Revue Française d'Economie et de Gestion
ISSN : 2728- 0128
Volume 6 : Numéro 5

Financial Technology and sustainability: Does Fintech contribute to the achievement of the United Nations Sustainable Development Goals?

Technologie financière et durabilité : la Fintech contribue-t-elle à la réalisation des Objectifs de Développement Durable ?

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Date de soumission : 06/04/2025

Date d'acceptation : 10/05/2025

Pour citer cet article :

ACHARGUI. K. & AMZIL. L. (2025) « Financial Technology and sustainability: Does Fintech contribute to the achievement of the United Nations Sustainable Development Goals? », Revue Française d'Économie et de Gestion «Volume 6: Numéro 5» pp : 219- 235.

Abstract

The article examines the role of Fintech in achieving the United Nations Sustainable Development Goals (SDGs). A systematic literature review was conducted to evaluate the impacts of Fintech on various areas of the SDGs, such as poverty eradication, access to affordable financial services, reduction of economic inequalities, promotion of sustainable economic growth, and combating climate change. The results of the study have shown that Fintech can play a crucial role in achieving the SDGs by providing inclusive financial services and encouraging innovation and investment in sustainable projects. However, challenges such as regulation and data security must be addressed for Fintech to have a significant impact on the SDGs. The article concludes by suggesting avenues for future research on this important topic.

Keyword: Finance, Technology, Fintech, Sustainable Development Goal, Sustainability, Sustainable development.

Résumé

L'article examine le rôle de la Fintech dans la réalisation des objectifs de développement durable (ODD) des Nations Unies. Une revue de littérature systématique a été menée pour évaluer les impacts de la Fintech sur les différents domaines des ODD, tels que l'élimination de la pauvreté, l'accès à des services financiers abordables, la réduction des inégalités économiques, la promotion de la croissance économique durable et la lutte contre le changement climatique. Les résultats de l'étude ont montré que la Fintech peut jouer un rôle crucial dans la réalisation des ODD, en offrant des services financiers inclusifs et en encourageant l'innovation et l'investissement dans des projets durables. Toutefois, des défis tels que la réglementation et la sécurité des données doivent être résolus pour que la Fintech puisse avoir un impact significatif sur les ODD. L'article conclut en suggérant des pistes pour de futures recherches sur ce sujet important.

Mots clés : Finance, technologie, Fintech, objectif de développement durable, durabilité, développement durable.

Introduction

Fintech can be defined as the application of technology in the financial services industry. It represents a field that is expanding rapidly. Through mobile applications and online platforms, fintech companies offer innovative financial solutions, such as mobile payments, money transfers, loans, and investments. According to the (World Bank report, 2020), 1.7 billion people worldwide lack access to formal financial services, such as bank accounts, financial debt or credit cards. Fintech seems to have the ability to bridge this gap by providing affordable and accessible financial services through the use of mobile technology, which can help achieve the United Nations Sustainable Development Goals by providing affordable and accessible financial services to the world's poorest and most marginalized populations SDGs (World Bank report. 2020). Accordingly, the potential impact of Fintech on the achievement of the United Nations sustainable development goals has been recognized by many industry stakeholders as developed by (Suryono and al, 2020).

The Sustainable Development Goals (SDGs) are a universal action plan to eradicate poverty, protect the planet, and ensure prosperity for all. Fintechs can help reduce poverty, improve health and education, promote gender equality, and limit climate change (Suryono et al, 2020). Furthermore, according to the (World Bank report, 2020), Fintech can help strengthen financial systems by improving the quality and efficiency of financial services offered, particularly in developing countries where traditional financial systems are often inadequate. Fintech can also help provide accessible and affordable financial services by using mobile technologies to reach populations that lack access to traditional financial services such as bank accounts and financing in general (Scheyvens and al, 2016).

However, it is important to note that the contribution of Fintech to the achievement of the sustainable development goals is a topic that requires in-depth analysis (Hoang et al, 2022). Fintech can have positive impacts, such as financial inclusion and poverty reduction, but it can also present risks, such as increased inequalities and digital exclusion. Therefore, a comprehensive understanding of the implications of Fintech for the Sustainable Development Goals is necessary to ensure a positive and sustainable impact. In this regard, the presentation of a theoretical context on the subject, as well as a systematic literature review, is essential to better understand the role of Fintech in achieving these goals. The objective of this study is thus to understand: **What perspectives does the academic literature offer on the contribution of Fintech to achieving the SDGs?**

First, to answer our research question, we begin our paper by defining key concepts related to technology applied in finance. Next, we adopt a robust methodology to conduct a systematic literature review on the contribution of fintech to the achievement of the sustainable development goals. Finally, we present the results of the systematic review along with the main findings.

1. Literature Review

1.1. Fintech

The digitalization of the global financial sector has resulted from the significant digital transformation the world has been witnessing, which encompasses technological innovations such as digital finance, big data, artificial intelligence, mobile platforms, blockchain and the Internet.

Fintech is a neologism from the contraction of "finance" and "technology" that refers to companies that use digital technologies to offer innovative financial services. Fintech is regarded as an important means of mobilizing private capital for sustainable development supporting strong, stable, healthy, and inclusive economic growth. According to the (World Bank report, 2020), Fintech can contribute to financial inclusion, improve the efficiency of the financial sector, and strengthen economic resilience (World Bank report, 2021). It offers many benefits such as reduced transaction costs, personalized offerings and increased accessibility to financial services. Fintech can also enable populations without access to traditional banking services to access financial services, particularly in developing countries.

The digital transformation in the financial sector is not a new trend. Over the past two decades, automation and technological transformation have significantly improved the performance of the financial industry (Hinson and al, 2019). Digital finance, which is part of Fintech, is increasingly demonstrating its potential to overcome obstacles to sustainable finance growth. Indeed, Fintech, and digital finance in particular, can play an important role in mobilizing private capital for sustainable development, supporting strong, stable, healthy, and inclusive economic growth. The Sustainable Development Goals are a collective aspiration for a better world, and the implementation of these goals requires the participation of all actors, including private companies.

The emerging Fintech, or financial technology, has a major impact on the financial sector by causing disruptive transformation. Fintech is changing the way business is conducted in the traditional financial industry through disintermediation. However, while commercial banks, investment banks, and mutual funds still dominate financial services and provide valuable

financial services to clients and investors, their role in the international market is increasingly important (Boratyńska, 2019). FinTech companies also use financial technologies to achieve sustainable development goals (SDGs). For example, peer-to-peer lending platforms allow individual borrowers or investors to obtain loans on favorable terms without going through commercial banking services. The disintermediated financial service model offers advantages over traditional bank lending, such as lower capital requirements, flexible and favorable loan terms, and lower operating fees than banks (Duygun and al. 2021).

Cryptocurrencies, such as Bitcoin or Ethereum, are also increasingly popular. These currencies allow value transfer over the internet without requiring intermediaries. Some applications and benefits of using cryptocurrencies have been reported by researchers, such as crowdfunding for early-stage start-ups, private transactions, alternative censorship-resistant wealth storage, and more (Ochara and al, 2015).

Advancements in mobile technology have also enabled "mobile money" and computer programs to operate on smartphones through applications that provide access to a wide range of goods and services. Techno-financial transactions, known as mobile money (MM), m-banking, or mobile transfers, are gradually being integrated into the structure of the global financial capital (Hoang and al. 2020). Electronic payment systems have transformed mobile phones into interfaces with the financial sector, and over a billion people now trust them. Electronic payment systems in developing countries have also included new distribution mechanisms (through agent networks, secure communications, and power supply). The use of financial technologies to maximize financial inclusion is a recurring theme in sustainable development goals.

1.1.1. Mobile Technology

In the context of Fintech and the achievement of sustainable development goals, Mobile Technology can be conceptualized as the application of mobile technologies aimed at providing accessible financial services to all, specifically to populations excluded from traditional financial services such as bank accounts and credit cards. This can encompass offerings such as mobile payments, money transfers, loans, and investments through mobile applications and online platforms. The implementation of mobile technology in the Fintech sector contributes to the promotion of financial inclusion by providing secure and affordable payment methods while working towards the achievement of Sustainable Development Goals such as poverty reduction, improvement of health and education, as well as promotion of gender equality and combating climate change.

1.1.2. Blockchain Technology

Blockchain technology (Milian, 2019) is a decentralized and secure system that enables the recording and verification of digital transactions in a transparent manner. It relies on a distributed network of interconnected computers, called nodes, that work together to validate and record transactions in a public ledger known as the blockchain. Blockchain technology is a revolutionary innovation that underlies cryptocurrencies and secure digital transactions. Digital currencies that rely on encryption for security are known as cryptocurrencies (Todorof, 2019). Bitcoin, Ethereum, Litecoin, Ripple, Dash, Peercoin, and Dogecoin are some examples of popular cryptocurrencies that fall under this definition. The blockchain, as the underlying technology of cryptocurrencies, utilizes encryption techniques to secure digital transactions on the network.

One key feature of blockchain is its decentralized system, which ensures that the network is not controlled by any central authority or government. Instead, blockchain technology relies on a distributed network of computers, known as nodes, to transparently and securely validate and record transactions. Each transaction is grouped into a block, which is then added to the blockchain in a chronological order, forming a blockchain.

Blockchain offers several advantages, such as transparency, security, and data immutability. By using consensus mechanisms like proof of work or proof of stake, the blockchain ensures that transactions are independently verified by network nodes, eliminating the need for a trusted third party.

1.2. Sustainable Development Goals (SDGs)

The Sustainable Development Goals (SDGs) were adopted by the 194 participating nations of the United Nations, aiming to eradicate poverty, protect the planet and ensure the prosperity of humanity. The SDGs are considered as a collective aspiration for a better world, and their implementation requires the participation of all actors, including private companies, who are invited to contribute to their realization (Hoang, 2022).

As it emerged during the United Nations Conference on Sustainable Development in Rio de Janeiro in June 2012, the Agenda 2030, also known as the Sustainable Development Goals (SDGs), was adopted in September 2015 by the members of the United Nations after a three-year intergovernmental negotiation process on the post-2015 development agenda. This development framework is known as "Transforming Our World: The 2030 Agenda for Sustainable Development." It encompasses 17 interconnected United Nations development goals **(Table 1)** and 169 targets that succeeded the Millennium Development Goals (MDGs),

aiming to end poverty, promote prosperity and human well-being while protecting the environment over the next 15 years (2016-2030) (Manuar Mukarram, 2020), (Allen, C, 2016), Previously, the MDGs were established in 2000 as the global development agenda, consisting of eight targets aimed at combating poverty between 2000 and 2015.

While the MDGs were initially intended for developing countries and the development goals focused on poverty, they now appear universally relevant to all countries and encompass all aspects and pillars of development, including social, economic, and environmental factors (Manuar Mukarram, 2020).

Even though these goals are often considered as successors to the MDGs, the SDGs are fundamentally different from the MDGs in that they are significantly more resilient, interconnected and built upon a framework of three pillars of sustainability (economic, social, and environmental). According to (Manuar Mukarram, 2020), these new goals are grounded in the concepts of leaving no one behind, inclusion, and multi-stakeholder partnerships", emphasizing a comprehensive approach to achieving sustainable development for all.

Table 1: Sustainable development goals SDGs

SDG Number	SDG Content
1	No Poverty
2	Zero Hunger
3	Good Health and Well-being
4	Quality Education
5	Gender Equality
6	Clean Water and Sanitation
7	Affordable and Clean Energy
8	Decent Work and Economic Growth
9	Industry, Innovation, and Infrastructure
10	Reduced Inequalities
11	Sustainable Cities and Communities
12	Responsible Consumption and Production
13	Climate Action
14	Life Below Water
15	Life on Land
16	Peace, Justice, and Strong Institutions
17	Partnerships for the Goals

Source : https://www.un.org/fr/

2. The role of financial technology in achieving sustainable development goals: a systematic literature review

2.1. Methodology

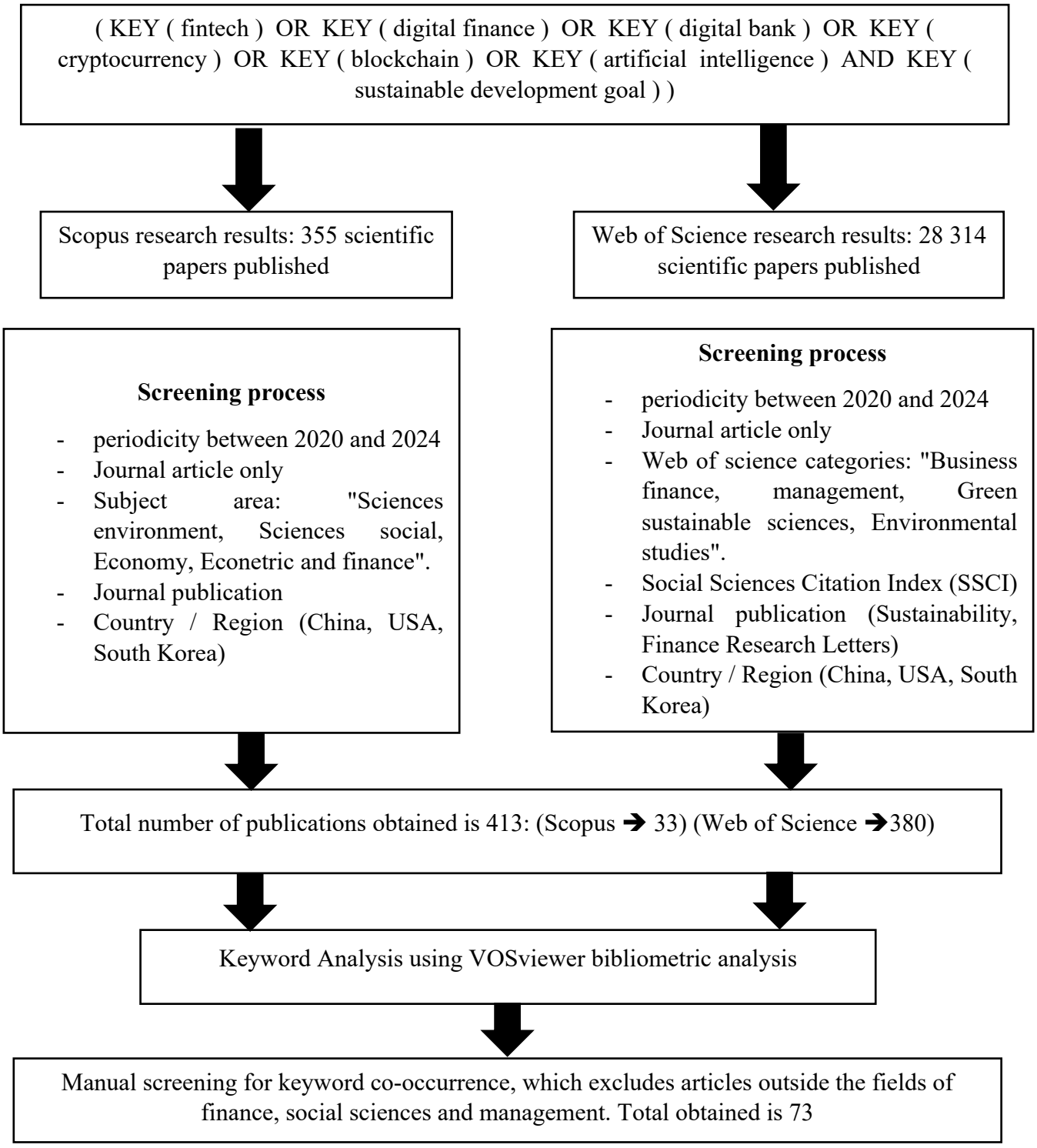
The methodological approach proposed by the PRISMA model was followed throughout the analysis and selection process. First, a set of specific keywords are set in the search fields of the two databases : Web of Science & Scopus, in order to obtain an initial panel of varied articles. Next, an initial elimination of redundant or irrelevant articles is carried out using NVIVO and ZOTERO software. An in-depth analysis of the remaining articles is also carried out, using SPSS software to identify trends and correlations that emerge from the data. Finally, an analysis is produced following a coherent structure and drawing on the results to support arguments and conclusions.

By entering specific keywords into the Web of Science database, we obtained an initial panel of 28.314 scientific articles. Subsequently, we applied the first filter corresponding to publication periodicity. In this way, all articles published before 2020 were excluded. In the same order of tasks, we selected only journal articles, causing a deduction of their number to 15.717. Next, by exploiting the filter associated with Web of Science categories, we retained the categories: "Business Finance", "Management", "Green Sustainable Science" and "Environmental Studies". Following this selectivity, the number of articles was reduced to 2.838.

Next, we refined the number of articles using the Web of Science index, which only includes publications from the Social Sciences Citation Index (SSCI). At the same time, we considered two leading reference journals, sustainability, and finance research letters, for their significant publications in this field. Finally, our panel of scientific articles was made up of 380 papers from the Web of Science database. Similarly, the screening methodology used in advance was explicitly applied to the Scopus database. This enabled us to detect 33 articles addressing the role of finTech in achieving sustainable development goals.

Following panel selection according to PRISMA logic and manual keyword filtering **(Figure 1)**, we obtained 73 scientific articles published between 2020 and 2024. This selected number was subjected to further reading, from which we identified highly cited articles also dealing with the subject in question (Kim Seong-Kyu and al, 2020), (Choi Eunsun and al, 2022), (Liu, Y and al, 2022), (Yuan and al, 2023).

Figure 1: Methodological mapping



Source: Developed by us

2.2. Results

2.2.1. Results of the selection process and word cloud.

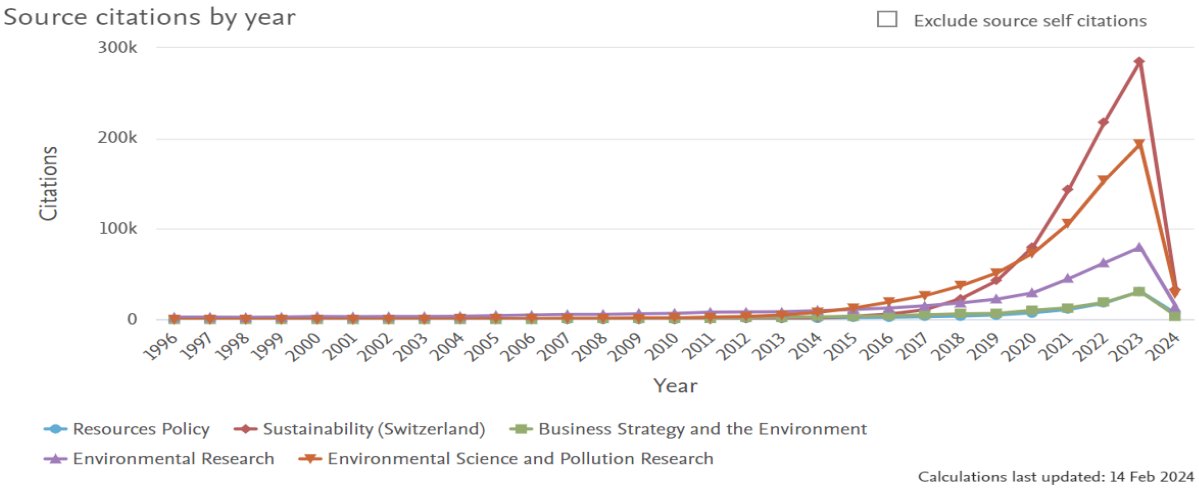
By analyzing the results of each software program, it is necessary to examine the publications selected concerning our main line of research. In this case, we have selected ten articles as pivotal publications for our systematic review. However, we also considered the rest of the scientific papers selected according to their importance to our research. This consideration has been precisely represented in the form of the word cloud **(Figure 2)**, which constitutes the fundamental nodes of the research.

Figure 2: Word clouds based on the selected articles

Source: Developed by us using the NVIVO software

According to the graph resulting from the analysis of the results (**Figure 3**), we can confirm that the subject in question has taken on significant importance in recent years, due to the accentuation of concerns linked to sustainable development. This tendency is explained by a growing demand for inclusive, transparent and efficient financial solutions that promote sustainable growth.

Figure 3: citation by year



Source: Developed by us using the Scopus analysis

2.2.2. Frequency of article collection

In our research, we conducted text analysis on a specific time frame to ensure the relevance and recency of the included articles. The time interval used as an inclusion criterion was set from 2020 to 2024 **(Table 2)**, capturing a recent and up-to-date range of publications. This approach allows us to focus on the most current research and insights within the specified timeframe. By considering articles published within this defined period, we aim to provide a comprehensive understanding of the subject matter while taking into account the latest developments in the field.

Table 2: Research Periodicity

Periodicity				
		Count	Percentage	Cumulative percentage
	2020	19	26%	26%
	2021	18	25%	51%
Valid	2022	21	29%	79%
	2023	11	15%	95%
	2024	4	5%	100%
	Total	73	100%	

Source: Developed by us using the SPSS software

2.2.3. Database

The table above presents the data sources that we considered in our research. The main data source chosen is the Web of Science database, which accounts for 70% of our weighting, enhanced by the Scopus data source, representing 30% of our overall weighting **(Table 3)**. These databases offer a multitude of relevant publications renowned for the quality of their articles, ranked according to the document's high citation rate. By using this leading data source, we ensured the inclusion of reliable, high-quality articles in our study. We also took into account other complementary data sources, which helped enrich our research and provide a broader perspective on the subject under study.

Table 3: Database name

Database name		
Indicator	**Count**	**Percentage**
Web Of Science	51	70%
Scopus	22	30%
Total	73	100%

Source: Developed by us using the SPSS software.

2.2.4. Language

It is crucial to select the language of the scientific documents used in the bibliographic analysis. For our research, we prioritized the English language, which represented 100% of the selected articles **(Table 4)**. This preference for English language articles is due to the significant publication output of researchers in the field of fintech and sustainable development in English. By prioritizing English language articles, we aimed to access a comprehensive body of literature and ensure that we covered the most relevant and influential research in our study. However, it is important to acknowledge that valuable knowledge may also exist in other languages, and future research could explore other linguistic sources to further enhance the understanding of the subject.

Table 4: Language

Language					
		Count	Percentage	Percentage valid	Cumulative Percentage
Valid	English	73	100	100	100

Source: Developed by us using the SPSS software

2.3. Discussion

2.3.1. How can fintech contribute to achieving the SDGs?

The SDGs are a set of 17 global goals established by the United Nations to address the social, economic, and environmental challenges our planet faces. These goals include poverty reduction, eradication of hunger, promotion of health and well-being, access to education, combating climate change, biodiversity conservation, promotion of gender equality, promotion of innovation and sustainable infrastructure, among others. Each of these goals aims to improve the lives of individuals and the sustainability of our planet.

Fintech, as the fusion of finance and technology, can play a crucial role in achieving these goals (Adekoya and al, 2022). This can be done through:

- Financial inclusion: Fintech enables the provision of financial services in a more accessible and affordable manner, especially for the unbanked or underbanked populations. This enhances financial inclusion and empowers individuals and small businesses to manage their finances and participate in the economy (Berg and al, 2022).
- Sustainable financing: Fintech can facilitate the financing of sustainable projects by simplifying fundraising processes, facilitating investment in ecological and social initiatives, and promoting transparency and traceability of financial flows (Bayram and al, 2022).
- Technology for development: Fintech can leverage technologies such as blockchain and artificial intelligence to enhance the efficiency of financial transactions, reduce costs, and facilitate international trade. This can stimulate economic development, particularly in regions with limited traditional financial infrastructure (Zhou and al, 2022).

Furthermore, (Yuan and al, 2023) attempted to examine the potential of fintech in degrading the effects of economic growth in Chinese cities. The results, from a panel of 290 cities, reveal that the group of cities with a higher proportion of taxes and secondary industries tend to produce more CO2 emissions. In contrast, other cities with high economic efficiency have better air quality. In addition, pollution control technologies and investments in technology and education correlate with increased urban green cover and reduced air pollution. The study also suggests that the implementation of digital financial technology can improve environmental awareness and contribute to the mitigation of air quality degradation.

In addition, the fintech industry has the potential to make significant contributions to the achievement of the Sustainable Development Goals. By promoting financial inclusion, enabling sustainable financing, and leveraging technology for development, fintech can help create a more inclusive and sustainable future for all.

2.3.2. Obstacles to fully leveraging the potential of sustainable digital finance

However, despite the potential of fintech, some obstacles hinder its full exploitation. Access inequalities persist as marginalized populations face difficulties in accessing digital financial services due to the digital divide, lack of financial education, and cultural barriers. Additionally, the increasing digitization of financial services raises concerns about cybersecurity and data protection. It is therefore crucial to implement robust security measures to protect users and establish trust in digital financial services. Furthermore, regulations and legal frameworks need to be harmonized to facilitate cross-border transactions and foster innovation while ensuring consumer protection and financial stability (Cumming and al, 2023).

In addition, it is important to acknowledge that while fintech presents promising opportunities for achieving the Sustainable Development Goals, there are also challenges that hinder its full potential.

One such challenge is the digital divide and unequal access to fintech services. Despite the benefits of financial inclusion, marginalized populations may still face difficulties in accessing these services due to factors such as the digital divide, lack of financial education, and cultural barriers. Efforts must be made to bridge these gaps and ensure that the benefits of fintech are accessible to all segments of society.

Another challenge is the need for robust cybersecurity and data protection measures. As financial services become increasingly digitized, users are exposed to risks of cybercrime and privacy breaches. It is crucial to establish strong security measures to protect sensitive user data and build trust in digital financial services.

Furthermore, the regulatory and legal frameworks surrounding digital financial services can vary across countries and regions. Harmonizing regulations and ensuring a conducive environment for fintech innovation and growth is essential. Clear and supportive regulatory frameworks can encourage responsible fintech practices while safeguarding consumer rights and financial stability.

Collaboration between fintech companies, policymakers, regulatory bodies, and other stakeholders is necessary to address these challenges and maximize the potential of sustainable digital finance. By overcoming these obstacles, fintech can become a powerful enabler in achieving the Sustainable Development Goals, promoting financial inclusion, driving sustainable financing, and fostering technological advancements for global development.

Conclusion

The analysis conducted through this systematic review provides insights into the multidimensional contribution of Fintech to the achievement of the sustainable development goals. Three key dimensions emerge financial inclusion, sustainable financing, and the integration of technology in support of development. The ability of financial technologies to improve access to banking and financial services represents a critical lever for reducing inequalities, particularly in underbanked contexts. This observation echoes the findings of (Attouchi and al, 2024), who emphasize the structuring role of financial development in broadening access to services and moving toward goals of economic and social justice.

Moreover, technology enables the redirection of financing mechanisms toward sustainable projects, thereby reinforcing the environmental and social dimensions of investment strategies.

In this regard, the propositions of (Dermine-Brullot and al, 2020) concerning the circular economy align with practices that Fintech companies can adopt to reduce their ecological footprint while maintaining a responsible innovation dynamic.

However, several challenges remain. Unequal access to digital infrastructure, weak regulatory frameworks in certain countries, as well as risks related to cybersecurity and data protection, constitute major barriers to the widespread adoption of Fintech solutions aimed at sustainability. A coordinated effort among public, private, and institutional actors is essential to overcome these constraints and to embed Fintech within a trajectory aligned with the SDGs.

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