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Mapping the Intersection of Sustainability and Fintech: A Bibliometric Analysis

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Abstract- The convergence of financial technology (fintech) and sustainability has emerged as a transformative force in the global effort to achieve inclusive, green, and efficient economic systems. Therefore, the objective of this paper is to understand and explore current trends in research, prolific authors, contributing countries, and prevailing themes. Data used in the study are collected from the Scopus database, and the analysis was done using VOSviewer and RStudio. The results of the study demonstrate that although fintech research began after 2015, there has been a surge in publications since 2023, which is expected to double by the end of this year. A significant rise in concern can also be seen among fintech authorities and related stakeholders regarding sustainability. This paper also demonstrates key themes and proposes future directions, including fintech's role in the circular economy and the integration of advanced technologies such as blockchain and AI in sustainable finance.

Keywords- Fintech, Sustainability, Green Finance, Bibliometric Study, Financial Technology

I. INTRODUCTION

Sustainability throughout the world has been a pressing concern since global warming's effect can be apprehended through rising sea levels, deforestation, and shifting weather patterns that threaten both ecosystems and human livelihoods [1]. Addressing this challenge requires coordinated efforts across nations, industries, and individuals to implement effective climate solutions [2], [3]. Developing economies, especially in South Asia, are facing high challenges because of high reliance on natural resources, high carbon emissions, deforestation, environmental pressures, and rapid industrialization [4]. Therefore, sustainable development has been a top concern for most countries since it requires figuring out and solving prevailing critical gaps of infrastructure, technology, and policy [5].

FinTech or Financial technology has the potential to provide ground for promoting sustainability through its innovative solutions [6]. In addition, Fintech facilitates green finance, financial inclusion, and efficient resource management that support sustainable practices across different industries [7]. Spanning from digital transformation of financial activities to modern technologies such as AI and blockchain, Fintech has offered various avenues to align technological growth with global environmental goals [6], [8].

Therefore, a priority shift can be noticed towards an inclusive financing culture/system that is presumed to be generated by the relationship of two very well-known

terminologies, Fintech and Sustainability, making it a valuable area for study [9], [10]. To name a few of its capabilities, we can include proper controlling and tracking of environmental/digital footprint [11], empowering the overall financial inclusion [12], and pushing towards an efficient use of resources [9], [13]. As a result, sustainability has the high potential to be included and considered as a major factor in economic systems and its processes through various prospects by the rapid growth. As sustainability covers a wide range of concepts, some currently used digital instruments of Finance can ensure the ESG (Environmental, Social and Governance) accuracy by backing green investment (Environmental), rationalizing financing methods and sources for this circular economy (Social), and ensuring fairness in reporting (Governance) [14]. In addition, sustainability and Fintech collaboration can also potentially assure financial inclusion in developing economies [15].

This interrelationship between Sustainability and Fintech has already been assessed from various viewpoints by number of authors and researchers in past studies. Notable ones among them can be corporate sustainability that has been refined by better green finance activities [11], sustainable innovation with the help of rapid Fintech growth [16], and enhancing better banking practices [17] and so on. Comprehensive and data-driven evaluations show that the improvement in scholarly contributions in this field of study, specifying the most notable authors and countries, mapping new topic groups, is known very little despite a wide range of work in this field. Policymakers, practitioners, and scholars might find it difficult to get a comprehensive grasp of trends, relationships, and future research objectives in the absence of such a compilation.

Using information from the Scopus database, this study fills this gap by conducting a bibliometric analysis of FinTech–sustainability literature from 2015 to 2025. The study maps publication growth trends, prominent authors, important regional contributors, and main themes using tools like VOSviewer and RStudio. Combining theme mapping with quantitative performance analysis represents the novelty of this study as it provides a macro- and micro-level perspective of the field's evolution over the past decade. The study clearly outlines the research questions as follows:

RQ1: How has research on Fintech and sustainability developed over time?

RQ2: Which authors, institutions, and countries have made the most significant contributions to this field?

RQ3: What are the key thematic clusters in Fintech and sustainability research, and how do they reflect the integration of technology, environmental sustainability, and financial inclusion?

The paper is structured as follows: section 2 describes the study background while section 3 illustrates the methodological design. On the other hand, section 4 discusses the analysis of data extracted from the Scopus database and the subsequent section 5 shows discussion. Finally, the conclusion and future research direction have been added to section 6.

II. STUDY BACKGROUND

The relationship of Fintech and Sustainability has been on the rise as a major domain for research over the last 10 years, which testifies that the world is shifting towards environmentally responsible finance practices and innovation [18]. Fintech or Financial Technologies aim at innovating and improving financial services [1]. It consists of a variety of activities such as mobile banking, blockchain, AI-driven tools, and peer-to-peer lending, etc. which ultimately results in an improved operational efficiency and effectiveness with total financial inclusion [19], [20].

On the other hand, sustainability in finance consists of frameworks of ESG (Environmental, Social, and Governance), which aim at creating long term value for not only the shareholders but also the society and environment. In this regards, Faizulayev [21] assesses the impact of different macroeconomic factors and confirms that ESG and Fintech factors ensure financial sustainability of conventional and Islamic banks.

Together, these two notable domains merge into Sustainable FinTech, a promising area for study from both economic and environmental perspective. Arner et al [9] presented their study by depicting how financial processes and systems can be merged with sustainable goals through the use of innovation and various financing tools and methods specially for green investment and the tracking of environmental as well as digital footprints.

Regarding initiatives of green finance and environmental performance, numerous studies have explored FinTech and Sustainability from their own perspectives and domains. One of those, Doghan and Chong [11], stress that FinTech can lead to both Green Investments and ensure optimum use of resources. Likewise, Gao et al [16] highlight the influence FinTech might have on the ESG outcomes of firms, that is, resulting in much better reporting and compliance of firms sustainability.

Looking into financial inclusion and socio-economic impact, several studies indicate that significant improvement can be seen in developing economies where FinTech contributed to financial inclusion. The study of Hiew et al [22] in Malaysia find that tech-based financing activities might fill the existing gap (such as limited access to all of the financial services), by ensuring participation from marginalized communities and people. Similar to this, Offiong et al [23] show that if an economic system

adopts FinTech there is a good chance for positive impact in both environmental and social aspects of sustainability. Anshari et al's [24] work is another study that depicts how green initiatives of Fintech help to maintain better and responsible consumption and production. In his work Othman (Othman, 2025) assessed the alignment between green finance and sustainable practices conducting a thorough analysis of data from 300 customers and 100 bank professionals. His paper reports that FinTech plays a vital role in transforming ethical banking in Jordan by advancing ESG objectives, reducing financial access disparities, and enhancing customer loyalty, thereby contributing to sustainable, inclusive, and customer-centric banking practices.

Despite the major rise of study in this area, some gaps and voids still remain for further research that this paper has tried to explore. One is the very low to none integrated research themes on this domain where technological innovation, financial inclusions, and lastly environmental impact is shown into a single bibliometric approach. Next, most studies focus on specific countries or regions, which might restrict the understanding of global research patterns and collaboration networks. Finally, while thematic groups have been identified in several separate studies, only a few have mapped their evolution over time so that new emerging research aspects can be revealed.

In order to fill these gaps, this study uses the Scopus database to provide a thorough bibliometric analysis of FinTech-sustainability research from 2015 to 2025. Where other studies explored a narrow set of themes, this study goes on to explore and understand the notable authors, trends of publication, collaboration patterns, and thematic structures as well, by integrating performance analysis with scientific mapping. Therefore, this will result in getting an overall view of this field of study altogether through this bibliometric approach and leave suggested key areas for further research in the future.

III. METHODOLOGY

As the main objective of this research is to figure out current status, emerging trends, research clusters, prominent authors and countries, this study has adopted a bibliometric and systematic review technique. Bibliometric study was introduced by Pritchard [25] in order to assess the evolution of any scientific field. It gained momentous attention to map any research domain with focus on emerging boundaries and fields. This method is commonly applied in various fields, including finance [26], management [27], healthcare [28], technology adoption [29], marketing [30], also in arts and humanities. We followed a similar approach to that of Tandon et al. (2021). A multistep approach was followed to collect, sort, and review articles from the Scopus database.

Authors such as [31], [32], [33] suggested using the Scopus database because of its comprehensive collection of high-end, top quality research works. First, we extracted the keywords related to fintech and sustainability using google scholar. We looked for keywords used in ABS 3 or 4

publications. We found “Financial Technology” and “Fintech” words as the mostly used keywords in top quality publications related to fintech. We also figured out “Sustainable Investment”, “Eco-friendly Finance”, and “Green Finance” keywords widely used for sustainability issues in finance.

We then invited 2 experts in the field of Fintech to finalize our keywords. Based on their suggestions, we incorporated the keywords "Financial Technology" or "Fintech" and "Sustainability" or "Sustainable investment" or "Eco-friendly Finance" or "Green Finance" for the final search. We started our search on 12 June 2025 and identified 715 records. The scope of the search was title, abstract, and keywords. We limited our study domain to Economics, Econometrics and Finance, Business, Management and Accounting, Humanities, and Social Science.

We focused solely on articles for this study and excluded other categories such as books, chapters, and conference papers due to their lack of peer-reviewed rigor and limited relevance to the specific research objectives, which required comprehensive, high-quality empirical studies. Therefore, 237 items were excluded from the list. Another 6 articles were removed since those are not published in English. Therefore 472 articles were screened before the final review. One author meticulously examined the titles and abstracts, excluding 34 articles that fell outside the scope and topic of this study. 438 documents, finally, were reviewed to map the intersection of fintech and sustainability (Figure 1).

We’ve used RStudio and VOSViewer to map the research field. RStudio was used to determine the data overview, contribution of authors, countries, and journals, thematic mapping, country collaboration maps etc., whereby VOSViewer was used to assess keyword analysis and cluster-mapping.

IV. ANALYSIS & RESULT

4.1 Descriptive Statistics

In this section we illustrate the findings from the bibliometric analysis conducted from 2015 to 2025 on 438 documents, specifically on the research field of Sustainable FinTech. Table 1 narrows down the findings from the analysis. It outlines that we have investigated a detailed explanation of sustainability issues in fintech as the annual growth rate of documents found here is 60.3%. On average, the documents collected from the Scopus database have an average of 18.25 citations.

As a combined, 1252 authors made contributions by publishing documents, of which 51 are single-authored documents. According to the number of authors, co-authors, and published papers, there is a mean number of 3.34 authors working on each document. In simple words, the data indicates a substantial number of international relationships, supported by 40.68% of international co-authorships. The authors collaborated extensively in FinTech, as evidenced by their findings.

TABLE I: OVERVIEW OF DATA

Description	Results
Timespan	2015:2025
Sources (Journals, Books, etc.)	187
Documents	438
Annual Growth Rate %	60.3
Document Average Age	1.48
Average citations per doc	18.25
References	28084
DOCUMENT CONTENTS	
Keywords Plus (ID)	1387
Author's Keywords (DE)	1262
AUTHORS	
Authors	1252
Authors of single-authored docs	48
AUTHORS COLLABORATION	
Single-authored docs	51
Co-Authors per Doc	3.34
International co-authorships %	40.64
DOCUMENT TYPES	
article	438

4.2 Annual Scientific Production

Figure 2 illustrates the trend in annual scientific production over the period of 2015 to 2025. As it shows, initially, production remained relatively low with a slight increase. Between 2019 and 2021, the yearly publishing in the field of FinTech started to gain momentum. The number of articles started to rise steadily, followed by a significant, sharp rise in 2023. The growth peaked approximately in 2024.

Subsequently, a decline is observed in the following years. The rapid implications of FinTech worldwide can justify the research numbers depicted. The intellectual agenda during these years centered on financial technologies, banking innovations, digital banking infrastructures, and financial inclusion, which collectively form the thematic core of contemporary FinTech research.

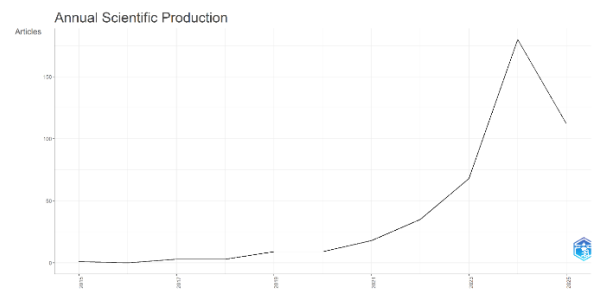


Fig. 2: Annual Scientific Production

The annual citations of FinTech-related publications over the period 2015-2025 are depicted in figure. It reveals the initial stability between 2015-2017, with approximately

10 papers on average. A sharp decline can be observed, recording the lowest level in 2018, which is only 5 papers. The exponential growth in annual citations pivoted to peak in 2020. Contrarily, A significant decline in 2020 can be attributed to Covid19 pandemic. The decline throughout the year till 2025.

4.3 Top Journals and Sources

Figure 4 demonstrates the publications among the leading academic journals sorted from the Scopus dataset. Among all Resources Policy emerges as the top contributor to this field, recording 93 documents. It has established itself as the leading source of contributions in this field. Followed by Sustainability (Switzerland) and Finance Research Letters with publications of 47 and 11, respectively. Further noteworthy journals include Technological Forecasting and Social Change, the Journal of Cleaner Production, and the Journal of Open Innovation: Technology, Market, and Complexity, each has contributed significantly to the dissemination of FinTech research. Overall, these journals outputs describe that they are truly focused on policy, sustainability, innovation, and financial management. Emphasizing the interdisciplinary nature and cross-sectoral relevance of FinTech.

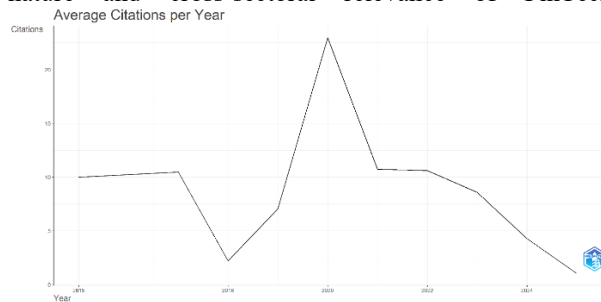


Fig. 4: Most relevant sources

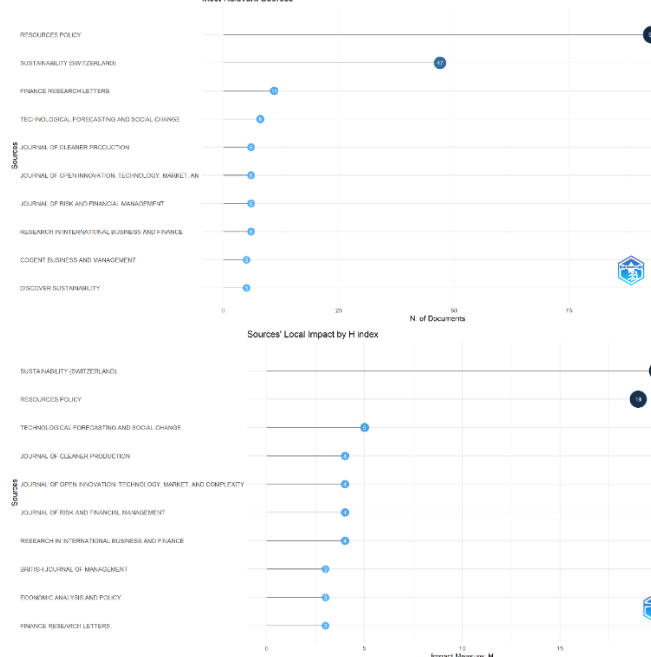


Fig. 5: Sources' local impact by H index

Fig. 5 showcases the local impact as measured by H-index and the contributing journals. Findings suggest that Sustainability (Switzerland) exhibits the highest number of local impacts with an H-index of 20, closely followed by Resources Policy with an H-index of 19. These two journals are the most influential sources. In the mid-range, Technological Forecasting and Social Change with (H=5) and four journals, Journal of Cleaner Production, Journal of Open Innovation: Technology, Market, and Complexity, Journal of Risk and Financial Management, and Research in International Business and Finance and all with H=4. Overall, the figure demonstrates a highly skewed distribution of impact, with two journals dominating in local influence, while most of the source's cluster at lower H-index values.

The previous figures show articles and leading journals. Now, Figure 6 represents the source's production overtime. Research In International Business and Finance pivoted itself to the most crucial role in production starting from 2023. Simultaneously, Sustainability (Switzerland) trend upwards gradually over time, proof of presence in production increasing every year. Besides these two, other sources experienced steady growth over time.

Fig. 6: Sources' production overtime

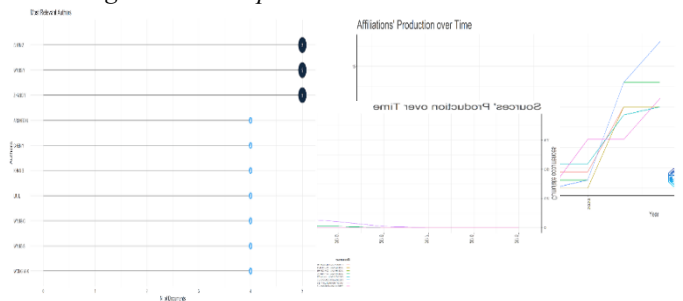


Fig. 7: Most relevant authors

4.4 Most Influential Authors and Documents

Figure 7 portrays the most relevant authors in FinTech. CHEN Z, WANG Y, and ZHANG Y are the most prominent, with 5 articles each. Other notable top contributors are Arshed N, Chen Y, Khan S, all others in this figure have produced 4 papers each.

4.5 Co-authorship or Country Collaboration Analysis

Following figure presents the top institutions for the Most Relevant Affiliations of the article produced. An astounding 18 publications have been produced by Sunway University, followed by King Saud University with 13 articles. Asia University, Hubei University of Automotive Technology, and Sichuan University produce

similar 10 outputs, respectively. The rest of the universities produced 9 articles each.

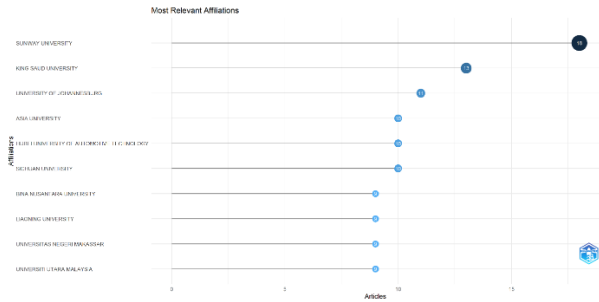


Fig. 8: Most relevant affiliations

The temporal evolution of scientific production (measured in the number of articles) from the Scopus dataset in the time frame of 2017-2025 has been demonstrated in figure 9. Initially, a slight inactivity between 2017 to 2020 is observed only by King Saud University, showing a small rise in publications. But the gradual emergence started in late 2020, Asia University and Hubei University of Automotive Technology began to increase their output, our research shows China and Southern Asia ramped up their research because of the rapid reshaping of their FinTech industry was undergoing. In 2023, onwards sharp output hike began, the University of Johannesburg showed the steepest growth and suppressed all others by 2025, with more than 17 cumulative publications. Hubei University of Automotive Technology has stabilized around 13-14 and 10-11 publications, respectively. Overall, there was a delay but accelerating engagement in scientific output among the institutions after 2023. This suggests new collaborative initiatives, funding availability, or emerging research trends that have simultaneously motivated productivity across multiple affiliations.

4.6 Keyword Co-occurrence Analysis

We conducted a keyword co-occurrence analysis with 10 keywords and figured out a total of 83 items (Figure 10). As shown in table 2, we examined the intersections of four distinct clusters related to sustainability in fintech issues. These clusters have been designed to offer a clear framework for understanding the interplay between technological progress, financial systems, and the advancement of sustainability.

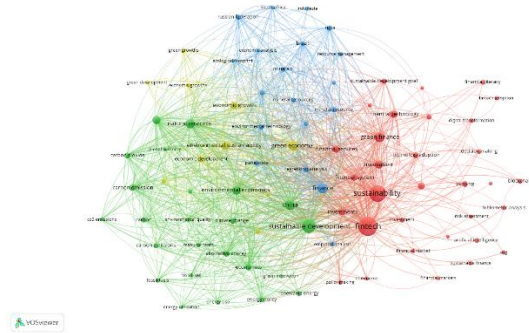


Fig. 10: Keyword cooccurrence map

TABLE II
IDENTIFIED CLUSTERS ACCORDING TO
COOCCURRENCE ASSESSMENT

Identified Cluster	Keywords	Unified Themes
Cluster 1 (31 items)	Artificial Intelligence, Banking, Bibliometric Analysis, Blockchain, Commerce, Decision Making, Developing World, Digital Transformation, Digitalization, Digitization, Financial Inclusion, Financial Literacy, Financial Market, Financial Markets, Financial Services, Financial System, Financial Technology, Fintech, Fintech Adoption, Green Finance, Innovation, Investment, Investments, Machine Learning, Policy Making, Risk Assessment, Sustainability, Sustainable Development, Sustainable Developer, Technology Adoption	Technological Integration and Financial Systems
Cluster 2 (24 items)	Alternative Energy, Carbon, Carbon Dioxide, Carbon Emission, Carbon Emissions, China, Climate Change, Co2 Emissions, Economics, Energy Policy, Energy Use, Energy Utilization, Environmental Economics, Environmental Quality, Environmental Regulation, Fossil Fuel, Fossil Fuels, Global Warming, Green Innovation, Natural Resource, Natural Resources, Renewable Energy, Resource Rents, Sustainable Developer	Environmental Sustainability and Green Energy
Cluster 3 (19 items)	Ecological Footprint, Economic Analysis, Empirical Analysis, Environmental Management, Environmental Technology, Finance, India, Indonesia, Method of Moments, Mineral Resource, Mineral Resources, Brazil, Minerals, Panel Data, Quantile Regression, Regression Analysis, Resource Management, Russian Federation, South Africa	Economic and Environmental Analytics
Cluster 4 (9 items)	Economic And Social Effects, Economic Development, Economic Growths, Environmental Policy, Environmental Sustainability, Green Development, Green Economy, Green Growths, Technological Development	Socio-Economic Growth and Development

Cluster 1: Technological Integration and Financial Systems
The first cluster necessitates how digital technologies such as machine learning, blockchain, and artificial intelligence are integrated into financial systems to transform the old practice of financial markets into modern domains. Keywords such as Fintech adoption, policy making, green finance, and financial inclusion highlight both opportunities and challenges in ensuring sustainable financial ecosystems. In developing countries, the emphasis on innovation and efficiency aims at broadening access to finance for everyone [9].

Cluster 2: Environmental Sustainability and Green Energy
In the second cluster, keywords such as renewable energy, environmental regulation, and green innovation highlight a strong focus on aligning financial technologies with energy transitions. It shows how Fintech can be a climate-related mechanism used to promote cleaner, eco-friendly focus. Furthermore, Finance-driven mechanisms such as green bonds, ESG financing, and carbon credit trading's role in accelerating low-carbon development pathways are highlighted here as well.

Cluster 3: Economic and Environmental Analytics
Cluster 3 groups together an empirical and econometric approach of connecting sustainability and Fintech. Terms such as panel data, quantile regression, economic analysis, resource management, and ecological footprint suggest that, across countries such as India, Brazil, Russia, Indonesia, and South Africa, researchers are testing measurable associations between financial practices and environmental outcomes. The emphasis is on giving policymakers evidence-based advice using quantitative methods.

Cluster 4: Socio-Economic Growth and Development
The last cluster focuses on macro-level impacts of sustainable Fintech application. This cluster highlights that the concept of Fintech innovations is comprehensive and inclusive, with key terms like economic growth, green growth, technological advancement, and eco-friendly present. This cluster focuses on harmonizing financial development with long-term societal and economic objectives such as green growth, employment generation, and social well-being.

V. DISCUSSION

This bibliometric study provides useful information on the prevailing interrelation between Fintech and sustainability, highlighting the development of literature, the role of leading authors and institutes, and the key themes that emanates from the scholarly works. The paper's initial research topic included was to examine the emergence of sustainability research based on FinTech. It has been noted that research in this field has experienced a rapid expansion, particularly since 2019, which is indicative of the growing recognition of possibilities for FinTech to address global challenges such as climate change, scarcity and financial exclusion [34], [35]. The findings of this research deliver valuable insights into the evolution of Fintech that has evolved beyond conventional financial

inclusion, transitioning into the digital space and making a vital contribution to the establishment of a more sustainable global financial system. Our research indicates that there is a global increase in publications concerning sustainability in Fintech, with an annual growth rate of 60.3%. The surge is indicative of rising global interest in sustainability and digital finance has been driven by the rapid evolution of Fintech advancements, including artificial intelligence, blockchain, digital banking, and sustainable financial offerings [18], [36], [37]. The spike in publications in 2024 focuses on how global pressures associated with sustainability, climate change, regulatory issues, and digital transformation have enhanced the concerns regarding Fintech. Hence, the rapid proliferation of publications presents a growing expression of academic interest, and a broader recognition of Fintech's potential for positive environmental and social impact.

The second question of this study was related to key people, institutions and countries who are contributing to this field. According to our research, writers such as Chen Z, Wang Y, and Zhang Y, who has made a remarkable impact on the theme of financial technology integration with the sustainable concept. Analysis of these authors addresses themes that involve financial inclusion, green finance, and the use of blockchain in sustainable investment. Their findings have been impactful for the academic discourse on sustainable Fintech.

Institutions like Sunway University (18 articles) and King Saud University (13 articles) are now playing a significant role, especially in areas such as Asia, where adoption in Fintech is accelerating rapidly [4]. Increasing attention to the Fintech ecosystem in the leading regions indicates a growing interest in the role that Fintech can play for sustainability.

Our final question was to assess the thematic clusters in Fintech and sustainability research. We conducted a keyword cooccurrence analysis with 10 keywords and identified four research clusters including technological integration and financial systems, environmental sustainability and green energy, economic and environmental analytics, and socio-economic growth and development. The analysis highlights key issues around how technology can be embedded in financial systems as the cornerstone of sustainable Fintech research. Blockchain, AI, and digital banking are constantly touted as tools with which to mobilize green finance programs and provide transparency on sustainable investments. Moreover, the trend of incorporating ESG factors into financial decision-making is equally aligned with rising need for sustainable products such as green bonds and other sustainable financial instruments [4], [38]. Another progressive area is how Fintech is addressing environmental sustainability, particularly through producing renewable energy and cutting carbon emissions [7]. In this regard, this study emphasizes how important Fintech is to promote sustainability in both developed and developing nations worldwide.

VI. Conclusion & Future Research Directions

Sustainability has emerged as an essential concern for every nation worldwide in recent years. It has been working as a catalyst for transforming the world towards sustainability goals. Fintech not only focuses on transforming traditional financing activities into digital form but also aims at integrating technologies to leverage efficiency, inclusivity, and transparency in financial services. This study offers valuable insight in the intersection of Fintech and sustainability with concern to technology, environment, and economy. However, future research avenues prevail.

First, it has been found that most sustainable fintech related research has been conducted in developed countries which cover little insight from emerging markets. Therefore, more research on the pattern of growth in Fintech adoption should be conducted. Second, since policymakers around the world have been working to create an environment conducive to the growth of green finance and digital financial services, further studies could highlight regulatory frameworks for supporting sustainable financial initiatives. Third, more research is necessary to fully understand the ethical ramifications of Fintech innovations. Fairness, transparency, and inclusivity are important topics to investigate as financial technologies advance, especially when it comes to the use of AI-driven financial products.

In summary, Fintech has contributed significantly to promote sustainable financial systems and advance global sustainability goals. However, more study is required to examine the ethical, legal, and economic aspects of this developing field to fully realize its potential.

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