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# Has Fintech Functioned as a Nudge for the SDGs Implementation? A Systematic Review

Hesan Zahid [1]*, Hammna Jillani [2]

[1] Department of Commerce and Finance, Government College University, Lahore, Pakistan

[2] Department of Environmental Science and Policy, Lahore School of Economics, Lahore, Pakistan

**Abstract:** An innovation in the financial industry, the merger of finance with technology known as Fin-Tech has triggered the paradigm shift towards sustainability. This paper tries to investigate the link between fintech and the implementation of Sustainable Development Goals (SDGs) through a systematic review. During the era of the pandemic digital transfers and online platforms were mandatory requisites therefore, various articles on fintech and SDGs were identified based on inclusion criteria particularly published only during the wake of the COVID-19 period, which represents a novelty of this work. This research reveals the indispensable role of fintech in adopting various SDGs in several developed and developing economies thus, making way for new entrants in the field of technological innovations. The study recognizes that the revolution in the financial sector helps towards the attainment of SDGs while keeping the financial flows aligned and the environment intact henceforth, indicating the prime importance of adopting financial technologies for a sustainable society.

**Keywords:** Fintech, Financial innovation, SDGs, Sustainability, Sustainable finance

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## INTRODUCTION

Banks are the biggest financial institutions, which route the market economy. Financial institutions i.e., banks have a direct link with the sustainable development of the economy because of their role as financers of the developmental and economic projects (Firmansiyah et al., 2022). Internal impacts related to the infrastructure and ongoing operational activities of banks are easier to identify whereas, the external activities related to the financial institutions are very complex and significant (Jeucken & Bouma, 2017). Conventional banking doesn't meet the financial needs of every individual thus, the newly emergent financial technology companies are coming up with solutions and services, with new business models incorporating technological advancements. When the company or organization incorporates sustainability i.e., environmental and social dimensions while focusing on economic growth they create sustainable innovations, of which fintech is an example (David et al., 2021).

Digitalization in the financial sector which incorporates technological inventions is known as Fin-Tech. At present, multiple fintech companies are competing to make way in the banking sector (Varga, 2018). Current fintech innovations are mobile payments, online banking, blockchain, cryptocurrencies, etc. Fintech start-ups are considered to have efficient operational designs that the incumbents might not have (Philippon, 2016, Kerea et al., 2022, Anakpo et al., 2023).

Fintech is a mobilizer of the capital. The financial industry has a substantial share in the GDP of a country. After the Paris Agreement 2015, a special focus on the environment and sustainability was made. Capital investment in decarbonization is a way to deal with climate catastrophe. In 2012, the global investments in the fintech sector added $100 Billion whereas in the year 2017, fintech investment surged 18%. The fintech revolution is a transformation in financial history. In the financial crisis of 2008, institutions were forced to focus on regulation, and that triggered innovation. Fintech is expanding and it has many sub-categories like paytech, regtech, lentech, banktech and insurtech etc. (Deng et al., 2019; Ghahroud et al., 2021). Fintech companies are often regarded as focusing on

*Corresponding author: Hesan Zahid
†Email: hesanzahid@gcu.edu.pk

the digitally literate generation. In this modern-day paradigm, where the facility of the internet is spreading like a blaze, harnessing its potential for the benefit of mankind is extremely imperative (Varga, 2018).

Financial technology is a swiftly growing industry that is changing the way we think about finance and investment. It has the prospective to help achieve the Sustainable Development Goals (SDGs) by providing ground-breaking solutions to some of the world's most pressing problems (UNEP Finance Initiative, 2016, Firmansiyah et al., 2022). Fintech utilizes many tools such as machine learning, crowdfunding, artificial intelligence, and peer-to-peer lending, etc. (Deng et al., 2019). Through fintech, an effort is made to improve financial activities and it is considered to be a driving force for the improvement of existing financial services (Kerenyi & Molnar, 2017).

Fintech is considered to have multiple benefits. The development of fintech is considered to have environmental benefits in terms of emissions reduction. According to a recent study by Du et al., (2022), fintech helps businesses enhance their external government subsidies and tax breaks while also easing their internal finance limitations. These factors collectively have a major positive impact on businesses' ESG performance. To make sure that fintech is truly fulfilling its social impact promises, more exacting methods for determining and quantifying impact are required. The relationship between fintech and various facets of social betterment is expected to differ significantly. Because they can quickly increase cash availability, fintech services might be viewed as the global accelerators of sustainable development. Emerging financial technologies have the potential to unlock green finance technologies. The digital revolution in financial technology offers enormous opportunities to expedite SDG financing, particularly by giving individuals greater power.

According to the World Bank, (2020), economic expansion and the eradication of poverty depend on having access to reasonably priced banking services. Having access to and using basic financial services can help the impoverished, particularly women, become more resilient, earn more money, and live better lives. Fintech advances are assisting in lowering the cost of service delivery, expanding the reach of services, and decreasing the necessity of in-person interactions, all of which are critical for maintaining economic activity. During the pandemic of 2020, digital transfers and online payment platforms were a basic necessity therefore, this paper aims to recognize the connection between fintech and the implementation of sustainable development goals during the rouse of COVID-19. Moreover, through a thorough systematic literature review, the papers try to examine how this financial innovation can lead to sustainability. This research investigates how fintech has offered a superior solution to various sectors of society to help achieve the Sustainable Development Goals (SDGs) by providing practical examples of numerous countries which also provides prospects for future implementation of fintech in the developed as well as developing economies of the world.

## LITERATURE REVIEW

Digitization of businesses has a resilient influence on the global finance industry and financial services (Puschmann, 2017). The use of digital technology has changed the way that individuals live, people shop, store, save, invest, borrow, move, and spend money leading to the transformation of the global financial industry (Latif, 2020). The Umbrella Term 'Fintech' incorporates financial solutions for shareholders powered by Information Technology (Zavolokina et al., 2016, Tay et al., 2022, Khera et al., 2022). The emergence of financial technology has become one of the distinguished trends in the world of financial services. Moreover, it focuses on the idea of financial inclusion, which means to support the undeveloped sector i.e., agriculture and small enterprises which is directly linked with the sustainable development goals. Table 1 shows the fintech development that has taken place over three phases gradually.

Table 1: Phases of fintech (Arner et al., 2015; Muganvi et al., 2021).

| | |
|---|---|
| First phase 1866-1987 | The development of telecommunication infrastructure became strong |
| Second phase 1987-2008 | Digitalization of the banking sector and the formation of modern banking |
| Third phase ongoing | Integration of banking and technology |

In the 21st century and specifically, in the era of the pandemic, fintech has a more customer-oriented definition. Fintech is a range of products, services, technologies, and business models that are changing conventional payment systems. Table 2 describes the various fintech products. The fintech industry with global multi-trillion-dollar market capitalization embraces business, banking sector, fundraising, education, nonprofit investment management, and the use of cryptocurrencies such as bitcoin, Ethereum, and Tether (Ghahroud et al., 2021). The era of COVID-19 has triggered fintech to become a visible element of the debate because it has helped to keep the global monetary system working and smoothing the flow of finances in an online mode (Arner et al. 2020).

Table 2: Fintech products (Rahmi, 2019).

| Savings/Investments | Payments/ Money Transfer | Borrowing | Insurance | Others |
|---|---|---|---|---|
| Peer-to-peer platforms for investment | Online foreign exchangeă | Borrowing through peer-to-peer platformsă | Health premium, car insurance using telematics | Education |
| Equity and crowd-funding | Overseas remittancesă | | | |
| Online investments/ stockbroking/ budgeting & financial planning | Non-banks to transfer money | | | |
| Cryptocurrency | Non-banks to transfer money | | | |

The old-fashioned finance theory particularly underlines the creation of value for stakeholders and stresses companies have ethical concerns like environmental protection, pollution abatement, and building wakefulness to provide valuable products environmentally, socially, and economically (Brigham & Ehrhardt, 2011). Fintech has an impact on stakeholders' experience outcomes high influence on business and commercial economics, which includes revenue, costs, and margins. Fintech crafts a stable financial landscape and has pledged to restructure the financial industry by reducing externalities/ costs and improving the value of financial services (Lee & Shin, 2018). Deloitte (2016), states that the fintech industry will accomplish the industry's dynamics by altering the ecosystem and the competitive structure of monetary facilities. Fintech has changed the world of financial institutions, asset and wealth managers, fund and payment providers, brokers, exchanges, and insurers (PWC, 2016). Boratynska (2019), stresses practical insights into fintech by developing value for stakeholders and presents seven main constituent characteristics of the diploma framework including "innovation, digitalization, modernity, pricing, agility, learning and openness" leading to a new value in the financial technology industry.

The United Nations Environmental Programme plays a very integral role in encouraging sustainable development in the banking sector through financial initiatives. Banks can incorporate sustainable banking through changes in operations, risk management, green sales and marketing, etc. (UNEP Finance Initiative, 2016). The notion of sustainable development focuses on the development of the economy without compromising the quality of the environment while preventing its deterioration. The idea is to integrate the economy, environment, and society. The bigger firms are focusing on sustainable development and efficient growth but sometimes it is just used as a greenwashing tool (Henderson, 2015). The economic activities must integrate innovations that can reduce environmental impacts and foster environmental protection (Zilhay & Zsoka, 2012).

The concept of sustainable development goes back to 1987 when the Brundtland Report by the United Nations 'Our Common Future' was issued. The report focused on the strong economy and healthy environment should function side by side, instead of the economic processes burdening the environment and impacting it negatively thus coining the term Sustainable Development. This concept integrates society, economy, and the environment in which there is optimal resource utilization without compromising the needs of the upcoming generations and provides a fair share of resources to everyone. For the integration of sustainability and the developmental processes, stakeholders i.e., government, public and private corporations, and people, everyone needs to be engaged (Steurer et al., 2005). Seventeen Sustainable Development Goals (SDGs) are devised, headed to meeting sustainable development in the developed and developing economies which include: "No poverty, zero hunger, good health and well-being, quality education, gender equality, clean water and sanitation, affordable & clean energy, decent work and economic growth, industry innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace justice and strong institutions and partnership".

These SDGs are directly associated with the fintech and sustainability industry. An enormous network of corporations, insurance companies, investors, and financial institutions are working for the advancement and achievement of SDGs under the arena of the UN Global Compact, the UN Environmental Finance Initiative (UNEP-FI), and the Principles for Responsible Investment (PRI). As the world professed war, to the invisible enemy

'COVID-19', the uncertainties and volatilities are posturing serious threats to withstand the thrust in meeting the SDG targets by the year 2030 utilizing the priorities transferal headed for managing the pandemic. During the span of the pandemic, "the financial markets were sinking, borders shutting down, people panic purchasing and millions trailing their jobs, development financing may be repurposed to solve pressing domestic issues at home first, as countries inject stimulus packages to revive their economies" (UN, 2019).

## RESEARCH METHODOLOGY

This research paper comprises of systematic review of the literature or meta-analysis. Figure 1 shows the methodology of articles selection for the review. The latest publications focusing on the keywords, fintech innovation and sustainable development goals (SDGs) are analyzed and scrutinized for this study. To carry out this research various databases like Scopus, (WOS) Web of Science, and Google Scholar are used (Mohel et al., 2009).

### Research Model

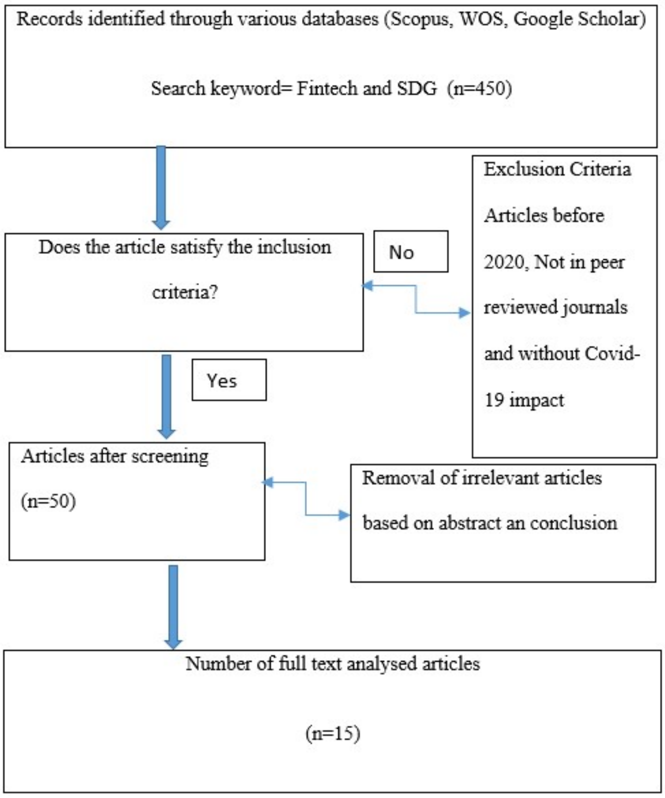


Figure 1: Articles selection criteria

## RESULTS AND DISCUSSION

Fintech is the tie between financial services and information technology. Fintech today focuses on five major areas: investments, payments, operations, risk management, infrastructure, customer interface, and data security. The fintech in the developed world has been driven by public demand and development whereas, in the developing economies such as Asia the inefficiency of conventional financial system is the key driver for advancements and improvements in the form of fintech. China and the US are leading countries in fintech start-ups and companies (KPMG, 2015). The emergence of e-finance, all financial services through electronic means without physical contact and low operational cost business models. Lee & Shin (2018), devised five business models of the fintech ecosystem i.e., "a). payment business model b). lending business model c). wealth management business model d). crowdfunding business model and e). capital marketing business model" under which fintech companies operate. The systematic review is carried out to search, select, and analyze the available literature. Table 3 highlights, the most comprehensive reference to Fintech and SDGs and invites us to interrelate different aspects of sustainability by climate change, new information, mobility technologies, and increasing stakeholder engagement.

Table 3: Systematic review

| Sr.No. | Authors | Journal & Publisher | Research Focus | Geographical Scope | Methods | Findings | SDGs Implementation |
|---|---|---|---|---|---|---|---|
| 1 | Y. Zhang et al., 2021 | Land use Policy/ Elsevier | Fintech contribution towards sustainable development goals and shareholders' value | China | Review | Fintech has great prospects for Socio-Economic Development and Environmental Improvement. Moreover, Fintech has attained great expansion in socio-economic improvement. | SDGs 1,3,7,13 |
| 2 | T. Muganyi et al., 2021 | Environmental Science and Technology/ Elsevier | Fintech Development leading toward negative impact on SO2 emissions and enhancing environment investment initiatives | China | Quantitative | Fintech development supports reduced emissions and supplements environmental protection investment initiatives. | SDG 8, SDG 13 |
| 3 | Fahmi Ali Hudaefi., 2020 | Qualitative Research in Financial Markets/ Emerald | Fintech through financial inclusion Promoting Global SDGs | Indonesia | Qualitative | Fintech firms have been funding the unbanked population and underdeveloped sector. Fintech lending has been financing SMEs and agriculture and initiating charity programs. | SDGs 1,2,10 |
| 4 | A. Demir et al., 2020 | The European Journal of Finance/ Taylor and Francis | Fintech and Financial Inclusion Preventing Income Inequality | Global Context | Quantitative | Fintech reduces income inequality predominantly among higher-income countries. | SDG 10 |
| 5 | Emara, N et al., 2021 | Topics in Middle Eastern and African Economies/ Middle East Economic Association | Fintech eradicating / alleviation extreme poverty | Middle East and Africa | Quantitative | Fintech has the prospective to improve access to financial services at a low cost, increasing the frequency of financial activities | SDG 1 |

Cont,.....

| Sr.No. | Authors | Journal & Publisher | Research Focus | Geographical Scope | Methods | Findings | SDGs Implementation |
|---|---|---|---|---|---|---|---|
| 6 | Riquelme, F et al., 2021 | Journal of Open Innovation: Technology, Market and Complexity/ MDPI | Fintech Firms through Social Media Activities incorporating SDGs | Europe | Survey | Powerful media could be used more dynamically, including campaigns related to financial inclusion, green energies, and new business prospects. | SDG 9 |
| 7 | Puschmann et al., 2020 | Sustainability/ MDPI | Green fintech and climate change increasing the value chain of financial services | Switzerland | Review | Green finance is propelling the financial sector to invest in climate resilience. | SDGs 7,11,12,13,14,15 |
| 8 | Vergara C et al., 2021 | Sustainability/ MDPI | Digital finance and financial technologies contribute to the greening and environmental protection | Global Context | Review | Digital finance and fintech both play an integral role in SDG achievement. | SDG 9 |
| 9 | Al-Okaily M et al., 2021 | Sustainability/ MDPI | Fintech services leading social, environmental, and ecological benefits | Jordan | Quantitative | Fintech services are completely influenced by perceived usefulness and perceived enjoyment. | SDG 9 |
| 10 | Ali, M et al., 2021 | Foresight/Emerald | Perceived benefits and Perceived risks of Fintech | Pakistan | Quantitative | Customers consider Fintech as economically useful, convenient, and effortless. There is a strong positive and significant relationship between trust and intention to adopt fintech. | SDG 8 |

Cont,.....

| Sr.No. | Authors | Journal & Publisher | Research Focus | Geographical Scope | Methods | Findings | SDGs Implementation |
|---|---|---|---|---|---|---|---|
| 11 | Hinson, R et al., 2020 | Environmental Sustainability/ Elsevier | Role of Fintech in Transforming Agribusiness and SDGs | Developing Countries | Review | Fintech and green technologies can play a significant role in digitalized agriculture system. | SDG 12 |
| 12 | Arner, D. W et al., 2020 | European Business Organization Law Review/ Springer | Fintech, Financial Inclusion, and balanced Sustainable Development can transform better economies and societies | Developing Countries | Review | Digital financial transformation proceeds, digital finance increasingly enables individuals to invest small amounts of money in technologies of these sorts. | SDGs 5,8, 9,10, 13,17 |
| 13 | Appiah-Otoo, I. et al., 2021 | Sustainability/ MDPI | Fintech measures reduce povertyă | China | Quantitative | Fintech supplements economic growth and financial development to reduce poverty in China. | SDG 1 |
| 14 | Zabala .Aguayo F. et al., 2020 | Sustainability/MDPI | Digitalization and the Global Banking Ecosystem | Spain | Quantitative | The digitalization of banking Processes created new economic relations and stimulated development. | SDG 8, SDG 9 |
| 15 | Anshari et al., 2020 | Third International Sustainability and Resilience Conference: Climate Change/ IEEE | Digital banking and payment transactions leading to green fintech | Global Context | Review | The digital ecosystem of fintech may have socioeconomic and environmental benefits leading to sustainability. | SDG 9 |

The Paris Agreement is the latest convention on climate and includes a commitment to making financial flows aligned with climate-resilient development thus, making sustainable investment and green finance an area of focus for the policy makers. Fintech and blockchain have the prospective to speed up the flow of capital to make the economy more sustainable. According to The United Nations Environment Programme (2016), there exist numerous applications of fintech focusing on SDGs and sustainability. The World Bank has classified an extensive range of blockchain uses in the monetary sector like “financial services infrastructure, money and payments, agriculture governance and healthcare” etc. (UNFCCC, 2015). Developed economies like Europe, have initiated the utilization of “green bonds to mobilize capital for investment in the sustainable substructure”. Moreover, in Europe, multiple energy trading firms have merged under the project named “Enerchain”, a blockchain project to conduct peer-to-peer trading in the energy market. Specifically, the Asian market can become an experimental ground for new business models of fintech as “the region has a high demand for financial inclusion and more efficient services” (Nassiry, 2018). COP26 Summit 2021in alliance with SDGs emphasized that developed countries as an obligation should fulfill their assurance to mobilize $100 billion per annum in climate finance to provide sustenance to third-world countries. This must embrace building innovative markets for adaptation and mitigation and improving the ‘quantity, quality, and access to finance’ for backing communities worldwide in order to curb the impacts of climate change in the longer run.

The market analysis and literature indicate that “Fintech has a positive impact leading functional the whole value chain of financial services covering Customer to Customer (C-2-C), Business to Customer (B-2-C) and

Business to Business (B-2-B) services" (Puschmann et al, 2020). Fintech innovations are considered as merged the organization's missions involving "the coexistence of impact objectives e.g., increasing the flow of financial resources for sustainable development and business objectives e.g., safeguarding a financial return to be able to continue creating impact in the long run" (Arena et al., 2018).

Fintech embraces the prospective to alter the existing financial system in all areas, including "payments, investments, financing, advice, and insurance" through sustainability for instance by directing capital in green investments, etc. Fintech permits the transformation of the monetary system, this also has a significant impact on the economy, such as "creating novel sustainable business models, startups" etc. Fintech solutions enable customers to directly engage in (C-2-C) customer-to-customer transactions. The transaction costs otherwise are too high and these are not possible without efficient technology. Fintech delivers the likelihood of linking various cross-industry ecosystems for instance, "the possibility to automatically connect business/sustainability services with payment, investment or financing services creates a powerful tool to link up firms from various industries in novel value chains". Digital financial services are the link, leading to "novel business models, products and services, processes, organizational forms or infrastructures (innovation object) and by this supporting specific environmental, sustainable development goals" (Puschmann et al., 2020, Firmansiyah et al., 2022).

Fintech has an undeviating relation with multiple SDGs and it may trigger the achievement of targets. Fintech apps have coupled "the stakeholders and subsidized to carbon reduction (SDG 13) and social-economic benefit (SDG 8) not only in cities where the users are located but also in regions where collective actions can make a difference". For instance, the areas facing the risk of desertification and other types of environmental issues (Hull & Liu, 2018; Liu et al., 2015; Newig et al., 2019). Furthermore, the Fintech that connects the users and the land degrading or degraded places can significantly help to achieve land restoration" (SDG 15).

The financial technology, compromises of a new elucidation to financial problems in developing economies like the Middle East and Africa (Anakpo et al., 2023). As per the World Bank statistics, the number of people living in risky poverty in the Middle East and Africa regions has amplified. In the (MENA) region Middle East and North Africa, the number has reached 18.6 Million, doubled over the two years 2013 to 2015. For Sub-Saharan Africa (SSA), "this number propagated from 405 million to 413 million over the same period. In both regions, the population lacks access to financial services. Fintech offers many opportunities for economies, from making their financial systems more efficient to extending access to financial services for the under-served populations, especially those who suffer from extreme poverty as part of the digital dividends" (Jack & Suri, 2014; Mbiti & Weil, 2015; Suri & Jack, 2016; Munyegara & Matsumoto, 2016; Burbuz, 2017; El-Zoghbi et al., 2019).

## CONCLUSION

In the milieu of sustainable finance and digital innovations, fintech serves as an alternative to the customary financial institutions and services. Circular economy often called as sharing economy along with improved information technology, is considered to be the driving force for this fintech revolution. Moro-Visconti et al., (2020) state that the emergence of fintech can lead to the greening of financial markets and it may help to manipulate finance to support sustainable development. Fintech has the prospective to mobilize green finance. Fintech makes financial services more convenient and accessible for customers thus encouraging the digitalization of the financial industry. Furthermore, it connects people through various platforms formulating social capital (Hommel & Bican, 2020, Pizzi et al., 2022).

Fintech and sustainable finance have many communal aspects and it can help in making the financial business more sustainable. Fintech is linked with sustainability as it promotes green finance. The increasing sustainability concern, environmental issues, and initiatives like (CSR) Corporate Social Responsibility and (ESG) Environmental and Social Governance, have led to socially responsible investment and sustainable fintech initiatives. Fintech is a motive force for sustainable economic growth influencing environmental, social, and ecological benefits for instance, "the use of funds for renewable energy and sustainable projects". It may also contribute to environmental development through the provision of cheap and accessible financing (Deng et al., 2019; Agudo, 2021).

The analysis of the literature shows multiple dimensions through which sustainability is achievable through the incorporation of fintech. Socioeconomic development, improvement of the environment, carbon reduction, reduced emissions, social and ecological benefits, reduction in inequality, provision and access of services to the unprivileged, green energy, digitalization of finance section in developing economies, and financial inclusion are all the themes that are linked with Sustainable Development Goals (SDGs) and can be achieved if fintech propagates in the developing economies.

Financial inclusion may progressively affect the economy through poverty reduction, enhanced economic growth, and innovations in the digital finance sector (Tay et al., 2022). The adoption and operation of fintech are easier in well-developed economies owing to the infrastructure and market regulations, which are essential to creating sustainable financial innovation (Ozili, 2018; Haddad & Hornuf, 2019; Hommel & Bican, 2020). For developing economies, regulations must be made in line with the digitalization of the economy so that digital finance and fintech may flourish leading to sustainability in the region.

**Limitations and Future Research**

The prime limitation of this work is that the research focuses on papers which are published during the COVID-19 era, the latest studies can be incorporated into future work. Moreover, country-specific exploratory studies can be performed concerning the role of fintech in the implementation of various SDGs.

**Declaration of Interest**

The authors declare no competing interests.

**REFERENCES**

Anakpo, G., Xhate, Z., & Mishi, S. (2023). The Policies, Practices, and Challenges of Digital Financial Inclusion for Sustainable Development: The Case of the Developing Economy. *FinTech, 2*(2), 327-343.

Arena, M., Bengo, I., Calderini, M., & Chiodo, V. (2018). Unlocking finance for social tech start-ups: Is there a new opportunity space?. *Technological Forecasting and Social Change, 127*, 154-165.

Arner DW, Barberis JN, Walker J, Buckley RP, Dahdal AM and Zetzsche DA (2020) Digital finance & the COVID-19 crisis. *University of Hong Kong Faculty of Law Research Paper* 2020/017.

Arner, D. W., Barberis, J., & Buckley, R. P. (2015). The evolution of Fintech: A new post-crisis paradigm. Geo. *J. Int'l L.*, 47, 1271.

Ben-David, I., Johnson, M. J., & Stulz, R. M. (2021). *Why Did Small Business Fintech Lending Dry Up During March 2020?* (No. w29205). National Bureau of Economic Research

Boratynska, K. (2019). Impact of digital transformation on value creation in Fintech services: an innovative approach. *Journal of Promotion Management, 25*(5), 631-639.

Brigham E. F., and M. C. Ehrhardt. (2011). *Financial Management: Theory & Practice* (13th ed.). Mason: Cengage Learning. (No. 978-1-4390-7809-9).

Agudo, L. F. (2021). Fintech and Sustainability: Do They Affect Each Other?. *Sustainability, 13*(13), 7012.

Deloitte. (2016). Disaggregating Fintech: brighter shades of disruption. Retrieved from https://shorturl.at/nuzHKpdf .

Deng, X.; Huang, Z.; Cheng, X. (2019). FinTech and Sustainable Development: Evidence from China Based on P2P Data. *Sustainability, 11*, 6434.

Du, P., Huang, S., Hong, Y., & Wu, W. (2022). Can FinTech improve corporate environmental, social, and governance performance?—A study based on the dual path of internal financing constraints and external fiscal incentives. *Frontiers in Environmental Science, 10*, 1061454.

Firmansyah, E. A., Masri, M., Anshari, M., & Besar, M. H. A. (2022). Factors affecting fintech adoption: a systematic literature review. *FinTech, 2*(1), 21-33.

Ghahroud, M. L., Jafari, F., & Maghsoodi, J. (2021). Review of the Fintech categories and the most famous Fintech start-ups. *Journal of FinTech and Artificial Intelligence, 1*(1), 7-7.

Haddad, C.; Hornuf, L. (2019). The emergence of the global Fintech market: Economic and technological determinants. *Small Bus. Econ., 53*, 81–105.

Hassan, M. K., Saraç, M., & Khan, A. (2021). *Islamic Finance and Sustainable Development*. Retrieved from https://shorturl.at/fEOS2

Henderson, R. M. (2015). Making the business case for environmental sustainability. *Harvard Business School working paper series # 15-068*.

Hommel, K.; Bican, P.M. (2020). Digital Entrepreneurship in Finance: Fintechs and Funding Decision Criteria. *Sustainability, 12*, 8035.

Hull, V., & Liu, J. (2018). Telecoupling: A new frontier for global sustainability. *Ecology & Society, 23*(4).

Jeucken, M., & Bouma, J. J. (2017). The changing environment of banks. *In Sustainable banking* (pp. 24-38). Routledge.

Kerenyi, A., & Molnar, J. (2017). The impact of the fintech phenomenon–radical change occurs in the financial sector?. *Financial and Economic Review, 16*(3), 32-50.

Khera, P., Ng, S., Ogawa, S., & Sahay, R. (2022). Measuring digital financial inclusion in emerging market and developing economies: A new index. *Asian Economic Policy Review, 17*(2), 213-230.

Latif, L. (2020). Leveraging Private Flows from Digital Technology to Finance SDGs in Africa: E-Business Revenue Opportunities Amidst IFF Challenges. *Available at SSRN 3864877*.

Lee, I., & Shin, Y. J. (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. *Business Horizons, 61*(1), 35–46.

Liu, J., Hull, V., Luo, J., Yang, W., Liu, W., Viña, A., ... & Zhang, H. (2015). Multiple telecouplings and their complex interrelationships. *Ecology and Society, 20*(3).

Ghahroud, M. L., Jafari, F., & Maghsoodi, J. (2021). Review of the Fintech categories and the most famous Fintech start-ups. *Journal of FinTech and Artificial Intelligence, 1*(1), 7-7..

Anshari, M., Almunawar, M. N., Masri, M., Hamdan, M., Fithriyah, M., & Fitri, A. (2021, November). Digital wallet in supporting green FinTech sustainability. In 2021 Third International Sustainability and Resilience Conference: *Climate Change* (pp. 352-357). IEEE.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & PRISMA Group*. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of internal medicine, 151*(4), 264-269.

Moro-Visconti, R.; Cruz Rambaud, S. (2020). López Pascual, J. Sustainability in FinTechs: An Explanation through Business Model Scalability and Market Valuation. *Sustainability, 12*, 10316.

Muganyi, T., Yan, L., & Sun, H. P. (2021). Green finance, fintech and environmental protection: Evidence from China. *Environmental Science and Ecotechnology, 7*, 100107.

Nassiry, D. (2018). The role of fintech in unlocking green finance: *Policy insights for developing countries* (No. 883). ADBI working paper.

Newig, J., Lenschow, A., Challies, E., Cotta, B., & Schilling-Vacaflor, A. (2019). What is governance in global telecoupling?. *Ecology and Society, 24*(3).

Ozili, P.K. (2018). Impact of digital finance on financial inclusion and stability. Borsa Istanb. *Rev. 18*, 329–340

Perrini, F., & Tencati, A. (2006). Sustainability and stakeholder management: the need for new corporate performance evaluation and reporting systems. *Business Strategy and the Environment, 15*(5), 296-308.

Philippon, T. (2016). *The fintech opportunity* (No. w22476). National Bureau of Economic Research.

Pizzi, S., Del Baldo, M., Caputo, F., & Venturelli, A. (2022). Voluntary disclosure of Sustainable Development Goals in mandatory nonfinancial reports: The moderating role of cultural dimension. *Journal of International Financial Management & Accounting, 33*(1), 83-106.

Puschmann, T. (2017). Fintech. *Business & Information Systems Engineering, 59*(1), 69-76.

Puschmann, T., Hoffmann, C. H., & Khmarskyi, V. (2020). How green FinTech can alleviate the impact of climate change—the case of Switzerland. *Sustainability, 12*(24), 10691.

PWC. (2016). Blurred lines: how fintech is shaping financial services—global fintech report. Retrieved from https://shorturl.at/bdGPZ

Rahmi, M. (2019, May). Fintech for financial inclusion: Indonesia case. In *1st International Conference on Economics, Business, Entrepreneurship, and Finance (ICEBEF 2018)* (pp. 805-807). Atlantis Press.

Steurer, R., Langer, M. E., Konrad, A., & Martinuzzi, A. (2005). Corporations, stakeholders and sustainable development I: a theoretical exploration of business–society relations. *Journal of business ethics, 61*, 263-281.

Tay, L. Y., Tai, H. T., & Tan, G. S. (2022). Digital financial inclusion: A gateway to sustainable development. *Heliyon*.

United Nations Environmental Programme Finance Initiative. (2016). UNEP FI Guide to Banking & Sustainability. UNEP Finance Initiative Switzerland.

Varga, D. (2018). Fintech: Supporting Sustainable Development By Disrupting Finance. *Budapest Management Review, 8*(11), 231-249.

World Bank. (2020). Fintech Market Reports Rapid Growth During COVID-19 Pandemic Retrieved from https://shorturl.at/hkuV9.

Zabala Aguayo F, Slusarczyk B. (2020). Risks of Banking Services' Digitalization: The Practice of Diversification and Sustainable Development Goals. *Sustainability.12*(10):4040.

Zavolokina L, Dolata M, Schwabe, G. (2016). Fintech - what's in a name? In: Proceedings of the 37th international conference on information systems. Dublin

Zilahy, G., & Zsoka, A. (2012). Sustainable consumption in Central and Eastern European Countries-A survey. In Proceedings: Sustainable Consumption Research and Action Initiative (SCORAI) Workshop (Vol. 1).