

Financial Technology's Disruption of Traditional Banking Systems in Developing Economies

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Abstract

FinTech has established itself as a disruptive technology, especially in developing countries, thereby affecting the banking sector. FinTech has brought about changes to the sector through technologies like mobile payments, blockchain, artificial intelligence (AI), and machine learning (ML). Technologies such as AI and digital payments have received a high rating (9/10) because of their ability to personalize services and make transactions better. Blockchain technology and smart contracts (8/10) have introduced another layer of security and decentralization into the financial ecosystem, while ML and RPA have helped optimize operations. FinTech innovations disrupt the traditional financial sector, but also help create an inclusive society offering financial services to those who lack access to banks. Innovations such as artificial intelligence and blockchain technology have helped increase financial transparency and reduce costs. However, the introduction of AI and blockchain technology presents challenges, including cybersecurity concerns and regulatory challenges, especially in developing countries. In response to technological advancements, the financial industry is implementing digital innovations and collaborating with traditional banks and FinTech firms. While technological development is still ongoing, some obstacles exist, including adapting existing procedures and regulations. Financial services offered at relatively low costs through FinTech innovations have led to more competition and financial inclusiveness in areas where traditional banks are non-existent.

Keywords: Financial Technology, Mobile Payments, Blockchain, Artificial Intelligence, Machine Learning, Financial Inclusion, Regulatory Challenges.

Introduction

The paper examines the disruption in the traditional financial services industry caused by FinTech startups and the influence of this innovation on the banking sector. The researcher pays attention to the influence of innovations on the financial infrastructure of developed and developing countries, where financial institutions are required to be innovative or become obsolete Divya et al., (2024). In the current research, the question of opportunities for the traditional financial institutions under the wave of disruption in the FinTech industry will be considered. The influence of digitized banking and mobile application innovations on the traditional financial institutions in the developing countries will be identified Liu, (2024). In this paper, Indonesia will serve as an example of the opportunities offered by digitization and the disruptiveness of the FinTech industry. The influence of innovations on the financial sector stability, especially in developing countries, will be examined, taking into account that the traditional banking environment is conservative towards innovations in terms of digitization (Jameaba, 2020). It becomes evident that the rapid pace of implementation of mobile and internet banking solutions is pushing traditional banks to reconsider their service delivery models and strategies (Sibanda et al., 2020). This research will seek to examine the notion that emerging FinTech technologies, such as blockchain technology and peer-to-peer lending, are changing the face of banking services in developing countries Han, (2022).

This paper evaluates the disruption brought about by digital transformation in the banking value chain. Specifically, this work will assess how fintech solutions affect the banking industries in emerging markets. From the works of these authors, fintech solutions are making transactions simpler, improving customer experiences, and increasing competition in the traditional banking sectors of developing countries (Naimi-Sadigh et al., 2022). These technological advances have improved financial inclusion in these regions, enabling individuals in rural areas to access banking services without physical branches (Omoge et al., 2022). Through the use of blockchain technology, decentralized finance (DeFi) solutions have become possible, thereby disrupting conventional banking systems, especially in countries with limited presence of these institutions (Kumari & Devi, 2022). This paper seeks to evaluate how fintech solutions like digital wallets, peer-to-peer lending, and mobile payments disrupt the banking industries in emerging economies through financial inclusion and addressing challenges associated with accessing banking services (Sangwan et al., 2020). In addition, it will look at how cryptocurrencies and CBDCs disrupt the traditional banking systems in third world countries which lack adequate financial infrastructure (Shinde, 2024).

Key Contribution

- The purpose of this paper is to give a detailed discussion on the role of FinTech in disrupting traditional banking models in developing economies, in terms of financial inclusion, accessibility and operational efficacy.
- The paper identifies the technological developments, including mobile payments, blockchain and AI that are transforming the financial services sector, providing more affordable solutions that are quicker and less dependent on traditional financial intermediaries.
- The study explains the way FinTech is changing financial services in developing economies by making underserved populations have access to banking, credit, and investment opportunities thereby improving economic opportunities and alleviating inequality.
- The paper will discuss how the traditional banks are addressing the challenge of the FinTech by embracing new technology and digital business to keep up with the competition and how this transformation could result in the emergence of neo-banks and digital only banking services.

This research is followed by the various sections, Section I as an introduction, Section II as a literature review based on the previous papers and also defines the research gap. Section III as Conceptual Framework Section IV discuss the history of traditional banking, Section V as the rise of Fin Tech, Section VI as Explore the emergence of fintech companies, Section VII as to discuss the impact of Fintech on the banking industry, Section VIII as to analysis the response of traditional banks to the rise of FinTech, Section IX as opportunities and challenges, and Section X as Conclusion of this research.

Literature Review

The paper discusses how blockchain and decentralized finance (DeFi) can disrupt the traditional banking and financial systems, especially in emerging markets. The authors believe that blockchain-based technologies have the potential to help promote transparency, minimize costs, and improve financial inclusion, which the conventional banking model in developing economies cannot Bakare et al., (2024). This study analyses the impact of the adoption of digital currency on conventional banking systems in emerging economies. Using data analytics, the authors discuss how the

adoption of digital currencies in financial systems is transforming the banking services and offering an alternative to the traditional banking processes in developing countries (Shabbir et al., 2024). It emphasises that the adoption of cryptocurrencies creates new opportunities for financial inclusion and economic development, especially in developing economies, but it poses challenges for established banking systems (Kayani & Hasan, 2024). The paper focuses on the prospects of DeFi, including the expansion of access to financial services, but also discusses the issues of regulation, security, and stability of financial systems, particularly in developing countries (Ali, 2024). The research concludes that though FinTech innovations enable more people to access banking, it's also presenting challenges to the traditional banks in managing liquidity, especially in developing countries whose financial systems are still developing Dang, (2020). The paper also highlights the role of financial innovations in disrupting the conventional financial system and the need for banks to adopt these technological innovations to remain competitive, especially in developing nations (Bozik, 2020). In this regard, the paper will highlight the disruptive nature of the FinTech revolution, with particular focus on its innovation elements. It examines the role of FinTech in transforming the financial landscape of developed and developing economies, emphasising innovations that are disrupting the traditional banking model, enhancing efficiency, and increasing access to financial services (Gomber et al., 2018). In order to examine blockchain disruption and decentralized finance (DeFi), it is important to highlight the emergence of decentralized business models. To claim that blockchain technology and DeFi have become an alternative to traditional banking, particularly in developing economies where traditional financial systems are not always efficient or accessible (Chen & Bellavitis, 2020). This systematic review examines blockchain as a disruptive business technology, and its effects on financial services. The authors indicate that a decentralized blockchain has the potential to transform banking in third world economies by making it more transparent, less fraudulent, and more financially inclusive, and breaking the conventional banking paradigm (Frizzo-Barker et al., 2020). According to the paper, financial technologies as mobile banking and blockchain can further destabilize the traditional banking sector by providing affordable options to financial inclusion in third-world economies (Visconti, 2016).

Research Gap

Although there has been a tremendous improvement on the role of FinTech in the traditional banking system, there have been gaps in investigating the long-term socio-economic implications of the technology, especially on financial inclusion in regions that lack adequate services. The role of mobile money and blockchain technologies in economic stability and governance of developing economies has limited literature. Also, the impact of regulatory frameworks on the speed of the adoption of FinTech has not been adequately considered. Moreover, the relations between conventional banks and FinTech companies, primarily with respect to the strategic partnerships, should be more thoroughly explored to have a full picture of their overall effects on the behavior of the market and access of the consumers to the financial services.

Conceptual Framework

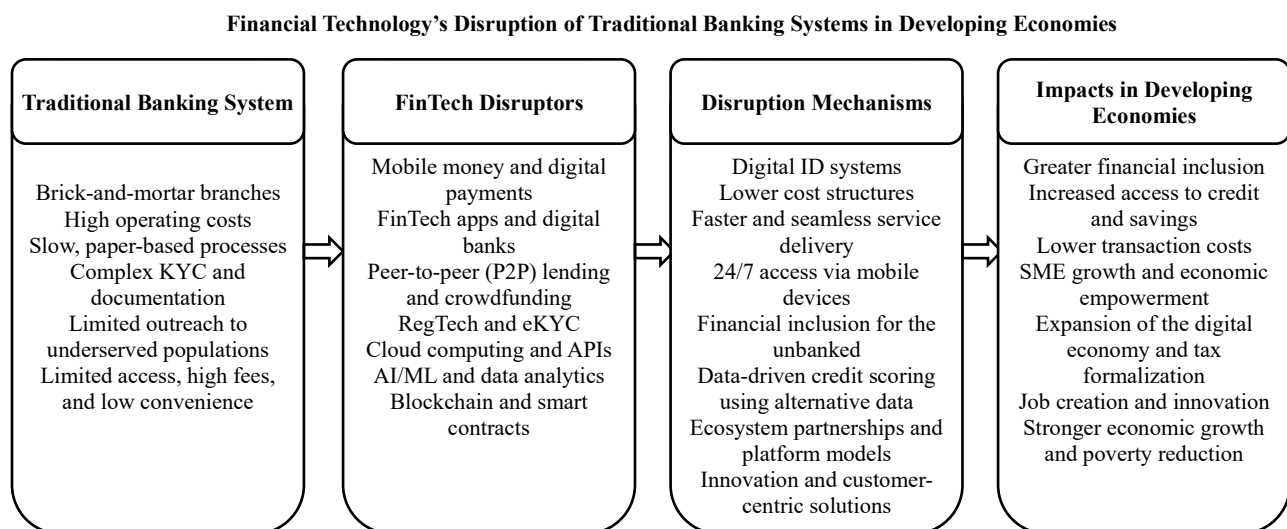


Fig. 1: Conceptual Diagram

Fig. 1 showcases how financial technology disrupts the existing banking model, especially in the emerging world. Existing banks characterized by physical branches, expensive operations, and slower manual transactions are now being disrupted through the adoption of the FinTech model. Such disruptions are made possible through the adoption of various technologies like mobile money, payments, P2P lending, and digital banks. Lower cost structures, fast transactions, and round-the-clock access to services have become possible through the use of FinTech technologies. Disruption through FinTech leads to financial inclusion for underserved populations because can now access financial services. The emerging economies benefit from FinTech as experience financial inclusion, better access to loans and savings, reduced transaction costs, and empowerment of SMEs. Moreover, emerging economies will experience digital economy growth, taxation formalization, employment, and poverty alleviation because of FinTech. Mobile penetration rates, identity digitalization, supportive policies, and financing are some of the key enablers for disruption through FinTech.

Discuss the History of Traditional Banking

Banking has been changing for millennia, and the roots of this practice can be traced back to ancient society. The first accounting of banks dates back to Mesopotamia circa 2000 B.C.E. where traders and merchants would leave money and valuables under the custody of banks. Italians started to take modern banking shape in the 14th century, especially when Medici Bank was created. Also in this time, banking services went beyond the safekeeping of money and started to cover the lending, currency and investment services. The industrial revolution also enhanced the development of banks since the capital was required to finance big infrastructural projects, which resulted in the establishment of central banks and commercial banks. Gradually, banks came to play a vital role in the operation of individual economies by supporting transactions, credit, and investments that led to the development of the economy. By the 20th century, the banking industry was highly regulated, and commercial banks became mediators between the savers and the borrowers, providing services such as savings accounts, loans, and mortgages. Although conventional banks have been instrumental in the development of the global economy, it is full of limitations and inefficiencies that have become more evident over the past few decades. The other major drawback is the slow processing of transactions especially when making a payment across borders. With conventional banking, it might take several days to go through an international transfer and the costs of such services are usually prohibitive. The shortfalls of the conventional banking systems support the dire necessity of innovation in the financial sphere. Due to the growing interconnection and digitalization of the global economies, there is a growing demand of faster, cheaper and more inclusive financial services. Financial technology could be a solution to these problems, as it will allow many more to become financially included, especially in areas with a deficit of financial infrastructure. Mobile banking, blockchain, and digital payments are just some of the FinTech innovations that can reduce the operational expenses, improve the accessibility, and offer more efficient services to the underserved populations. Also, the higher usage of data-driven decision making and processes automation in finance is predicted to make the delivery process more accurate, faster, and personalized. Real-time transactions, lower costs, and improved risk management via artificial intelligence and machine learning are just a few of the many possible reasons why technology innovation should be embraced within the financial industry. With changes in consumer needs, the financial industry is finding itself increasingly pressured to innovate in order to satisfy consumers.

The Rise of Fin Tech (Financial Technology)

The field of financial technology (FinTech) is one that has managed to make significant changes in the field of finance by virtue of adopting new technologies and venturing into areas that were previously untouched through their use of internet and smartphones. The adoption of technologies like blockchain, AI, and Big Data analytics has made an entirely revolutionary impact on the way financial services are rendered; more precisely, providing fast and cheap services in areas where financial firms have not been able to reach. Furthermore, FinTech has made possible decentralized financial systems and improved fraud detection along with personalized services like digital payments, digital lending, and digital insurance services. Moreover, FinTech's evolution has been helped considerably by regulatory developments that have created an ecosystem favorable for innovation.

Explore The Emergence of Fintech Companies

The emergence of FinTech companies has significantly disturbed the industry of financial services, because of a technological shift of the classic banking framework toward something new, cheaper, efficient, and convenient. Companies operating under the FinTech model began emerging in the early 2000s and are known for offering digital platforms and mobile application through which offer various services from digital payments, loans, insurance,

investment advisory, and even blockchain solutions. In addition, FinTech is considered one of the most influential factors in achieving financial inclusion, to cover the holes left by traditional banking. This was necessary to address people that traditional banking systems cannot serve due to geographical or infrastructural reasons. The use of advanced technological innovations, such as blockchain technology and artificial intelligence (AI), has made it possible for FinTech companies to provide payment solutions, tailored financial services, and enhanced decision-making abilities. Such developments have resulted in FinTech being a more flexible and less expensive option in comparison to the conventional banks since the companies can run on lesser overhead costs and grow at a rapid pace without physical branches. Regulators have responded by adjusting to enable innovation by developing more liberal structures without compromising on consumer protection. Consequently, the emergence of FinTech firms has transformed the financial environment, providing competition and affordable alternatives to conventional banking services, especially in developing economies and positioning FinTech as a major catalyst of the future of finance.

Discuss The Impact of Fintech on the Banking Industry

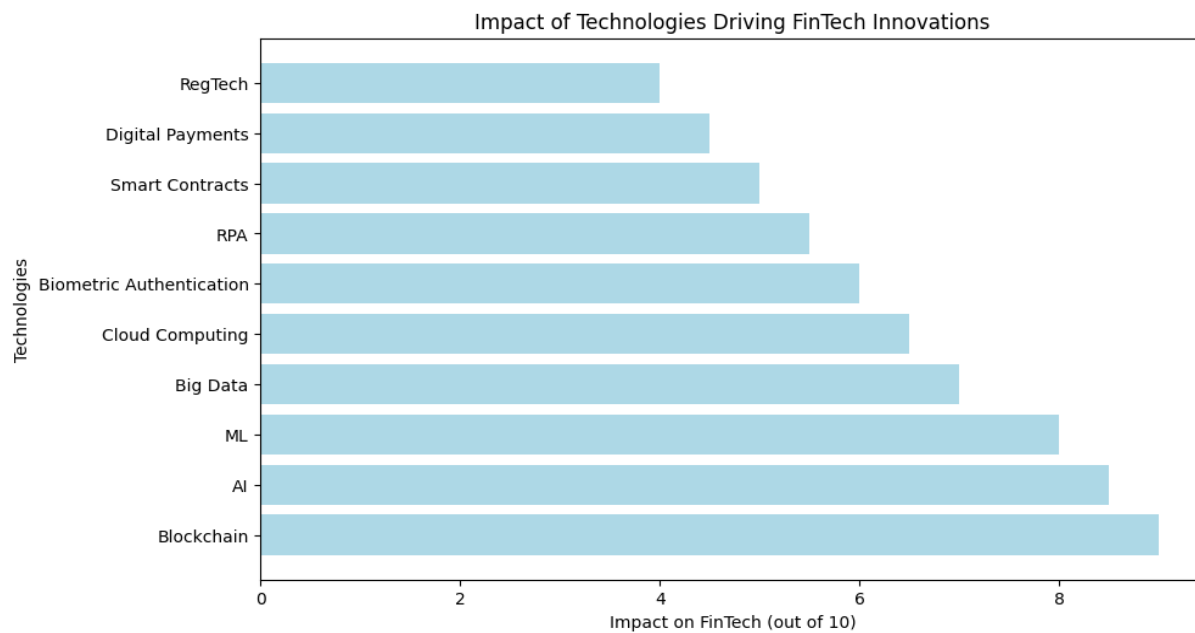


Fig. 2: Impacts of Key Technologies Driving Fin Tech Innovations

Fig. 2 demonstrates the degree to which different types of technologies can influence the development of innovative changes in the FinTech industry. Artificial Intelligence and Digital Payments stand out because of the score received (9 out of 10). It means that these two technologies are crucial when it comes to developing personalized customer experience as well as transactions. In the same vein, Blockchain and Smart Contracts, which follow Artificial Intelligence and Digital Payments with a score of eight, play significant roles in enabling the creation of secure financial transactions. Turning attention to other types of technologies mentioned in fig. 1, like ML and RPA, which exert considerable influence on the FinTech sector, owing to the optimization of financial processes permitted. In turn, Big Data Analytics and Cloud Computing are equally significant in relation to data-driven decisions and increased efficiency of companies in their operation. On the other hand, Biometric Authentication and RegTech can be regarded as fewer influential technologies in FinTech innovations because of their focus on security and compliance.

Analyze The Response of Traditional Banks to the Rise of Fintech

Banks have been trying to cope with the emerging FinTech challenge through a combination of adaption, cooperation, and competition. At first, they regarded FinTech as a threat; however, they started to adapt and invest massively in technological changes, including the implementation of AI, ML, and blockchain, to make operations more efficient, cheaper, and user-friendly. Banks have been actively seeking partnerships or even acquiring FinTech startups so that can adopt technologies such as digital payments and peer-to-peer loans into their activities. Furthermore, many banks have been creating digital or neo-banks in an attempt to compete with FinTech by providing users with more technologically oriented services. However, banks still cannot compete with FinTech on its own level because of using

outdated technologies and operating in a rigid regulatory framework that slows down their process of innovations. Thus, although banks are gradually implementing new technologies, need to deal with several issues to become competitive in the FinTech environment.

Opportunities And Challenges

The emergence of FinTech, the traditional banking system faces a combination of both challenges and opportunities. On one hand, one of the biggest opportunities that FinTech may provide for banks is collaboration with these FinTech companies. In other words, the banks have an opportunity to use the innovations developed by FinTech businesses to improve their services without having to develop such technologies themselves. Such partnerships can help banks to become more effective in terms of offering various types of services, including, but not limited to, peer-to-peer loans or cross-border transactions that would be much more secure and efficient due to the use of digital technologies. At the same time, the collaboration will inevitably bring some additional challenges in the form of regulation problems. Since FinTech firms do not face the same stringent requirements, the problems with regulations, especially data privacy and consumer protection issues, and compliance with anti-money laundering laws, will emerge as potential obstacles. Finally, cybersecurity and financial exclusion are two important issues that also cannot be overlooked. As a result, the development of FinTech creates many opportunities as well as poses numerous challenges.

Conclusion

FinTech technology has totally transformed the banking industry through the introduction of disruptive technologies that have had immense effects on the industry, especially in developing countries. Technologies such as mobile payment, block chain, artificial intelligence, and machine learning have improved access to finance while reducing the cost of financial transactions. Introduction of technology such as artificial intelligence and digital payments has received great praises (9/10). Blockchain and smart contracts (8/10) have played an important role in ensuring the security of financial transactions, whereas RPA (7/10) and ML (8/10) have improved financial procedures and decision-making. In spite of all these technological breakthroughs, there have been some major issues involved in the growth of the FinTech industry. As a result of this disruption, financial institutions had to come up with new strategies such as digitalization and making strategic partnerships with FinTech companies. Consequently, digital banks and neo-banks are competing successfully. In addition to promoting financial inclusiveness through services to underprivileged groups, FinTech faces issues of data privacy and cybersecurity, as well as the need for adequate regulatory frameworks. Futuristic studies must involve analyzing the socio-economic implications of FinTech in the long-run, especially in underdeveloped areas. Also, there should be research done on the link between innovations in FinTech and financial stability. The regulatory framework required for FinTech innovations needs to be explored. Lastly, research collaborations on the dynamics of the interactions between conventional financial institutions and FinTech organizations can reveal important insights into future global banking systems.

References

- Divya, Mathur, A., Mathur, A., & Gupta, V. (2024). Fintech Disruption in Traditional Financial Services: Analyzing the Impact of Fintech Startups on Traditional Banking and Financial Institutions. In *The AI Revolution: Driving Business Innovation and Research: Volume 1* (pp. 589-603). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-54379-1_52
- Xin Liu. (2024). Fintech disruption in traditional banking: Opportunities and challenges for financial institutions. *Trends in Social Sciences and Humanities Research*, 2(8), 52–60. <https://doi.org/10.61784/tsshr3081>
- Jameaba, M. S. (2020). Digitization revolution, FinTech disruption, and financial stability: Using the case of Indonesian banking ecosystem to highlight wide-ranging digitization opportunities and major challenges. *FinTech Disruption, and financial stability: Using the Case of Indonesian Banking Ecosystem to highlight wide-ranging digitization opportunities and major challenges (July 16 2, 2020)*. <https://doi.org/10.2139/ssrn.3529924>
- Sibanda, W., Ndiweni, E., Boulkeroua, M., Echchabi, A., & Ndlovu, T. (2020). Digital technology disruption on bank business models. *International Journal of Business Performance Management*, 21(1-2), 184-213. <https://doi.org/10.1504/IJBPM.2020.106121>
- Han, T. (2022). Disruption of Traditional Banking Services by Financial Technology in the Digital Economy. *MODERN ECONOMICS*, 3(6), 393. <https://doi.org/10.32629/memf.v3i6.2607>

- Naimi-Sadigh, A., Asgari, T., & Rabiei, M. (2022). Digital transformation in the value chain disruption of banking services. *Journal of the Knowledge Economy*, 13(2), 1212-1242. <https://doi.org/10.1007/s13132-021-00759-0>
- Omoge, A. P., Gala, P., & Horky, A. (2022). Disruptive technology and AI in the banking industry of an emerging market. *International Journal of Bank Marketing*, 40(6), 1217-1247. <https://doi.org/10.1108/IJBM-09-2021-0403>
- Kumari, A., & Devi, N. C. (2022). The impact of fintech and blockchain technologies on banking and financial services. *Technology Innovation Management Review*, 12(1/2). <http://doi.org/10.22215/timreview/1481>
- Sangwan, V., Harshita, Prakash, P., & Singh, S. (2020). Financial technology: a review of extant literature. *Studies in Economics and Finance*, 37(1), 71-88. <https://doi.org/10.1108/SEF-07-2019-0270>
- Shinde, M. S. U. (2024). Digital Currencies and Their Potential to Disrupt Traditional Economic Systems. *UNIFIED VISIONS*, 170. <https://doi.org/10.25215/819818984X.18>
- Bakare, F. A., Omojola, J., & Iwuh, A. C. (2024). Blockchain and decentralized finance (DeFi): Disrupting traditional banking and financial systems. *World Journal of Advanced Research and Reviews*, 23(3), 3075-3089. <https://doi.org/10.30574/wjarr.2024.23.3.2968>
- Shabbir, J., Perveen, S., Dad, A. M., Rehman, S. U., & Ness, S. (2024). Analyzing the Influence of Digital Currency Adoption on Traditional Banking Systems Through Data Analytics: A Study on Emerging Economies. *The Asian Bulletin of Big Data Management*, 4(1), 14-26. <https://doi.org/10.62019/abbdm.v4i01.97>
- Kayani, U., & Hasan, F. (2024). Unveiling cryptocurrency impact on financial markets and traditional banking systems: Lessons for sustainable blockchain and interdisciplinary collaborations. *Journal of Risk and Financial Management*, 17(2), 58. <https://doi.org/10.3390/jrfm17020058>
- Ali, A. (2024). Decentralized finance (DeFi) and its impact on traditional banking systems: Opportunities, challenges, and future directions. *Challenges, and Future Directions (August 01, 2024)*. <https://doi.org/10.2139/ssrn.4942313>
- Dang, V. D. (2020). Do non-traditional banking activities reduce bank liquidity creation? Evidence from Vietnam. *Research in International Business and Finance*, 54, 101257. <https://doi.org/10.1016/j.ribaf.2020.101257>
- Bozik, M. S. (2020). Impact of participation and conventional banks on economic growth: Case of Turkey. *İktisadi İdari ve Siyasal Araştırmalar Dergisi (İKTİSAD)*, 5(11), 69-85. <https://doi.org/10.25204/iktisad.618930>
- Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the fintech revolution: Interpreting the forces of innovation, disruption, and transformation in financial services. *Journal of management information systems*, 35(1), 220-265. <https://doi.org/10.1080/07421222.2018.1440766>
- Chen, Y., & Bellavitis, C. (2020). Blockchain disruption and decentralized finance: The rise of decentralized business models. *Journal of Business Venturing Insights*, 13, e00151. <https://doi.org/10.1016/j.jbvi.2019.e00151>
- Frizzo-Barker, J., Chow-White, P. A., Adams, P. R., Mentanko, J., Ha, D., & Green, S. (2020). Blockchain as a disruptive technology for business: A systematic review. *International Journal of Information Management*, 51, 102029. <https://doi.org/10.1016/j.ijinfomgt.2019.10.014>
- Visconti, R. M. (2016). Microfinance vs. traditional banking in developing countries. *International Journal of Financial Innovation in Banking*, 1(1-2), 43-61. <https://doi.org/10.1504/IJFIB.2016.076613>