumers. It is now possible to pay in malls using a Q.R. code rather than cash, due to technological developments surrounding AI. Moreover, technology-driven financial innovations provide more deregulation, product diversity, and faster, more visible, cost-effective, and bigger access to funding, all of which promote financial inclusion. Moreover, the rapid development and expansion of digital platforms and digital payments have helped in enhancing financial inclusion by providing rapidity, safety, accountability, and cost-effectiveness. When used in conjunction with a sound financial consumer protection framework, internet technologies may quickly expand access to financial possibilities via cellphones, retail point-of-sale terminals, and other broadly accessible network services. However, there exist several challenges pertaining to the adoption of fintech, innovative payments and digital payments in modern times. The study indicates that a strong financial infrastructure is necessary to support digital payment services, which involves network access and technologies such as mobile phones, which are sometimes unavailable in poor areas. Additionally, many people lack the requisite documents to use digital services, such as government-issued identity documents or birth certificates. Also, due to a lack of financial education and the capacity to think quantitatively, it is difficult for individuals to make efficient use of online payment systems.

V. CONCLUSION AND FUTURE SCOPE

As a result of the COVID-19 situation, many businesses are under hardship on a variety of fronts. Simultaneously, many FinTech firms have the potential to expand despite

societal alienation. Availability of credit has already become challenging, particularly for certain early-stage FinTech startups concentrating on well-established business models. As COVID-19 sweeps the globe and disrupts the way individuals and businesses interact and continue businesses, technologies can assist by providing solutions for maintaining the necessary social distance. FinTech may boost government responses and enable safe ways for authorities and providers to reach vulnerable populations quickly and effectively by reducing dependency on physical cash related interactions and the necessity for physical currency. The present study aimed at reviewing the literature regarding the role of Fintech and Innovative Payment Systems during the Covid-19 pandemic. However, future studies can adopt a quantitative methodology to understand the perceptions of the consumers regarding the use of fintech, innovative payments systems and digital payments interactions during the pandemic. This will not only assist in understanding the scope of Fintech and innovative payments post the Covid-19 pandemic but will also assist in delivering new technologies that can mitigate the challenges presently posed by these digital advancements.

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