

FINANCIAL TECHNOLOGY (FINTECH) EVOLVEMENT AND INNOVATIONS: A REVIEW OF LITERATURE

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ABSTRACT

This study evaluates the innovations in financial technology (FinTech) and their impact on traditional financial institutions. Literature reviewed showed that FinTech remains the cardinal instrument for the effectuation of digital transformation. In spite of its potency, FinTech companies are largely criticized because they serve as channels of money laundering through Bitcoin. Findings from this study portrays that empirical studies on fintech in developing countries are yet to gain ascendancy. It therefore concludes that given the innovativeness and flexibility to financial services occasioned by Fintech emergence and adoption, it remains the best initiative to promote financial activities in the financial industry globally. The study recommends that there is need for the apex regulatory body to urgently come up with guidelines and framework to regulate the activities of Fintech firms in Nigeria as this will go a long way in promoting investors/market confidence in the financial sector. As a way of promoting financial market deepening in Nigeria, the government should come up with policies to encourage the listing of Fintech firms in the Nigerian bourse. It is also expected that future researchers should seek to examine the impact of FinTech on the spread of COVID-19 in different climes as this will influence policy implication for the government and regulators.

Keywords: Financial Technology, Innovation, Financial Institutions, Digitalization.

JEL CLASIFICATION: O32, O33, Q55

1.0 INTRODUCTION

In recent time, Fintech has increased astronomically in the entire globe and there is high tendency for this trend to extend even higher. Fintech is an evolving and innovative financial technology geared towards driving digital transformation worldwide. It is a combination of “finance” and “technology” to drive digital transformation in the financial service sector. Fintech emerged as a result of technological innovation, new distribution channels, demographic shift and non-traditional competitors’ policy (Adewolu, 2021). It is an initiative skewed towards applying the tools of financial technology to promote financial activities in

the financial industry in a more convenient and flexible way (Suryono, Budi & Purwandari, 2020). Fintech firms in their own uniqueness are new entrants which operate side by side with orthodox financial services providers such as banks, insurance firms, mutual fund operators and pension fund firms.

In the view of Arefevs and Verdenhofs (2021), Fintech are start-ups whose prime aims are hinged on the employment of technology driven financial tools and soft-ware to render financial services to numerous corporate clients with a view to promoting effective operation and competition. They are otherwise referred to as 'alternative financial institutions', 'BigTech', 'non-banking corporations' or 'innovation firms. It is worthy to note that Fintech are not substitutes for banks and other financial firms, even though they are in the nascent stage of digital disruption geared towards satisfying customers' need in the spate of their dramatic surge from developed to developing climes in the world (Kashyap, 2016; Chishti & Barberis 2016).

What makes Fintech firms differ markedly from the traditional banks is their use of technologies to efficiently render financial services. While Fintech firms are generally known to offer more stand-alone convenient financial services, the assumption is that as financial technologically-enabled firms, they however presently do not have the capacity to bring about the needed results in financial institutions that engage in loans lending. This is one germane reason for their side-by-side operation with the conventional firms that engage in financial and non- financial intermediations such as banks, microfinance banks and insurance firms. The drastic rise in Fintech in both developed and developing countries is gradually becoming competitive and indeed challenging to the traditional financial institutions. For instance, the submission from Fintech Disruptor Report (2017) indicates that up to one-third of financial institutions' income is already at risk based on Fintech emergence and innovations. Similarly, the evolvement of Fintech and instrumentality of artificial intelligence, block chain and crypto currencies has sharply influenced the nature of financial services rendered by the conventional banks, insurance firms and asset management firms world-wide (KMPG, 2015). In the financial service sector, Fintech firms are at the frontier in transforming financial services with several innovative ideas, products, promoting efficiency and flexibility in delivering financial services to myriad customers.

It is in the light of this that Parameshwar, Sruthie, Cisse, Kumar and Misra (2019) accentuate that the rapid development of Fintech is a major disruptive impact in traditional financial institutions which are not high-tech savvy globally. If this consequence may be mitigated, it is expedient for the traditional institutions to collaborate with Fintech institutions or at best, become Fintech solution provider in order to stay active (Lee & Shin, 2018; Parameshwar, et al. 2019; Arefevs & Verdenhofs, 2021). Since the 2000, Fintech investments have also grown dramatically and are almost at their peak in over twenty (20) largest financial markets across the world (EY Fintech Adoption Index Report, 2017). This indicates that the awareness about Fintech and its attendant benefits are being noticed all over the different continents, which may favorably contribute to the financial economy of the world.

In terms of awareness, the EY Fintech Adoption Index Survey Report (2017) shows that on the average, the adoption rate of Fintech with the average among the twenty (20) largest markets is 33%, with the greatest (69%) in China and the lowest (33%) in Belgium and Luxembourg

(13 percent). Two key points may be deduced from the survey report. Firstly, it is obvious from the survey report that the factor behind the awareness and adoption of Fintech in those countries is premised on their ability to excellently tap into the tech-literate but financially underserved consumers. Secondly, the awareness and adoption of Fintech in those aforementioned nations is because of the fact that Fintech services are simpler, highly transparent and easier to personalize by consumers compared to those financial services offered by the traditional financial institutions (Parameshwar, et al. 2019).

Fintech acceptance is still in its early phases in developing countries, and it is relatively new to Nigeria. Since the inception of Fintech, few studies have been conducted by researchers in Nigeria to investigate it. Apart from Okoli and Tewari's (2020) research which was an empirical examination of Fintech diverse transmission pathways to financial development in African economies, lack of literature is a significant barrier to acquiring adequate insights into Fintech acceptance and innovation. In general, Africa is endowed with a proclivity to save; yet, due to a lack of simple access to financial services, financial expansion and deepening have been hampered, and this gap is the driving force behind Fintech's rise and adoption in the financial sector (Andrianaivo & Kpodar, 2011). This shows that the absence of savings intermediation in Africa, particularly Nigeria, is attributable to a lack of innovation/Fintech, especially given the high perceived risk in giving loans to the general populace in Africa (Okoli & Tewari, 2020). It is against this backdrop that this paper seeks to assess the evolution and innovations in financial technology (FinTech) using a literature review approach.

2.0 LITERATURE REVIEW

2.1 Conceptual Clarification

Fintech does not have a generally-accepted definition. In fact, there have been divergent definitions of Fintech by both students and corporate business professionals based on perception and views in varying climes. Literarily, Fintech is a word which is a combination of "finance" and "technology". As opined by Zavolokina, Dolata and Schwabe (2018), Fintech is a new and exciting area that has gotten a lot of press and is attracting a lot of money. The term "Fintech" refers to the emergence of new information technology in the financial services sector (Chong, William-choo, Chan, Julian-The & Ng, 2019). Fintech is simply an innovation in financial technology.

Fintech firms make financial services more widely available. Financial technology can be defined as technology and innovation aimed at competing with existing financial methods for delivering financial services to users in the public sphere. Financial technology is a growing industry that uses technology to improve financial operations. Fintech can also be defined as the evolution of financial services enabled by technological advancements (Arefevs & Verdenhofs, 2021). Fintech is any innovative ideas that have the capacity to promote financial service processes via the provision of technology driven elixirs to different business practices. Basically, the most common Fintech business models as opined by Lee and Shin (2018), encompass but not limited to insurance services, crowd funding, payment, lending, wealth management, and capital markets.

Fintech is concerned with software and other modern technologies commonly employed by firms to provide automated and enhanced financial services. Financial technology can be said

to mean technology and innovation aimed at competing with existing financial techniques for delivering financial services to public customers. Financial technology is a rapidly expanding field that uses technology to improve financial operations. Fintech is a term that refers to the use of sophisticated phones for internet financial transactions as well as the usage of crypto currency to make financial services highly reachable to members of the wider population.

Financial technology firms are typically made up of startups and established financial institutions, as well as other technology organizations, all aiming to increase the usage of financial services provided by existing financial institutions. Various firms, ranging from crowd funding firms to electronic money organizations to insurance technology service providers, amongst numerous ones, are gradually growing within the Fintech industry in various parts of the world based on the type of services provided. The key objective of *Fintech* firms is to disrupt the usual model of banking through the use of technology to ensure that financial *operations* and services are easier, faster, reliable and more accessible to the general members of the public.

2.2 Activities of Fintech Companies

Despite the fact that alternative Fintech businesses are greatly common in the financial markets, their impacts are yet to be fully investigated (Arefevs&Verdenhofs, 2021). Fintech firms make financial services more accessible to the large proportion of people. Some of the financial services are mainly conventional and they include cash savings, undertaking investment in financial and non-financial assets and credit lending. Similarly, the financial services include revolutionary crypto currency. Financial technology firms are often made up of startups and established financial institutions as well as other technology firms striving to promote the use of financial services delivered by existing financial firms. In recent times, Fintech firms can provide financial services that are cheap and easy to access by a broader range of customers, especially in key aspects like loan provision and collection (Carmona, Lombardo, Pastor, Quiros, Villar -Garcia, Ramos- Munoz & Castejon -Martin, 2018).

2.3 Fintech Evolvment and Innovations

The evolution of Fintech started in the early 1950s. As at this time, cards used for credit transactions emerged to simplify everyday business activities. Financial institutions began shifting from a traditional strategy to meeting consumer demands around the turn of the 2000 to a modern-day technology approach (Gabor & Brooks, 2017). The conventional financial sector faces technical problems as a result of the financial institutions' changing business models. This therefore implies that the underlying factor behind Fintech's emergence is innovativeness in financial service delivery to consumers. It is on this premise that Arefevs and Verdenhofs (2021) define Fintech as a financial services change made possible by financial innovations. Fintech's vast quantity of technical advancements, which have changed how people do business, move money, and perform everyday activities, has made it one of the most essential industries that has gotten support from decision makers throughout the globe (AlMomani & Alomari, 2021). It is not unexpected that investment estimates in this field would reach \$15 billion by 2022, given the expanding potential of the financial industry to bring about a technological revolution and the greater creativity and efficiency it is witnessing to achieve wealth and development (AlMomani & Alomari, 2021).

Chong et al. (2019) emphasize that the financial industry must first assess the degree of customer acceptability of technological adoption in financial services in order to use Fintech services. Financial service providers may provide mobile banking, for example, which enables users to conduct financial transactions using mobile devices such as smartphones and tablets. Oshodin, Molla, Karanasios and Ong (2017) stress that without doubt the conventional financial technologies have experienced an unprecedented transformation through the emergence of Fintech. They aver that Fintech as an emerging field has brought about a lot of innovativeness in the method utilized to render financial services to customers. This presupposes that the evolvement of computer-based application (Fintech) is making financial services more accessible and adaptable to customers regardless of whether financial institutions are involved. It has continued to bring about disruption, innovation and dynamism over the traditional financial institutions world-wide.

Parameshwar, et al. (2019) in a study of the impact assessment of Fintech and disruption among countries in Asian continent opine that with the emergence of fintech, financial services are now easier, highly flexible and accessible by a lot of persons. New Financial technologies are reducing or removing conventional financial institutions' roles as middlemen and providing cheaper pricing and/or greater returns to clients according to a study by the World Economic Forum in 2015. Parameshwar et al. (2019) identify some innovations of Fintech to include prompt mobile financial services payment, ease of trading Bitcoin/Blockchain, easy fund transfer, accessibility to personal loans/ capital for investment purpose, enhancing personal finance, traditional deposits/savings account and promotion of better wealth management. They emphasize that these innovations engineered by Fintech has started reducing the reliance on the tradition financial institutions.

Banks in many developing countries, such as Nigeria, have developed their own Fintech innovations. GTPay, First Bank's FirstPayLink, and the United Bank for Africa's UCollect are just a few examples of the new payment methods that have been introduced by various banks (Kyari & Akinwale, 2020). It is through the development of these mobile payment systems that many Nigerians who do not have internet access are able to conduct financial transactions (Kyari & Akinwale, 2020). The United Bank for Africa (UBA) in Nigeria for instance, offers a Fintech savings platform called "PiggyBank.ng" that enables people to save money (Kyari & Akinwale, 2020). People can save using this Fintech innovation platform because the savings procedures can be automated and the money is taken directly from the person's bank account (Kyari & Akinwale, 2020). "Social Lender" by Sterling Bank is a platform that lends money to people based on their online reputation. The use of this Fintech innovation allows those who are unable to obtain conventional loans to borrow money from a bank based on their social reputation (Kyari & Akinwale, 2020). When it comes to Fintech, banks no longer view it as an enemy but now see it as a partner. In consonance with this view, Deloitte (2018) noted that in our contemporary time, Fintech is here to empower banks rather than disrupt them.

2.4 Challenges of Fintech Companies

The criticisms against Fintech firms can also be regarded as their defects.

- i. Regulators, such as central banks and the federal government, often express questions about the legitimacy of new technologies like blockchain and cryptocurrencies.

- ii. Security of data is a major challenge affecting Fintech companies. This is so because regulators are always keen on the possibility of threat occurrence such as hacking and of course premised on taking care of key individuals and data of certain financial firms. For example, in some continents of the world such as Europe, Fintech firms are often given resources to ensure they are able to carry out defined statutory obligation of protecting their sensitive data. This is so because Fintech firms are mandated to strictly adhere to data protection laws.
- iii. A lot of Fintech firms often have very huge start-up costs quite small marginal costs when they want to increase customers.
- iv. Fraudsters and corrupt individuals usually employed Fintech companies to engage in money laundering via bit coins and others.
- v. Fintech companies are gradually influencing the occurrence of unabated unemployment via workers' job losses.
- vi. Fintech firms are usually affected with smaller fewer financial resources which tend to prevent them from appropriate scaling.
- vii. Financial technology companies do have limited fund, coupled with startup experience/necessary wherewithal.
- viii. Financial technology companies do lack effective business model for efficient operation.
- ix. Fintech firms do not have adequate competence and manpower in the effectuation of its services. That is why management in financial technology enterprises, according to Arefevs and Verdenhofs (2021), must keep up-to-date on the newest existing and future technologies in order to produce innovations that assure the viability of organizations in the short and long term.
- x. Many critical operations of banks are not often replaced by Fintech companies, despite their distinctive positions (Navaretti, et al. 2017).
- xi. In the world of Fintech, there is a lot of potential for technological failure. The total digitization of the financial system, for example, may be hampered by the incompatibility of certain old banking procedures with modern technologies. In addition, as with any IT-based method, there is a possibility of technological failure.
- xii. There will always be financial risks associated with using Fintech to perform financial transactions. The sort of financial risk, on the other hand, will be determined by the financial transaction itself (Lee & Shin (2018).

2.5 Superiority of Fintech over Traditional Financial Institutions

Customers' expectations for speed and convenience have changed significantly as a result of Fintech's threat. To put it another way, as the Fintech industry has grown, so has the demand from clients for technology-based banking assistance from their banks. This has left traditional banks in a tough position since they lack the technology to match that of the Fintech firms (Navaretti et al., 2017). Faster and more user-friendly services provided by Fintech are becoming more popular and accepted (Dorfleitner et al, 2017). Additionally, banks are very concerned about Fintech's capacity to damage their connection with their clients by winning their trust and loyalty (Xavier, 2017).

From a conceptual and empirical research perspective, it has been argued that Fintech variables have outweighing implications on traditional financial institutions variables. For

example, in a study conducted by Parameshwar et al. (2019) where the nexus between traditional financial institutions variables like savings account, withdrawal and number of withdrawal as well as number of deposit was analyzed using Fintech factors such as utility bill payment, online and mobile banking, digital payments, etc., the researchers discover that Fintech outperform conventional financial institutions and mobile money accounts and paid utilities have a negative influence on conventional financial institution savings, thus, illustrating the disruption caused by Fintech. Also, conventional financial institution metrics such as withdrawal and deposit numbers, do not indicate a significant level with Fintech indicators. The research also examines the relationship between conventional financial account proxies like bank accounts and Fintech proxies like debit cards, online and mobile banking, and utility bill payment. However, the survey shows that using the internet or mobile to access a bank account is more important than having one. The study reveals that the more individuals use the internet and mobile phones, the less they want a bank account. Moreover, the above statistics imply that individuals choose mobile or online banking over conventional financial accounts. The research indicates that Fintech factors affect non-Fintech withdrawal and deposit.

2.6 Theoretical Framework

The technological acceptance model and the evolutionary theory of firm are the foundations of this study. Davis (1989) proposes that a user's intention to embrace a new technology is a function of its perceived utility and ease of use, according to the technology acceptance model (TAM). It means that if a corporation or an individual believes that a new technology will improve performance while simultaneously requiring less labor and time to complete a job, they are more likely to embrace it. The firm's evolutionary theory emphasizes micro-level technical competence as a result of internal technological skills and complex interactions between persons, businesses, and organizations within a particular socioeconomic and institutional context (Iammarino et al., 2012). Technological capabilities, in this perspective, are defined as the firm's ability to acquire, adapt, enhance, and generate new technologies in order to maintain its inventive capacity over the long term (Akinwale, Akinbami, & Akarakiri, 2018; Cerulli, 2014; Zahra and George, 2002). Financial institutions must see financial technology as an opportunity to enhance their internal and external interactions as well as their performance and client relationships in order to use it.

2.7 Empirical Review

Empirical studies on Fintech are yet to achieve prominence in general (Chong et al., 2019; Oseni & Ali, 2019, etc.). Though it has been addressed theoretically from its inception (Razak, et al. 2020, Arefevs & Verdenhofs, 2021), here is empirical evidence that Fintech practices are disrupting conventional financial institutions in various Asian nations (Parameshwar, et al., 2019). The study by Parameshwar, et al., (2019) was conducted using a combination of exploratory and descriptive methods and a standard least squares multivariate regression approach to evaluate data collected between 2013 and 2017 from the global Fintech report. The study found that there was a disruption in savings and account numbers at traditional financial institutions because of Fintech practices. Similarly, the findings of the study show that services like mobile money accounts, utility bill payment, and use of a mobile or internet device are used to gain access to a bank account in addition to digital payments. Okoli and Tewari (2020) conducted an empirical review of Fintech diverse transmission pathways on financial growth in African nations from 2002 to 2019, with a focus on financial technology

(Fintech). Interacting dummy variables were modelled using the theories of liquidity preference and credit-creation in order to capture probable heterogeneities. Fintech, according to the research, has a direct impact on financial growth in African countries, but also has an indirect effect on financial inclusion and bank efficiency in frontier and fragile nations too. The result from the general method of moment (GMM) and static estimations corroborate this theory with substantial differences in intercept and slope coefficients of Fintech across different groups.

Varga (2017) investigated the role of Fintech in enabling innovation in the financial industry as well as its impact on the triple bottom line in tackling the important concerns of people worldwide. In the report, Fintech is judged to be a critical remedy for ensuring that customers have easy access to flexible services. Sustainability, Fintech, and financial inclusion as studied by Arner, Buckley, Zetsche and Robin (2020) evinces that Fintech is the driving force behind financial inclusion. Priya and Anusha (2019) studied the concerns and challenges of Fintech in India. A frequency and percentage distribution was used for the research's quantitative components. The study reveals that Fintech allows people to transfer money between accounts. Financial technology, according to the findings has expanded swiftly and is projected to continue to increase in the near future.

Um, Shin and Kim (2020) employed structural equation modeling to study high-end Fintech. The results show that middle-aged and older persons embrace technology because it is beneficial, easy, innovative, and unpredictable. The desire to adopt Fintech increases with utility, ease, and innovation, and decreases with uncertainty. Jin, Seong and Khin (2019) creation of conceptual elements impacting Fintech product and service awareness solves research gaps and increases understanding regarding Fintech awareness and acceptability. Dianna and Leon (2020) examination of the variables influencing Fintech payment adoption in Jakarta using structural equation modeling from 313 surveys indicates that convenience is the most significant beneficial element influencing the inclination to continue Fintech payments. The results also showed that operational issues do not hinder Fintech payment's future.

Al-Nawayseh, (2020) finds that customers' faith in financial technology apps is a key mediator in the link between their perceptions of risk and their inclination to utilize it. The author concurs that using Fintech apps is strongly influenced by both the perceived advantages and social norms, though the perceived hazards of using Fintech applications are hardly noticeable. Lien, Doan and Bui (2020) gathered data from 620 bank clients in Ho Chi Minh City to show that Fintech may also be used in the banking industry. Multivariate regression analysis was used to determine that Fintech is a critical component of the banking industry. The outcome of the study suggests that consumer trust, perceived utility, and social impact, all play important roles in Fintech services in the banking industry. Covid-19 expansion may be predicted with the use of Fintech, according to Daqar, Constantinovits, Arqawi, and Daragmeh (2021). Their research employed structural equation modeling. In the study, the researchers keenly observe that Fintech users who have a better understanding of and usage of Fintech would assist to reduce the spread of covid-19 by avoiding contact payment methods. They emphasize that when it comes to preventing the spread of covid-19, Fintech's primary tool is contactless payment. The authors conclude that covid-19 spread may be predicted based on customers' Fintech beliefs and behaviors.

Adebayo and John (2021) studied the impact of Fintech on conventional financial service providers in Nigeria. The purpose of the study was to determine the factors influencing the adoption of Fintech in Nigeria's banking industry. The survey also sought to ascertain what drives the banking industry's embrace of Fintech services. Five distinct financial sectors were randomly assigned in 150 surveys. Respondents' response rate was 88.0 percent. The information was broken down into frequency, proportion, significance, and ranking. The findings indicate that financial institutions are more concerned about the danger of implementing Fintech as opposed to having easy access to goods or services. The research recommend that the Nigerian banking industry should further promote the characteristics of Fintech services in order to enhance the training of high-quality human resources.

Kyari and Akinwale (2020) evaluated the degree of Fintech adoption across Nigerian commercial banks using least squares method. It is clear from the descriptive analysis that most of the banks tested were adopting Fintech at a medium level, and the most prevalent Fintech innovation was money transfer and payment. Findings from the study reveal that the adoption of Fintech innovation and software technology acquisition by banks has an extremely beneficial and substantial influence on their financial performance. From the literature examined above, it is explicit that there are scanty literatures which have conceptually examined the subject of Fintech evolvement and innovation from Nigeria, thus necessitating this research.

3.0 CONCLUSION AND RECOMMENDATIONS

The primary aim of this study was to assess the literature on Fintech, innovations in Fintech and its potency over the traditional financial institutions. Literatures reviewed indicate that there is no universal definition and innovation in Fintech is causing a disruption impact on the traditional financial institutions. Despite the attendant advantages associated with Fintech adoption, some of the criticisms against it include but not limited to the fact that fraudsters and corrupt individuals usually employed Fintech companies to engage in money laundering via bit coins and others. Similarly, the study reveals that empirical studies on Fintech in developing countries are yet to gain ascendancy. This study therefore concludes that given the innovativeness and flexibility to financial services occasioned by Fintech emergence and adoption, it remains the best initiative to promote financial activities in the financial industry globally.

Flowing from the literature explored, it therefore suggested that there is need for the apex regulatory body to urgently come up with guidelines and framework to regulate the activities of Fintech firms in Nigeria as this will extensively promote investors/market confidence in the financial sector. As a way of promoting financial market deepening in Nigeria, the government should come up with policies to encourage the listing of Fintech firms in the Nigerian bourse. Future researchers are encouraged to investigate the implication of Fintech transmission channels on the financial development of Nigeria and other regions for a robust policy implication.

References

Adebayo, A.S., & John, I. (2021). Fintech and its effect on traditional financial service providers. *Uniport Journal of Business, Accounting and Management*12(2), 112-120

- Adewolu, B. (2021). A perspective on Fintech's growing influence on financial services. Pwc Nigeria Alumni breakfast meeting. Pwc.com/fintech report.
- Akinwale, Y., Akinbami, J.F., & Akarakiri, J.B. (2018). Factors influencing technology and innovation capability in the Nigerian indigenous oil firms. *International Journal of Business Innovation and Research* 15(2), 247–268
- AlMomani, A.A., & Alomari, K.F. (2021). Financial technology (Fintech) and its role in supporting the financial and banking services sector. *International Journal of Academic Research in Business & Social Sciences* 11(8), 1793-1802
- Al-Nawayseh, M. K. (2020). Fintech in COVID-19 and beyond: what factors are affecting customers' choice of Fintech applications? *Journal of Open Innovation: Technology, Market, and Complexity* 6(4), 1-15
- Andrianaivo, G., & Kpodar, J. (2011). Taming the beast: a scientific definition of FinTech. *Journal of Innovation Management* 4(4), 32-54
- Arefjevs, A., & Verdenhofs, M. (2021). The role of Fintech firms in contemporary financial sector development. *WSEAS Business and Economics Journal* 18, 411-423
- Arner, D. W., Buckley, R. P., Zetsche, D. A., & Robin, V. (2020). Sustainability, Fintech and financial inclusion. *European Business Organization Law Review* 21(1), 7-35
- Arner, D. W., Buckley, R. P., Zetsche, D. A., & Robin, V. (2020). Sustainability, FinTech and innovations. *Journal of Financial Technology*, 4(3), 12-36.
- Carmona, A.F., Lombardo, A.G-Q., Pastor, R.R., Quiros, C. T., Villar-Garcia, J. P., Ramos Munoz, D. & Castejon-Martin, L. (2018). Competition issues in the area of financial technology (Fintech), policy department for economic, scientific and quality of life policies of the European Parliament. *Journal of Financial Technology* 5(2), 44-56
- Cerulli, G. (2014). The impact of technological capabilities on invention: an investigation based on country responsiveness scores, *World Development* 59(3), 147–165
- Chishti, S., & Barberis, J. (2016). The Fintech book: the financial technology handbook for investors, entrepreneurs and visionaries. John Wiley & Sons. (1st ed), 51-232
- Chong, T., William-Choo, K., Yip, Y., Chan, P., Julian Teh, H., & Ng, S. (2019). An adoption of Fintech service in Malaysia. *South East Asia Journal of Contemporary Business, Economics and Law* 18 (5), 134-147
- Daqar, M. A., Constantinovits, M., Arqawi, S., & Daragmeh, A. (2021). The role of fintech in predicting the spread of covid-19. *Banks and Bank Systems* 16(1), 11-19
- Davis, F. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology, *MIS Quarterly* 13, 319-339
- Deloitte (2018). Closing the gap in fintech collaboration overcoming obstacles to a symbiotic relationship. Available online: <https://www2.deloitte.com/content/dam/Deloitte>.
- Diana, N., & Leon, F. M. (2020). Factors affecting continuance intention of fintech payment among millennial in Jakarta. *European Journal of Business and Management Research* 5(4), 1-19
- Dorffleitner, G., Hornuf, L., Schmitt, M., & Weber, M. (2017). Fintech in Germany. Cham: Springer
- Ey Fintech Adoption Index (2017). Key aspects around financial technologies and regulation policy report. *Journal of Information Technology* 3(2), 33-43
- Financial inclusion. *European Business Organization Law Review* 21(1), 7-35
- Fintech Disruptor Report (2017). Innovation, distributed: mapping the Fintech Bridge in open source era. Magnacartacomms. 16

- Gabor, D., & Brooks, S. (2017). The digital revolution in financial inclusion: international development in the fintech era. *New Political Economy* 22(4), 423-436
- Iammariono, S., Piva, M., Vivarelli, M. & Tunzelmann, N. (2012). Technology capabilities and patterns of innovative cooperation of firms in the UK regions, *Regional Studies* 46(10), 1283–1301
- Jin, C. C., Seong, L. C., & Khin, A. A. (2019). Factors affecting the consumer acceptance towards fintech products and services in Malaysia. *International Journal of Asian Social Science* 9(1), 59-65
- Kashyap, F. (2016). The fintech book: the financial technology handbook for investors, entrepreneurs and visionaries. John Wiley & Sons. (1st ed), 22
- KPMG. (2015). Fintech 100 - Leading Global Fintech Innovators Report 2015.
- Kyari, A.K.Y., & Akinwale, Y. (2020). An assessment of the level of adoption of Fintech technology by Nigerian Banks. *African Journal of Science Policy and Innovation Management* 1(1), 118-130
- Lee, I., & Shin, Y. J. (2018). Fintech: Ecosystem, Business Models, Investment Decisions, and Challenges. *Business Horizons* 61(1), 35–46
- Nakaso, H. (2016). Fintech - its impacts on finance, economies and central banking. [Transcript]. Retrieved from https://www.boj.or.jp/en/announcements/press/koen_2016/data/ko161118a.pdf.
- Navaretti, G.B., Calzolari, G., MansillaFernandez, J.M. & Pozzolo, A.F. (2017). Fintech and Banks: Friends or Foes? *European Economy* 2(9), 1-17
- Okoli, T. T., & Tewari, D.D. (2020). An empirical assessment of Fintech heterogeneous transmission channels to financial development among African economies. *Cogent Economics & Finance Journal* 8(1), 1-18
- Oseni, U. A., & Ali, S. N. (2019). Fintech in Islamic finance: theory and practice. London, England: Routledge Taylor & Francis Group.
- Oshodin, O., Molla, A., Karanasios, S., & Ong, C. E. (2017). Is Fintech a disruption or a New Eco-system? An exploratory investigation of Banksr response to Fintech in Australia. In Proceeding of Australasian Conference on Information Systems, 1-11
- Parameshwar, A.S., Sruthie, A., Cisse, M., Kumar, M.A., & Misra, S. (2019). Fintech and disruptions: an impact assessment. *Journal of Critical Review*, 6(6), 89-97
- Priya, K., Buckley, R. P., Anusha, D. A., & Buckler, R. (2019). Fintech, financial inclusion and the UN Sustainable Development Goals. In Routledge Handbook of Financial Technology and Law, 247-272.
- Priya, P. K., & Anusha, K. (2019). Fintech issues and challenges in India. *International Journal of Management*, 8(3), 56-67.
- Suryono, R.R., Budi, I., & Purwandari, B. (2020). Challenges and trends of financial technology (FinTech): a systematic literature review. *Journal of Information Technology* 3(2), 1-20
- Um, S. R., Shin, H. R., & Kim, Y. S. (2020). An analysis of the factors affecting technology acceptance: focusing on fintech in high-end technology. *Journal of Digital Convergence* 18(2), 57-71.
- Varga, D. (2017). Fintech, the new era of financial services. *Vezetéstudomány-Budapest Management Review* 48(11), 22-32
- World Economic Forum Report (2015). The future of financial services. Retrieved from http://www3.weforum.org/docs/WEF_The_future_of_financial_services.pdf
- Xavier, V. (2017). The impact of Fintech on banking. *European Economy, Banks, Regulation, and the Real Sector* 2, 97-105

- Zahra, S., & George, G. (2002). Absorptive capacity: a review, re-conceptualization and extension. *Academy of Management Review* 27(2), 185–203
- Zavolokina, L., Dolata, M., & Schwabe, G. (2018). FinTech – what’s in a name? In Proceedings of the Thirty Seventh International Conference on Information Systems, Dublin, Ireland, 11–14, 469–490