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Digital Currencies and Sustainable Finance: A Bibliometric Review of Global Research Trends

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Abstract: This study presents a comprehensive bibliometric analysis of research trends at the intersection of digital currencies and sustainable finance from 2018 to 2026. Drawing on 358 publications indexed in the Scopus database, the analysis employed Bibliometrics and VOSviewer to examine publication performance, citation structures, keyword co-occurrences, and thematic evolution. The results reveal a significant rise in scholarly attention toward digital currencies, particularly cryptocurrency, blockchain, and central bank digital currency (CBDC), with notable connections to themes of sustainability, green economy, and financial inclusion. The study identified cryptocurrency (31.01%), blockchain (14.25%), and bitcoin (13.13%) as the most prominent keywords, underscoring the dominance of technological innovation in reshaping financial ecosystems. Furthermore, the citation metrics (4,246 total citations; h-index = 34) indicate robust academic engagement and growing interdisciplinary collaboration. The findings highlight those digital financial innovations not only transform global financial structures but also play a pivotal role in promoting sustainable development and green finance initiatives. This bibliometric mapping offers valuable insights for policymakers, financial institutions, and researchers aiming to align digital finance strategies with sustainability objectives. Future studies are encouraged to explore the regulatory frameworks, technological ethics, and environmental impacts of digital currencies to foster an inclusive and resilient financial future.

Keywords: *Digital Currencies, Sustainable Finance, Blockchain Technology, Sustainability, Bibliometric Analysis*

1. Introduction

In recent years, the integration of digital currencies and sustainable finance has risen as one of the most impactful developments that influences current economic and financial systems. Digital currencies, including decentralized cryptocurrencies and central bank digital currencies (CBDCs), are transforming how people transact, invest, and interact with financial markets (Prodan et al., 2024). At the same time, sustainable finance is gaining prominence as it links economic activity with environmental, social, and governance (ESG) priorities, drawing attention to issues such as climate change and the necessity of more equitable development (Luo et al., 2022). Such integration of these two aspects is creating new opportunities while also exposing the challenges of meeting global sustainability goals, attracting growing interest from scholars and policymakers alike (Kumar et al., 2025).

With the increasing exposure to digital currencies and sustainable finance, there is a substantial increase in scholarly publications in regard to these subject matters, particularly after 2020. There is empirical evidence to suggest that related discussions have diversified rapidly that focusing on blockchain-powered green finance, eco-cryptocurrencies, and the role of CBDCs for sustainability-led economic activity (Ali et al., 2024; Khaustova et al., 2024). It can be overserved that from on the statistical analysis of bibliographic data regarding sustainable finance that there is a significant development in the studies where recent ones addresses the issues such as social responsibility, socially responsible investments, and climate change mitigation by delving deeper into the subject matters such as reviewing green bonds, low-carbon transitions, and the integration of financial technology into sustainable practices (Luo et al., 2022; Singhania et al., 2024). Such development reveals the dynamic and diverse nature of research in this sector and highlights the necessity for a complete map of its intellectual evolution.

In this context, this study provides a bibliometric analysis to systematically investigate the global research trends on the integration between digital currencies and sustainable financing. The researchers found bibliometric methods as the appropriate method in investigating this subject matter since it helps in understanding influential publications, thematic clusters, and knowledge trajectories in a complex and evolving research space (Khaustova, et al., 2024). This study utilizes the performance and co-citation analysis, and science mapping techniques, to establish digital currency research in a larger spectrum of sustainable finance perspectives. This study also aims to offer a systemic view of its intellectual structure and the subsequent results.

Although there is an increase in the number of research pertaining digital currency, however a significant gap can still be observed in term of understanding how in regard of comprehending how such research can contribute to sustainable finance in a wider scope. Most contemporary studies prefer to direct their focus on technological advances or environmental consequences individually, instead of collectively; they failed to systematically study in detail the impacts of integrating these factors in global research trends (Ali et al., 2024; Dzhereleyko et al., 2025). They thus leave a gap in understanding about how digital currencies are portrayed as positive or negative with regard to sustainability, and across different regions and academic disciplines. Doing so is critical for the development of theory, policy-making, and future research agendas.

As such, this study focuses on the following research question: What are the global research trends, thematic patterns, and intellectual structures at the intersection of digital currencies and sustainable finance, as revealed through bibliometric analysis? The following sections of the studies are structured as follows. Section 2 discusses the methodology adopted in this study, encompassing the bibliometric analysis and the selected data sources. The results of the bibliometrics analysis – with an emphasis on publication productivity, leading author and affiliation productivity and thematic clusters are presented in Section 3. Section 4 discusses major findings in relation to the available literature, and the implications are outlined, as in the theoretical, practical and policy implications. Finally, Section 5 provides the conclusion of the study by summarizing the research contributions, highlighting the research limitations, and suggesting directions to improve future research.

2. Literature Review

Emerging research at the interface of digital currencies and sustainable finance has significantly expanded in the past few years driven by growing financial systems' digitalization and the increasing demand for sustainable development across the globe. It can be observed from Bibliometric studies that there is a significant increase in the number of scholarly publications since 2020, especially from China, India and United Kingdom (Kumar et al., 2025). A considerable portion of this literature employs bibliometric and scientometric techniques, including tools like VOSviewer and CiteSpace to map publication patterns, intellectual structures, and thematic clusters (Khaustova et al., 2024). These studies discussed some important financial elements such as distributed finance (DeFi), blockchain-based innovations, and the integration of virtual currencies into sustainable financial practices (Singhania et al., 2024).

In general and according to the current global trends, digital currencies such as cryptocurrencies, stablecoins, and central bank digital currencies (CBDCs) are widely presented as instruments that have the capacity to enhance the efficiency and inclusiveness of sustainable finance and they are studied for their potential to enable cross-border transactions, reduce transaction costs, and expand financial access, especially in regions where there are insufficient banks to meet consumer needs. (Prodan et al., 2024). At the same time, sustainable finance is gaining prominence as it links economic activity with ESG priorities, drawing attention to issues such as climate change and the need for more equitable development (Luo et al., 2022). The intersection of these two elements is creating new opportunities while also exposing the challenges of meeting global sustainability goals, attracting growing interest from scholars and policymakers alike (Kumar et al., 2025).

Even though the potentials of digital currencies are acknowledged, some researchers have highlighted the challenges in integrating digital currencies with sustainable finance practices, such as digital literacy, cybersecurity, and infrastructure readiness. These elements are crucial in such integration especially in this rapid economic development (Ali et al., 2024). Furthermore, regulatory issues need to catch up with technology development, providing uncertainties to the policymakers, central banks and market actors (Prodan et al.,

2024). Whether digital currencies contribute to systemic risks such as money laundering, market volatility and environmental externalities or can be adequately controlled to promote sustainability remains a matter of continued debate (Kumar et al., 2025). These tensions reflect ongoing struggles that have pitted digital currency research against the discourse of sustainable finance at large.

The role of emerging technologies in integrating digital currencies and sustainable finance is highly significant. Blockchain, which comes with decentralized and transparent ledger systems, has been identified as open-source for promoting carbon trading, renewable energy markets and sustainable supply chain (Singhania et al., 2024). Also, the use of artificial intelligence (AI) and big data analytics is being more and more integrated into sustainable investment strategies for predictive modelling, risk evaluation, and ESG criterion alignment (Dzhereleyko et al., 2025). Taken as a whole, these technological advances are reshaping not only the design of financial instruments but also the way in which sustainability is implemented in financial systems.

Although it has been growing at a rapid pace, the literature in this field is highly disintegrated, with few attempts so far to systematically decipher global trends and intellectual structures of research across its broad array of subject areas. The majority of the research papers only addressed specific topics of CBDCs, green cryptocurrencies or blockchain applications and did not provide a comprehensive bibliometric overview (Luo et al., 2022). This then translates into a gap caused by a lack of understanding of the interaction between digital currency research and sustainable finance, where key knowledge clusters can be found, or how scholarly debates differ over time. In the effort to bridge such gap, this study applied bibliometric analysis to provide a broad view of the current research trends across the globe that can be used to aid reflection on progress and lead as well as under-researched areas.

3. Methodology

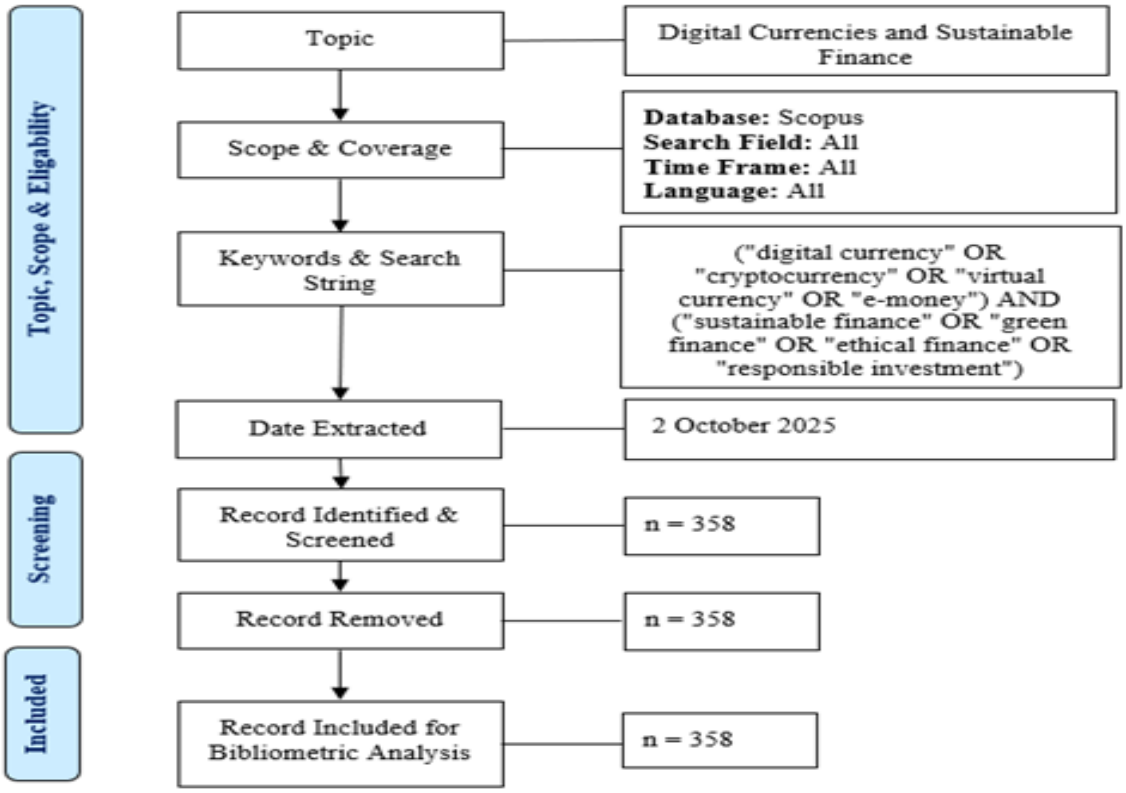
This study adopts the bibliometric method to investigate the research trends, intellectual structure and global collaboration network of digital currencies and sustainable finance, as it this method is particularly relevant for systematic analyzation of extensive corpora of academic literature because it offers the possibility to accordingly determine disciplinary knowledge structures, including potential key publications as well thematic clusters and emerging research fronts (Donthu et al., 2021). Performance analysis and science mapping methods are specifically used to quantify publication output, citation impact and author productivity, while co-citation, co-authorship and co-word analyses reveal intellectual structures and collaboration profiles among disciplines and countries. The methodological framework of the study ensures a detailed description of how knowledge in this nascent field develops and is spread.

Scopus is the main data source of this study as it has wide coverage for peer-reviewed journals, conference proceedings, and book chapters within the social sciences (including economics), business and IT. For instance, when the search scope and selection of data source region were extended to global coverage, compared with Web of Science databases, a wider range of international literature was included in the Scopus database around hot topics or emerging interdisciplinary fields including financial technology and sustainability. Scopus additionally offers both advanced citation-tracking and universal author identifiers, which allow researchers to accurately map the collaboration networks and influence in the scholarly community (Pranckutė, 2021). Due to the reliability and comprehensiveness of Scopus, it is the most suitable database for covering as much research as possible on digital currencies and sustainable finance in a worldwide context.

This study contributes in two ways to the advancement of scholarly knowledge by applying bibliometric methods to Scopus data. First, it analyzes the development trend of digital currency and sustainable finance literature, enabling the researchers to identify thematic hotspots such as blockchain-enabled green finance, CBDCs, and environmentally-friendly cryptocurrencies. Second, this study illustrates the intellectual structures and international cooperation patterns of research on this topic, which presents the main contributors, organizations and regions in this field. These insights are important not only to comprehend the existing academic literature, but also to inspire future research, interdisciplinary co-operation and policy-making decisions in the digital finance sphere (Aria & Cuccurullo, 2017, Kumar et al., 2025).

This bibliometric analysis follows a systematic and explicit process for its methods and the collection of data, as displayed in the PRISMA diagram (Figure 1). The thematic focus on digital currencies and sustainable financing allowed for a full exploration of the nexus between financial innovation and sustainability. Scopus was chosen as the main database of the data set because it covers a wide range of peer-reviewed literature, a multidisciplinary scope and establishes reliability in bibliometric studies (Donthu et al., 2021; Burnham, 2006). The coverage and selection criteria covered all topics, languages and years of publication to optimize inclusiveness and reflect the full range of academic opinion.

Figure 1: PRISMA Flow Diagram



Source: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

The researchers ensure precision and comprehensiveness using a carefully constructed search string that includes multiple synonyms for both digital currencies and sustainable finance. The final search query combined terms such as "digital currency," "cryptocurrency," "virtual currency," and "e-money" with sustainability-related concepts including "sustainable finance," "green finance," "ethical finance," and "responsible investment." This is known as a Boolean strategy, which is applied to minimize retrieval bias while simultaneously covering the applicable records.

From the research conducted on 2 October 2025, 358 records were obtained and they were subsequently screened and checked based on the level of relevance, requiring no exclusions, as all results met the inclusion criteria. Therefore, all the 358 studies were included for bibliometric analysis. The information was prepared for further analysis (performance, mapping of intellectual structure and visualization of coauthorship) according to the recommendations set out for bibliometric methodology (Aria & Cuccurullo, 2017; Zupic & Čater, 2015).

The bibliometric analysis was carried out using a set of specialized tools that allowed for the sorting out and standardization of data as well as the visualization of research results. After data retrieval from Scopus,

Harzing's Publish or Perish (PoP) tool was used to refine and normalize the dataset, for example, by fixing author names, affiliations and citation inconsistencies. This was necessary to provide reliable data for the calculation of bibliometric indicators like citation counts, h-index and g-index (Harzing, 2007). After data cleaning, VOSviewer was used to create and display bibliometric networks (e.g., co-authorship, keyword co-occurrence, citation links) as it is especially helpful in producing visual maps that illustrate the intellectual landscape of a domain and identify webs of collaboration as well as thematic clusters and emerging research foci (Van Eck & Waltman, 2010). These instruments collectively contributed to methodological rigor via facilitating systematic data processing, enhancing the reliability of findings as well and displaying clear visual representations of research trends and knowledge structures in digital currencies as well as sustainable finance.

4. Findings and Results

This section provides the research findings from the adoption of the bibliometric analysis in studying the integration of digital currencies and sustainable finance. The research results are structured in such a way that they enable readers to have an overall view of the publication dispersion, intellectual structure and collaboration pattern of the subject matter. The researchers first examined the descriptive performance indicators, which include annual growth of publications, distribution of sources, and the most prominent authors and organizations. Next, the researchers analyzed citation-based indicators to identify influential works, authors, and journals that contributed significantly in respect of this discourse. The following step was applying the keyword co-occurrence and thematic mapping to determine the predominant research themes and their evolution over time. Finally, co-authorship and collaboration networks are visually presented to demonstrate trends in international and institutional cooperation. Taken together, such insights provide a systematic understanding of the worldwide knowledge resources about Digital Currencies and Sustainable Finance, which helps to interpret the trends of research hotspots, intellectual linkages and potential directions for further research.

Year of Publications/Evolution of Published Studies

Based on the annual distribution of publications, it can be observed that there is an increasing trend in the development of research on digital currencies and sustainable finance. Table 2 and Figure 2 illustrate that the publication of academic output was limited between 2018 and 2020 with only seven documents produced throughout these years (1.96% overall). This scarcity is indicative of the early stages in the conceptualization and integration process with regard to digital currencies in sustainable finance discourses, when research on this topic was still at the foundational stage and lacked momentum. Early contributions during such phases were typically more exploratory in nature and they laid down theoretical foundations rather than fully-fledged empirical work – a phenomenon not limited only to interdisciplinary fields but analogous contexts (Donthu et al., 2021).

There was a slight rise in 2021 with 16 publications (4.47%) but growth spiked in 2022 as it saw 29 publications (8.10%). This development can be explained by factors including global interest in the use of blockchain technology for sustainable purposes, the growing importance attached to CBDCs, and policy decisions associating financial innovation with United Nations SDGs. At this point, the literature also moved beyond cryptocurrencies to consider topics such as green finance, responsible investment (Corbet et al., 2020) and the environmental consequences of digital assets.

The most remarkable growth is from 2023 to 2025, showing the optimum stage in academic publication. Out of 359 publications identified in 2023, the number of research showed a considerable increment to 75 (20.95%) with almost three times higher compared with the previous year. This trend also persisted in 2024, the year with the greatest number of publications (120; 33.52%), and 2025 (110; 30.73%). Together, these three years represent 85.2% of all publications, reflecting an intense period of maturity in the field. This exponential increase follows amplified international policy discussions on the combination of digital financial technologies and sustainable finance, in particular with respect to carbon markets, ESG investing and the role of digital platforms for promoting financial inclusion (Auer et al., 2022). On the other hand, 2026 has a drastic drop, with only 1 publication (0.28%) listed. However, this decrease should be viewed with caution since the data was obtained in October 2025, and the 2026 output is incomplete. Such temporal lags are a common

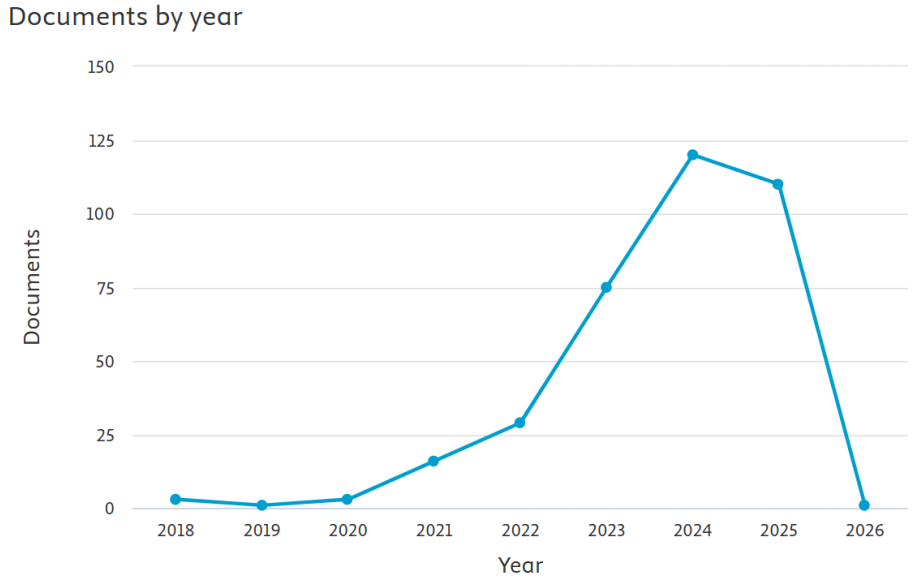
problem in bibliometric work, and decreasing trends at the "shelf-edges" of the data sets often appear to be more artefacts of incomplete indexing than real declines or decreases in scientific activity (Zupic & Čater, 2015).

In general, this publication trend reveals three distinctive stages: In the first stage: emergence phase (2018–2020) in which there are few contributions; in the second one growth phase (2021–2022) with an increment expansion and in the last one consolidation phase (2023–2025), where is showed a trend of exponential growth and maturity of the task. These findings illustrate how the integration of digital currencies and sustainable finance has quickly moved from a niche area to an emergent domain of interdisciplinary inquiry, prompted by technological advancements and sustainability demands.

Table 1: Year of Publications

Year	Total Publications	%
2026	1	0.28%
2025	110	30.73%
2024	120	33.52%
2023	75	20.95%
2022	29	8.10%
2021	16	4.47%
2020	3	0.84%
2019	1	0.28%
2018	3	0.84%
TOTAL	358	100%

Figure 2: Document by Year



Most Active Source Titles

The fact that publications are distributed across various source titles is a representation of the cross-disciplinary nature of digital currency and sustainable finance research, thereby covering economics, finance, environmental management and sustainability. The North American Journal of Economics and Finance (NJAEF) is the most active journal with 10 publications (2.79%); it speaks to a rising concern, how financial research benefits from a constant dialogue between the monetary system, international finance and emerging digital financial instruments. The coverage of the journal on international economics and continuously applied finance has positioned it as an outlet of preference for researchers focusing on the consequences of

cryptocurrencies in global financial markets, investment climate, and financing approaches purposely attributed to sustainability (Elsayed et al., 2022).

Second close is following NJAEF is the Research in International Business and Finance, with 9 publications (2.51%), which again demonstrates its relative focus on international aspects of finance and cross-border investment dynamics. The focus of this journal is on financial stability, risk and international markets, which reflects the increasing academic interest in digital currencies as innovative instruments and as potentially volatile ones (Alqahtani et al., 2020).

The financial press comprising Energy Economics (8 articles, 2.23%), International Review of Economics and Finance (8 articles, 2.23%), Finance Research Letters (7 articles, 1.96%), and International Review of Financial Analysis (7 articles, 1.96%) collectively highlights that the community around financial economics played a significant part in promoting this research agenda. Besides providing a rigorous econometric investigation into cryptocurrency markets, these journals provided evidence-based solutions on risk management and pricing behavior, in addition to the sustainability implications of digital finance (Corbet et al., 2020). It is also interesting that 6 articles (1.68%) contributed by Technological Forecasting and Social Change are foresight and innovation-oriented. The interdisciplinary perspective of this journal towards the adoption of technology, innovation systems and social change has made it particularly conducive for the investigation on blockchain applications, digital currency ecosystems, as well as their interlinkage with the sustainable development discourses (Bibri 2021).

From an environmental and sustainability perspective, journals such as Heliyon (5 publications, 1.40%), Journal of Environmental Management (5 publications; 1.40%), Resources Policy (5 publications, 1.40%), Sustainability (Switzerland) (5 publications; 1.40%), Sustainable Finance (5 publications, 1.40%) and Environmental Science and Pollution Research were increasingly active in debating the ecological and policy aspects of digital currencies. These debates contribute in illustrating the ecological externalities that cryptocurrency mining can cause, how digital financial instruments are accommodated by SDGs, and the policy pathways toward integrating green finance (Truby, 2018; Luo et al., 2022).

Finally, high-impact journals such as the Journal of Cleaner Production (4 publications; 1.12%) represent a strong sustainability focus. Famous for its sustainable production systems and circular economy research, this journal broadened the scope, inquiring how blockchain and digital currencies can be used to encourage environmental accountability among stakeholders and transparency of transactions, as well as creating new opportunities for sustainable business (Shahzad et al., 2020). IN addition, Physica A: Statistical Mechanics and its Applications (5 papers; 1.40%) similarly adopts a quantitative/methodological research through complex systems modelization to refine researchers' understanding of cryptocurrency market dynamics & systemic risk (Zhang & Li, 2020).

The distribution of source titles overall has shown that there are two common focuses, i.e. in core finance and economics journals, which dominate discussions on the financial implications of digital currencies; and, in sustainability and interdisciplinary outlets, which address their broader societal, environmental, and technological dimensions. This segmented publication trend reflects the interdisciplinary intersection constituting the knowledge field of digital currencies and sustainable finance.

Table 2: Most Active Source Title

Source Title	TP	%
North American Journal of Economics and Finance	10	2.79%
Research in International Business and Finance	9	2.51%
Energy Economics	8	2.23%
International Review of Economics and Finance	8	2.23%
Finance Research Letters	7	1.96%
International Review of Financial Analysis	7	1.96%

Technological Forecasting and Social Change	6	1.68%
Heliyon	5	1.40%
Journal of Environmental Management	5	1.40%
Physica A Statistical Mechanics and Its Applications	5	1.40%
Resources Policy	5	1.40%
Sustainability Switzerland	5	1.40%
Sustainable Finance	5	1.40%
Environmental Science and Pollution Research	4	1.12%
Journal of Cleaner Production	4	1.12%

Keyword Analysis

The analysis of author keywords provides an exposure to the thematic focus and intellectual structure of the investigatory landscape between digital currencies and sustainable finance. Based on the research findings, the most used keyword is "cryptocurrency" (111 articles, 31.01%), with obvious reference to the centrality of cryptocurrencies as a technological innovation and also an object of financial/metastatutory/sustainability discussions. The prevalence of this keyword highlights cryptocurrency as a new catalyst for scholarly research, prompting scholars to explore the role of digital currency in regard to volatility, diversification and green investment strategies (Bouri et al., 2023; Tiwari et al., 2021). The usage of the relatable terms such as "cryptocurrencies" (41 publications, 11.45%) and "Bitcoin" (47 publications, 13.13%) also demonstrates the centrality of the digital assets landscape where Bitcoin happens to be the most studied considering its high standing in market cap and historical significance in the evolution of digital finance (Naeem et al., 2021).

Another research stream is captured by the search term "blockchain" (51 publications, 14.25%) and its variation "block-chain" (23 publications, 6.42%). With the advancement of blockchain technology, which essentially powers cryptocurrencies, the question of whether it can help "clean up" or "promote transparency" in financial systems is brought to light. Notably, the blockchain technology has received more and more attention in relation to sustainable finance, including applications for renewable energy markets, green bonds and supply chain management of sustainable goods (Brunnhuber 2021; Chen et al., 2020). In the same vein, "CBDC" (21 articles, 5.87%) is an emerging topic that reflects worldwide concern about the central bank's contribution to producing sovereign-backed digital money with a view to promoting financial inclusion and achieving financial stability (Ozili, 2022).

The intersection with sustainability-related themes is reflected by the keywords "sustainable development" (29 publications, 8.10%), "sustainability" (26 publications, 7.26%) and "green economy" (16 publications, 4.47%), which imply a tangible academic recognition of the role those digital currencies and blockchain technologies can and may play in support for global sustainability agendas, such as financing renewable energy projects, carbon markets, climate action initiatives. The connection between digital finance and sustainability is of high relevance in recent years due to increasing focus on policy relating to aligning financial flows with the United Nations SDGs (UNEP, 2021).

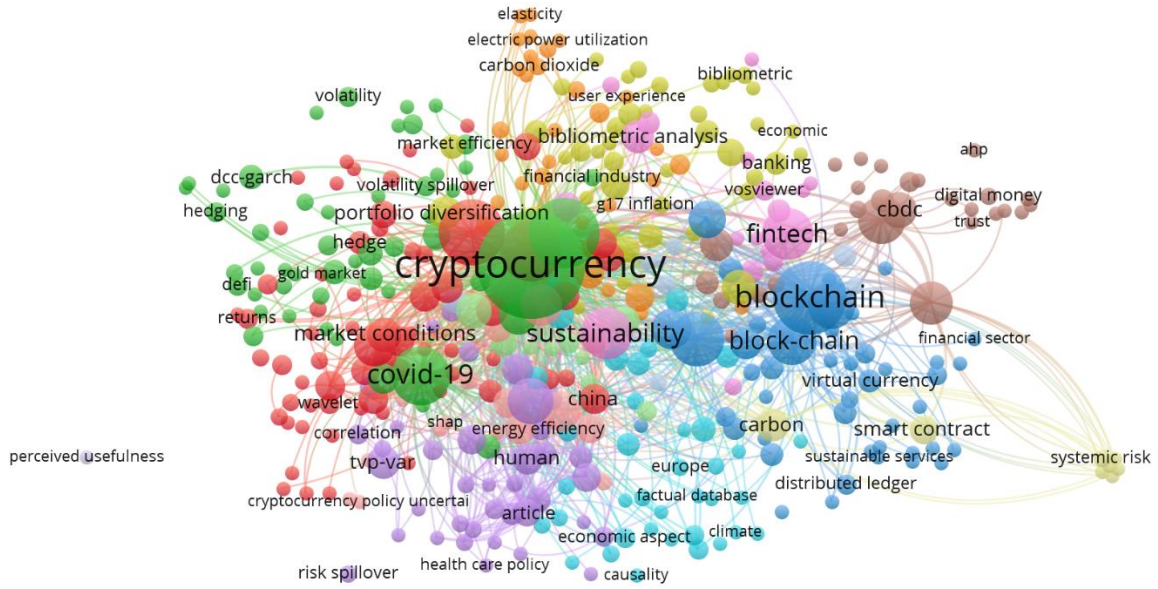
Interestingly, the term "Covid-19" (34 or 9.50%) illustrates how the global pandemic accelerated research on digital finance and cryptocurrencies. The crisis increases public exposure for digital financial services as a factor enhancing remote transactions in the time of pandemic, which helps to keep liquidity in a conducive fund environment and provides an alternative investment during economic uncertainty (Goodell & Goutte, 2021). Other financial system terms such as "financial markets" (22 publications, 6.15%), "electronic money" (21 publications, 5.87%), "investment(s)" (35 and 20 publications, 9.78% and 5.59%, respectively), and "currency" (17 publications, 4.75%) reflect traditional financial constructs being examined through the lens of disruptive digital assets. Furthermore, specific concepts like "gold" (17 articles; 4.75%) signal comparative analysis between traditional safe-haven assets and cryptocurrencies, stimulating discussions on the hedging and diversification effects of cryptocurrencies (Shahzad et al., 2019).

Overall, the top keywords identify three major thematic clusters, namely: (i) technological and financial innovation (cryptocurrency; blockchain; CBDC; fintech); (ii) sustainability and green finance integration (sustainable development; green economy; energy); and (iii) contextual drivers and comparative studies (Covid-19, gold, financial markets). This distribution highlights the interdisciplinary character of the field and at the same time reveals the change of focus in research from cryptocurrencies as speculative assets to them being a potential enabler of sustainable finance. These thematic trends are consistent with broader research focus on linking digital financial innovation with long-term sustainability globally.

.**Table 3: Top Keywords**

Author Keywords	Total Publications	Percentage (%)
Cryptocurrency	111	31.01%
Blockchain	51	14.25%
Bitcoin	47	13.13%
Cryptocurrencies	41	11.45%
Investments	35	9.78%
Covid-19	34	9.50%
Sustainable Development	29	8.10%
Sustainability	26	7.26%
Fintech	25	6.98%
Block-chain	23	6.42%
Financial Markets	22	6.15%
Central Bank Digital Currency	21	5.87%
Electronic Money	21	5.87%
Investment	20	5.59%
Central Bank	18	5.03%
Currency	17	4.75%
Gold	17	4.75%
Finance	16	4.47%
Green Economy	16	4.47%
Energy	15	4.19%
Cryptocurrency	111	31.01%
Blockchain	51	14.25%
Bitcoin	47	13.13%
Cryptocurrencies	41	11.45%
Investments	35	9.78%
Covid-19	34	9.50%
Sustainable Development	29	8.10%
Sustainability	26	7.26%
Fintech	25	6.98%
Block-chain	23	6.42%
Financial Markets	22	6.15%
Central Bank Digital Currency	21	5.87%
Electronic Money	21	5.87%

Figure 3: Network visualization map of the author's keywords



Geographical Distribution of Publications - Most Influential Countries

The geographical distribution of publications shows a highly diversified, but regionally localized research landscape at the intersection of digital currencies (DCs) and sustainable finance. China (72 publications; 20.11%) and India (71 publications; 19.83%) are the two prominent contributors accounting for a combined share of about 40% of the world publication output. The leading position of China is also due to strategic priorities in developing CBDC, including the digital yuan, and linking it with green finance policies aimed at supporting carbon neutrality objectives (Zhang & Huang, 2022). Then, the increasing productivity of research in India mirrors the rapid digitalization of financial services in the country, its focus on financial inclusion and growing scholarly involvement with sustainable development frameworks (Sharma & Tiwari, 2023).

As for Europe, the most prominent research centres are the UK (35 articles; 9.78%) and France (29 articles; 8.10%). The UK's involvement is linked to its role as a global financial centre and also a leader in fintech development, such as digital asset regulation and sustainable finance mechanisms (Arner et al., 2020). In contrast, France has produced a significant body of interdisciplinary research that integrates digital finance and green bonds with corporate sustainability in relation to European Union frameworks on sustainable finance (Caldecott, 2021).

Among the developing countries, significant engagement can be seen in Pakistan (28 publications; 7.82%), Malaysia (23 publications; 6.42%) and Saudi Arabia (22 publications; 6.15%). The increased focus on the academic side of blockchain application, financial inclusion and Islamic finance impacted Pakistan as a developing source (Rizvi et al., 2022). Malaysia has emerged as a leading actor by integrating fintech adoption and sustainable finance in cooperative and Islamic financial systems, whereas research conducted in Saudi Arabia echoes the Nation's Vision 2030, which focuses on striking a balance between economic diversification versus digital transformation and environmental sustainability (Alam et al., 2021). Contributions from Tunisia (20 documents; 5.59%), Turkey (19 documents; 5.31%) and the United Arab Emirates (18 documents; 5.03%) illustrate a growing even it to, be modest, increase of the MENA region's scholarly contribution with time. These countries are deliberately incorporating digital financial technologies to improve financial resilience as well as address sustainable development goals (Ben Arab & Jarboui, 2021). Lebanon (16 papers, 4.47%) is also overactive for its size, presumably due to the Lebanese American University's role in promoting research on sustainable digital finance.

Western economies such as the United States (24 publications, 6.70%), Spain (15 publications, 4.19%), Australia (14 publications, 3.91%), Germany (13 publications, 3.63%), and Italy (13 publications, 3.63%) remain consistent contributors, though their shares are comparatively smaller than Asia's leading nations. The

distribution indicates a geographical realignment of research leadership to Asia, with China and India being the major contributors, albeit it is noteworthy that traditional European financial centres in the West constituted an important source for regulatory, innovation and sustainability reflection (Bouri et al., 2021). Emerging economies such as Romania (12 publications, 3.35%) and South Africa (11 publications, 3.07%) also appear to reflect increasing academic demand for a broader contextualization of digital finance in terms of transitional and developing market economies, with challenges related to financial inclusion and sustainable development at stake.

Altogether, the distribution of active countries suggests that, although the global research effort is widely dispersed overall, it is heavily influenced by the policy agenda, financial ecosystem and stage of development in major contributors. The overwhelming predominance of Asian economies, supplemented by consistent contributions from Europe and the Middle East, as well as a handful of African countries, supports the notion that the scholarly engagement extends across multiple dimensions that are unlikely to shrink due to worldwide interlinkages between cryptocurrencies and sustainability goals.

Table 4: Top 20 Countries contributed to the publications

Country	Total Publications	Percentage (%)
China	72	20.11%
India	71	19.83%
United Kingdom	35	9.78%
France	29	8.10%
Pakistan	28	7.82%
United States	24	6.70%
Malaysia	23	6.42%
Saudi Arabia	22	6.15%
Tunisia	20	5.59%
Turkey	19	5.31%
United Arab Emirates	18	5.03%
Lebanon	16	4.47%
Spain	15	4.19%
Australia	14	3.91%
Russian Federation	14	3.91%
Germany	13	3.63%
Italy	13	3.63%
Portugal	13	3.63%
Romania	12	3.35%
South Africa	11	3.07%

Citation Analysis

The document profile of this bibliometric analysis reveals some important characteristics of the scope, visibility, and academic impact regarding digital currencies and sustainable finance research. The data are from 2018 to 2026, in all, there are seven citation years. Throughout this period, 358 came up with the search strings, and all of them contributed to 4,246 citations. This is consistent with the novelty and increasing importance of this research field in the face of recent global trends, including the spread of digital finance innovations and increased focus on sustainability agendas over the past decade (Bouri et al., 2023; Ozili, 2022). In citation impact terms, an average of 606.57 citations/year and 11.86 cites/paper is demonstrated by the data, which implies a healthy engagement with this literature by the research community. The high citation/paper conveys the relevance and scholarly impact of a field that is still developing. Earlier works have found that research fields at the intersection of finance and sustainability tend to have a faster rate of citation

growth on average, a reflection of their interdisciplinary nature across economics, environmental science and policy studies (Brunnhuber, 2021; Kumar et al., 2025).

Information on author-level productivity and impact is also useful. A citation count per author is 1,435.2 and a paper count is 148.45 on average. These collaboration-related measures may result from the feature of co-publishing and clustering phenomenon, or the concentration of human resources in a few scholars whose ideas shape this domain. Bibliometric analyses in similar fields of research found that closely connected research subfields will create dense co-authorship networks, which may further enhance their visibility and citation rates (Donthu et al., 2021). This shifting trend seems to be true also in digital currencies and sustainable finance for their inherently global and interdisciplinary nature. The h-index supports the statement by stating that there are at least 34 papers in the dataset which have received at least 34 citations – a relatively solid core of influential publications. Moreover, the g-index of 54 indicates that the first 54 papers were cited disproportionately higher than others, indicating a large distribution of highly cited documents, be just a small number of them. These bibliometric indicators are well-accepted criteria for assessing academic impact and research quality, especially in emerging areas where seed works rapidly become established (Hirsch, 2005; Glänzel & Moed, 2019).

Taken together, the document profiles highlight a rapidly evolving research domain characterized by steady publication growth, increasing scholarly recognition, and strong intellectual contributions. The high citation rates and robust h- and g-index scores, alongside author-level productivity, suggest that digital currencies and sustainable finance are not merely going to be accepted academically but they will warrant considerable attention as part of the financial system, more generally, and the sustainability endeavor in particular.

Table 5: Citations Metrics

Metrics	Data
Publication years	2018-2026
Citation years	7 (2018-2026)
Papers	358
Citations	4246
Citations/year	606.57
Citations/paper	11.86
Citations/author	1435.2
Papers/author	148.45
h-index	34
g-index	54

Table 6: Highly cited articles

No	Authors	Title	Year	Cites	Cites per Year
1	T.N.-L. Le, E.J.A. Abakah, A.K. Tiwari	Time and frequency domain connectedness and spill-over among fintech, green bonds and cryptocurrencies in the age of the fourth industrial revolution	2021	317	79.25
2	C. Alexander, M. Dakos	A critical investigation of cryptocurrency data and analysis	2020	138	27.6
3	S. Nosratabadi, A. Mosavi, P. Duan, P. Ghamisi, F. Filip, S.S. Band, U. Reuter, J. Gama, A.H. Gandomi	Data science in economics: Comprehensive review of advanced machine learning and deep learning methods	2020	136	27.2
4	N. Nazareth, Y.V. Ramana Reddy	Financial applications of machine learning: A literature review	2023	122	61

5	M.A. Naeem, I. Mbarki, S.J.H. Shahzad	Predictive role of online investor sentiment for cryptocurrency market: Evidence from happiness and fears	2021	115	28.75
6	E. Platanakis, A. Urquhart	Portfolio management with cryptocurrencies: The role of estimation risk	2019	100	16.67
7	Z. Li, C. Yang, Z. Huang	How does the fintech sector react to signals from central bank digital currencies?	2022	93	31
8	M. Disli, R. Nagayev, K. Salim, S.K. Rizkiah, A.F. Aysan	In search of safe haven assets during COVID-19 pandemic: An empirical analysis of different investor types	2021	91	22.75
9	Y.-S. Ren, C.-Q. Ma, X.-Q. Chen, Y.-T. Lei, Y.-R. Wang	Sustainable finance and blockchain: A systematic review and research agenda	2023	86	43
10	A. Sharif, M. Brahim, E. Dogan, P. Tzeremes	Analysis of the spillover effects between green economy, clean and dirty cryptocurrencies	2023	83	41.5
11	R. Khalfaoui, S. Mefteh-Wali, B. Dogan, S. Ghosh	Extreme spillover effect of COVID-19 pandemic-related news and cryptocurrencies on green bond markets: A quantile connectedness analysis	2023	78	39
12	Y. Yue, X. Li, D. Zhang, S. Wang	How cryptocurrency affects economy? A network analysis using bibliometric methods	2021	71	17.75
13	M.A. Siddique, H. Nobanee, S. Karim, F. Naz	Do green financial markets offset the risk of cryptocurrencies and carbon markets?	2023	67	33.5
14	M. Alqudah, L. Ferruz, E. MartÃ-n, H. Qudah, F. Hamdan	The Sustainability of Investing in Cryptocurrencies: A Bibliometric Analysis of Research Trends	2023	61	30.5
15	E. Dogan, M.T. Majeed, T. Luni	Are clean energy and carbon emission allowances caused by bitcoin? A novel time-varying method	2022	57	19
16	I.U. Haq, A. Maneengam, S. Chupradit, W. Suksatan, C. Huo	Economic policy uncertainty and cryptocurrency market as a risk management avenue: A systematic review	2021	55	13.75
17	A. Rao, M. Gupta, G.D. Sharma, M. Mahendru, A. Agrawal	Revisiting the financial market interdependence during COVID-19 times: a study of green bonds, cryptocurrency, commodities and other financial markets	2022	52	17.33
18	F. Tronnier, D. Harborth, P. Hamm	Investigating privacy concerns and trust in the digital Euro in Germany	2022	50	16.67
19	P. Jariyapan, S. Mattayaphutron, S.N. Gillani, O. Shafique	Factors Influencing the Behavioral Intention to Use Cryptocurrency in Emerging Economies During the COVID-19 Pandemic: Based on Technology Acceptance Model 3, Perceived Risk, and Financial Literacy	2022	48	16
20	P. Rani, P. Sharma, I. Gupta	Toward a greener future: A survey on sustainable blockchain applications and impact	2024	47	47

Discussion

Through bibliometric analysis, a comprehensive overview of the global research trends, thematic patterns and intellectual structures on digital currencies and sustainable finance is well-illustrated. The research findings show that exponential growth in this area of interest has experienced exponential growth over the last 10 years, in line with the increasing relevance of financial innovations like digital currencies as part of

sustainability transitions. The dominance of Economics, Econometrics and Finance, Business, Management and Accounting as core subject areas suggested that a great deal of discussion is still focused on the economic and financial drivers associated with digital currencies (specifically those relating to markets, risk management, and institutional governance). This is in line with previous literature that stresses the importance of financial research in informing sustainable finance narratives (Corbet et al., 2020; Umar et al., 2021).

The nations which are contributing most for bioremediation research globally are China (20.11 %), followed by India (19.83%) and United Kingdom (9.78%), respectively, showing a well-diversified but unequal global research profile landscape. The high proportion of participants from rising powers like China and India illustrates the increasing interest of these countries in using digital currencies to advance inclusiveness and sustainable development, which reflects findings in previous studies on finance's digital transformation (Zhang & He, 2022). At the same time, contributions from developed countries like United Kingdom, France and United States also tend to continue towards this orientation, focusing on regulatory devices, investment policies and effects of introducing sustainability in agreement with financial technologies (Bouri et al., 2023).

The analysis of source titles, in turn, shows that journals the North American Journal of Economics and Finance, Research in International Business and Finance, and Energy Economics are highly prominent. This reflects a predominant focus on finance and the energy-sustainability interface, illustrating a clear interdisciplinary nature of research in this space. Finally, journals such as Sustainability and the Journal of Cleaner Production indicate that environmental and sustainability issues are increasingly being incorporated in mainstream financial-related discussions, reflecting a trend to widen the subject matter in sustainable finance research more generally (Friede et al., 2015).

The research patterns revealed that if the integrated structures are seen as intellectual structures in field, the research can be clustered around three main thematic areas of: (1) financialization and volatility of digital currencies; (2) sustainability implications of digital currency on investment and financing; and (3) blockchain integration in green finance, leading to better transparency and governance. These themes align with the risks but also with the opportunity for digital currencies to fulfill sustainable finance goals; in particular, the adoption of blockchain within sustainable finance practices is acknowledged as a means of improving traceability and accountability in ESG investments (Tapscott & Tapscott, 2017; Umar et al.,2021).

There are a number of reasons behind these trends. In the first place, digital currencies as a disruptive technology in the financial innovation space could lead to opportunities as well as risks, which drive scholars to carry out research on their function in financial inclusion, risk mitigation, and investment diversification. And second, the importance of climate change and sustainability as a global policy priority has raised the stakes in advancing sustainable finance solutions, as in the possibility of the implementation of digital currencies leading to transparency and accountability within green financing. Third, the progress of technology (i.e., blockchain) encourages research topics to diversify, and connecting the concerns about environmental and corporate sustainability to digital currency studies (Bouri et al., 2023).

Summarily, the bibliometric coverage indicates that the nexus between digital currencies and sustainable finance is an emerging area of study, but it has already become an academic trend, where the level of interdisciplinarity is rising, with high contributions from economics, business studies, computer science and environmental sciences. Conceptually, the field is shifting from a focus on financial risk and market behavior to more sophisticated discussions about sustainability integration, green investments, and digital governance. This trend implies that future research will tend to focus on cross-disciplinary cooperation, building sustainable digital financial ecosystems, and aligning digital finance innovations with global sustainability agendas such as the United Nations SDGs.

5. Conclusion and Recommendations

This bibliometric analysis of digital currencies and sustainable finance in this study provides a thorough and comprehensive view of the intellectual structure, global research hotspots, as well as cooperation patterns. The study discovers a remarkable growth in scholarly focus over the last 5 years, and an impressive rise in publications, not only from emerging countries such as China or India, but also with strong contributions by

established research hotspots in Europe and the US. The thematic analysis reveals that the field is centred around a number of recurrent domains, including digital finance for financial inclusion; blockchain for greater transparency in the use of funds; green investment strategies through digital financial innovation and fitting new technologies into sustainability goals. Both influential authors, institutions and journals have had a significant impact on how the discourse has been shaped through citation analysis, which also shows an increasing internationalization of research activities. Taken together, these results highlight the dynamism of the field and its capacity to shape both scholarly study and real-world implications in financial markets and policy regimes.

Notwithstanding the eye-opening exposure from these research findings, this study is still subject to some limitations. First, the sole usage of the Scopus database could have resulted in missing relevant articles indexed within other databases, such as Web of Science or Google Scholar, which might limit this dataset. Second, although bibliometric analysis is widely used in mapping the trends and architecture of research work, it has issues with apprehension of theoretical and methodological variety as well as reconceptualization in concrete practice. Another limitation derives from the dynamism of digital currencies and sustainable finance, where technology advances often outpace changes in policy making; hence, bibliometric findings are a snapshot, not a full account of where the field may be heading. There is a need to address these limitations in future research through innovative strategies, including analyses of multiple databases, and the application of sophisticated scientometric techniques (e.g., machine learning–based topic modeling or text mining) that can be integrated with more traditional bibliometric analysis as part of qualitative review to provide a comprehensive perspective on the field. Moreover, potential research could also evaluate the socio-economic implications of digital currencies to drive sustainable goals, investigate their regulatory and ethical issues, and consider the effects of global collaboration on enhanced innovation.

In conclusion, this paper has implications for both the development of theory and practice by shedding more light on a nascent area of research where digital currencies meets sustainable finance. The lasting legacy of these findings, therefore, is that they enable us to better learn and communicate amongst academics, practitioners, and policymakers on the trajectories, opportunities and challenges of this fast-maturing field. Mapping its intellectual organisation and capturing proliferation of DI during the past 15 years, this study provides a base for future research and practical recommendations to support the implementation of digital innovation in relation to sustainable financial services.

The findings of this bibliometric study hold significant implications for industry practices, policymaking, and real-world implementation in the domains of digital currencies and sustainable finance. For industry professionals, the international research trends and thematic clusters found can give direction to new prospects, such as the future exploitation of blockchain-based digital currencies aimed at increasing transparency, traceability, and responsibility on sustainable investments. This insight can enable financial institutions, fintech firms and asset managers to shape new products that adhere to the ESG principles while meeting ongoing investor interest. Policy-wise, the findings underscore the importance of a regulatory environment that strikes a balance between financial innovation and sustainable imperatives, such that DC might lead to containment rather than the emergence of systemic risks while also leading to more inclusive and green development goals. Policy makers can use these reflections as an input for coherent strategies to incorporate digital currencies in national financial systems and forward sustainability agendas. These real-life applications also include improving financial inclusion in underbanked areas, fostering funding of renewable energy projects and promoting sustainable investment with digital finance ecosystems. Together, these contributions demonstrate how scholarly research can inform practical initiatives for industry and government to leverage digital currencies as a driver of sustainable economic change.

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