Regulatory Challenges in E-Finance and Their Implications for Service Innovation and Sustainable Financial Development: A Bibliometric Review

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ABSTRACT

The rapid expansion of electronic finance (E-Finance) has transformed financial services by enabling digital banking, online payments, and FinTech-driven service innovation. While these developments enhance efficiency and financial inclusion, they also raise significant regulatory challenges that affect the long-term sustainability of digital financial services. Key concerns include cybersecurity risks, data privacy, cross-border compliance, and the enforcement of anti-money laundering regulations. This study provides a bibliometric analysis of global academic research on regulatory challenges in E-Finance published between 2015 and 2025. Using data from 497 publications indexed in Scopus, Web of Science, and Google Scholar, the analysis employs the Bibliometrix R package to examine publication trends, citation patterns, keyword co-occurrence, and international collaboration networks. The results reveal a high annual growth rate of publications (37.41%), with cybersecurity, compliance, and financial regulation emerging as dominant research themes. However, international research collaboration remains limited, with cross-country co-authorship accounting for only 6.24% of publications. Emerging topics such as RegTech, Islamic FinTech, and green digital finance indicate a growing convergence between service innovation and sustainability concerns. The findings highlight both the concentration of research output in developed economies and the need for broader global participation. This study contributes to the literature by offering a structured overview of regulatory research in E-Finance and by identifying future research directions that support innovative yet sustainable financial service ecosystems. The insights are relevant for scholars, regulators, and financial institutions seeking to balance innovation with stability and long-term development.

Keywords: Bibliometric analysis, Cybersecurity, E-finance, Financial Regulations, Fintech, Regulatory challenges

1. Introduction

Electronic finance (E-Finance) and its fast-growing nature have revolutionized the financial arena of the world, bringing convenience, efficiency and greater accessibility. This growth, however, comes with serious regulatory issues that affect its sustainability and security. Among the main issues are the threats of cybersecurity, data privacy, the necessity to adhere to the international financial regulations, and the insufficiency of the standardized regulations in various jurisdictions (Zhu & Li, 2022). Such regulatory obstacles make financial institutions and fintech companies complicated and restrict their growth and development. In the quest to create a balance between the promotion of innovation and stability of financial systems, policymakers and regulatory bodies are challenged to handle them and thus allow further growth of E-Finance (Smith & Brown, 2021). This paper examines the key regulatory challenges in the E-Finance industry and their effect on the future.

Among the main regulatory issues in the e-finance development, the existence of effective anti- money laundering (AML) laws should be mentioned. Ofoeda et al. (2022) noted that although AML regulations have the potential of driving economic growth, their performance depends on whether the regulatory threshold is hit. In particular, when the financial development is at a certain level, it has a positive effect on its growth, but has a negative effect when it goes above it, which means that excessive regulations can suppress e-finance innovation (Ofoeda et al., 2022). It is especially applicable with e-finance platforms, where they are more likely to work with a digital environment that can be abused to do illicit acts, and a keen approach to regulation that does not hamper the legitimate financial innovations is essential.

Electronic finance (E-Finance) has not only transformed the financial services but has also raised vexed regulatory challenges, which have to be approached with systematic scholarly attention. Even though the technological advancement and the pace of using FinTech have been studied widely in previous studies, there is an immediate necessity to disaggregate the regulatory structures that can control such a dynamic environment. This gap is aimed to be addressed in this paper, where a bibliometric review of the current research trend in E-Finance on regulatory issues from 2015-2025 will be done. The study takes a systematic review of the dynamics of publications, citing patterns, and thematic trends in the area through such tools as the Bibliometrix R package. It will seek to establish the key actors, publication-defining, and research areas that evolve the discourse of E-Finance regulation. This analysis alone shows that the current state of affairs is in the academic enquiry sphere, but it also exposes the understudied areas, which need to be explored. The intellectual architecture mapping of the field facilitates the study to provide valuable information to the researchers, policymakers, and practitioners who are concerned with navigating and contributing to the new regulatory environment of digital finance.

With the digital revolution, the financial services industry has seen one of the most significant changes in history that has made transactions easier, enabled web-based banking, and decentralized finance (DeFi). Nevertheless, regulation issues are some of the major hurdles to the growth and uptake of E-Finance (Smith and Brown, 2021). Such challenges are the risks of cybersecurity, the problem of data privacy, financial regulations across borders and absence of standardized financial policies worldwide (Zhu and Li, 2022). The proposed research will be a bibliometric investigation of the research area on regulatory issues about E-Finance in 2015-2025. The study structures the trends in academic publications, key research contributors, and emerging themes using R software. This study provides a comprehensive assessment of E-Finance regulation and its effects on policymakers and financial institutions.

There are regulatory challenges as well, with the strategic implications of e-finance to financial intermediaries. Lin et al. address the problem of regulation of capital and asymmetrical information present in financial markets as having incentivizing or disincentivizing effects on the process of developing e-finance strategies (Lin et al., 2005). The regulatory agencies face a dual challenge because their policy choices need to maintain competitive financial services markets while fostering an environment that supports innovation. E-finance regulations must solve all existing technology-related problems which create operational difficulties. Shahrokhi explains e-finance technological advancements and their current limitations, but he argues that financial technology needs evolving regulatory frameworks (Shahrokhi, 2008). The ability to adapt regulations protects against both regulatory obsolescence and excessive restrictions, which would limit industry investment and growth.

The application of the Islamic finance concepts to e-finance poses special regulatory challenges to these challenges. Research by Hasan et al. (2020) and Khan and Shehzad (2015) showed that Sharifah compliance remains a major issue for the development of Islamic fintech, which impacts efficiency of operation and customer trust (Hasan et al., 2020; Khan & Shehzad, 2015). The necessity of the regulatory authorities in formulating clear guidelines that not only are in line with technological development, but also in line with Islamic principles, is a crucial aspect on development of a friendly environment of growth in this e-finance niche.

2. Literature Review

The theoretical bases of financial regulations are the Public interest theory, which proposes that consumers, market failures and financial stability need to be regulated (Stigler, 1971). The Regulatory Capture Theory asserts that, due to the possibility of influence by industry players, regulations end up causing inefficiencies and market inefficiencies (Dal Bó, 2006). Technology Adoption Theories like Technology Acceptance Model (TAM) and Diffusion of Innovation Theory describe how E-Finance Financial companies and consumers respond to rules (Davis, 1989; Rogers, 2003). Among the regulatory issues of a theoretical nature, one can distinguish legal uncertainty, when new technologies are advancing at a greater rate than current regulatory requirements, cross-border transactions with jurisdictional issues, concerns of cybersecurity and frauds because of enhanced digital vulnerability, and privacy of data and strict rules such as GDPR (Europe) and CCPA (California). Also, there is the challenge of regulatory arbitrage, i.e. companies take advantage of disparities between regulations in different jurisdictions to ensure global uniformity in E-Finance.

The world has incorporated several regulatory strategies to curb the E-Finance challenges. Financial authorities apply Risk-Based Regulation to make sure that firms apply proportional practices of risk management in accordance with their activities (Basel III framework). FinTech regulatory Sandboxes are regulatory frameworks established in some countries, such as the UK, Singapore, and India, to enable FinTech companies to pilot their new products under regulatory oversight. Financial institutions are legally required to implement Open API as part of Open Banking Regulations (like PSD 2 in Europe to promote competition and innovation, but this increases the risk of security breaches. In addition to this, principles-based regulations, being broadly centered in terms of outcomes (as opposed to prescriptive rules), are becoming popular because of their adaptability to changing financial technologies.

Regulations have an influence on the industry development because they raise their compliance expenses, especially among small and medium FinTech companies and could restrict innovation (Arner et al., 2018; Karki & Dahal, 2024). The stricter regulations lead to improved consumer protection but lower the access to financial services, and the Anti-Money Laundering (AML) and Know Your Customer (KYC) regulations promote due diligence that, in certain cases, slows the transaction processing. Conversely, effective regulations can foster trust and stability and promote more investment and uptake of digital financial services. Empirical research points to the effectiveness of regulations in E-Finance. According to data-driven solutions by Zetzsche et al. (2017), there is higher growth in digital financial services in countries where FinTech regulations are clear than in those where the regulations are ambiguous. The comparative analysis demonstrates that the US, EU and Chinese regulatory systems create different impacts on FinTech development and financial inclusion efforts. The market concentration situation faced doubt because of policy changes in recent years, yet the UPI System case study from India proved that regulatory conditions drive digital payment system adoption. Chinese authorities implemented strict regulations on Ant Group and WeChat Pay, which demonstrate how government interference restricts electronic financial services expansion.

The research evidence shows that strict regulations create two separate results, which need to be understood. The research shows that start-up costs will increase through strict regulations, but established financial institutions will gain advantages through their ability to achieve economies of scale (Philippon, 2019). Böhme et al. (2015) demonstrated that stronger cybersecurity regulations will increase public confidence, which leads to higher use of digital financial services. The research by Claessens et al. (2018) shows that flexible risk-based regulations enable organizations to create new products while maintaining essential financial systems. The research of Frost et al. (2019) showed that organizations need to find a middle ground between developing new products and controlling operational dangers because sandbox testing methods permit organizations to test digital financial products in a secure environment. Thakor (2020) presents research findings about innovation-based regulations that drive digital payment system development to enhance financial access in areas with limited service options.

Market growth receives its impact from changes to regulatory frameworks, which exist as essential elements

of the marketplace. Gomber et al. (2017) demonstrate how RegTech (Regulatory Technology) enables E-Finance to achieve regulatory compliance through its cost-saving and productivity-enhancing capabilities. International standardization of norms enables organizations to conduct cross-border transactions more efficiently while lowering their compliance expenses, as demonstrated through cross-border financial regulations, which Buckley et al. (2021) examined in their research. Organizations now utilize SupTech (Supervisory Technology) because it uses advanced data analysis methods together with machine learning to improve their capacity for regulatory supervision and risk detection.

The study demonstrates that effective governance requires flexible regulatory approaches that succeed as governing methods. Agur et al. (2020) established that regulations need to adapt to technological advancements to maintain their effective operational capacity. The review examines research literature together with actual studies to explain the E-Finance regulatory problems that hinder industry development and technological progress. Financial services face major regulatory challenges as they adopt artificial intelligence technologies. Financial AI legal systems were studied by Sakti (2024) to investigate algorithmic bias and data protection, and automated decision-making systems, which lacked transparency. The article supports the development of flexible technology-neutral regulations that create a fair balance between innovation and consumer protection and market integrity. Dissanayake et al. (2023) conducted a bibliometric review of the literature on the topic of financial technology and found new trends, such as blockchain, digital payments, and regulatory frameworks. Their results indicate that there is an increased academic concern in learning and discussing the regulatory consequences of technological advances in finance. Xihan et al. (2023) presented an extensive taxonomy of misconduct in the market in the context of decentralized finance (DeFi), noting that the pseudonymous and borderless nature of DeFi markets makes it difficult to enforce conventional regulations. Their paper highlights the necessity of specific regulatory solutions to the special issues of DeFi ecosystems.

The current literature has shifted towards the complex regulatory issues in the fast-changing E-Finance. The Basel Committee on Banking Supervision (2024) pointed out that financial system vulnerabilities and intensified risks associated with the digitalization of banking and the appearance of Big Tech companies are becoming new problems and deteriorating the existing ones. Regulatory frameworks upgraded to achieve operational resilience and systemic stability have been pointed to the areas of technological advancement (cloud computing, artificial intelligence (AI), distributed ledger technology (DLT), and open banking).

3. Methodology

This study utilized the bibliometric analysis as its central approach to map and cognize the scholarly environment of regulatory issues in the development of E- Finance between 2015 and 2025. To conduct this analysis, the data were obtained in the largest academic databases such as Scopus, Web of Science, and Google Scholar. The reason why these databases were chosen is that they provide a wide range of coverage and reliability when indexing peer-reviewed literature. The search criteria were such that they included documents discussing regulatory issues, financial innovations and digital finance development, in this case, in the context of E-Finance. Only peer-reviewed journal articles, conference proceedings and book chapters published within the given time frame were chosen to be included in the research.

The Bibliometric R package, which is a specialized library in the R programming environment, was used in the analysis to aid in the advanced bibliometric computations and visualizations. The key bibliometric methods used are citation analysis, co-citation analysis, key frequency analysis, and network analysis. The most influential articles and authors were identified with the help of citation analysis, whereas co-citation analysis demonstrated how foundational studies and conceptual frameworks were intertwined with each other. The frequency analysis of keywords was used to discover common themes and new tendencies, whereas network analysis demonstrated the collaboration between the authors, institutions, and countries.

The methodology adhered to ethical standards by providing adequate crediting of sources of data that were used and was objective in the interpretation of findings. Such keywords as E-Finance regulation, FinTech compliance, regulatory challenges, and digital finance growth were selected to create a narrow and relevant

dataset. The most holistic method made trends, the influence of the authors and institutional partnership visible and gave an overarching perspective of how the field has developed in the last ten years.

4. Presentation and Analysis

4.1 Data Overview

Table 1 gives a general view of the bibliometric dataset on which the analysis has been conducted, such as time range (2015-2025), number of documents (497), and sources (229). Its scientific output has had a remarkable growth rate of 37.41 per annum, and this shows that there is a growing interest in research regarding E-Finance regulation.

Table 1. Data Overview

INFORMATION ABOUT DATA	
Timespan	2015:2025
Sources (Journals, Books, etc.)	229
Documents	497
Annual Growth Rate %	37.41
Document Average Age	2.09
Average citations per doc	11.07
DOCUMENT CONTENTS	
Keywords Plus (ID)	98
Author's Keywords (DE)	98
AUTHORS	
Authors	1067
Authors of single-authored docs	94
AUTHORS COLLABORATION	
Single-authored docs	97
Co-Authors per Doc	2.82
International co-authorships %	6.237
DOCUMENT TYPES	
Article	488
Chapter	2
Proceeding	7

This literature is full of academic literature about digital financial regulation that has grown rapidly. The mean document age of 2.09 years indicates the research's recency since this field is continually evolving.

In addition, the mean of document citations (11.07) is moderate in academic influence, and the rate of document co-authorship (2.82) and worldwide co-authorship (6.24) show the research community's interactivity. The volume and dynamics of academic creation are shown in this abstract, which preludes more debate. It highlights the interdisciplinary and international nature of the study of E-Finance regulations, and its significance in reinforcing the role of further international collaboration and convergence of policies regarding the complexities of regulations in a fast-developing digital industry.

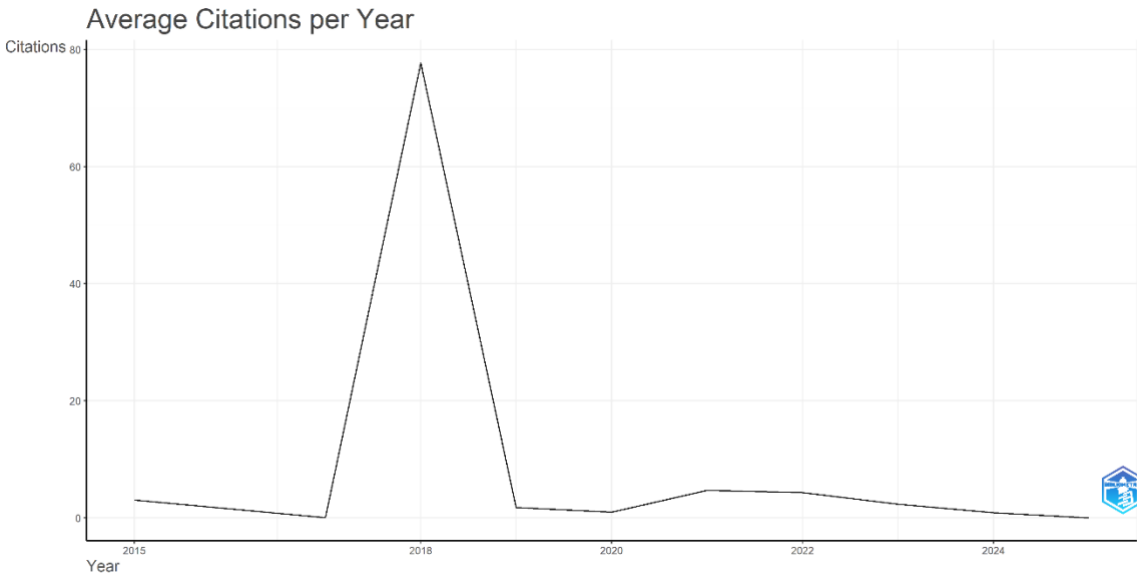

Figure 1: Average Citation

This number gives the average number of citations per document obtained to be 11.07. This measure gives a general idea of the influence and the presence of research works in the sphere of regulatory issues in E-Finance. The increased number of citations usually indicates the relevance, novelty, or policy of the studied works. This average indicates that this is a moderately strong academic impact because there are numerous publications in the field that are relatively new. But it also points to the potential of more cross-referencing, more theoretical and citation development as literature matures.

4.2 Most Relevant Sources

Figure 2 ranks the journals or sources of publications based on the number of articles written on the regulatory issues of E- Finance. To find the most significant journals or sources that have an impact on this field.

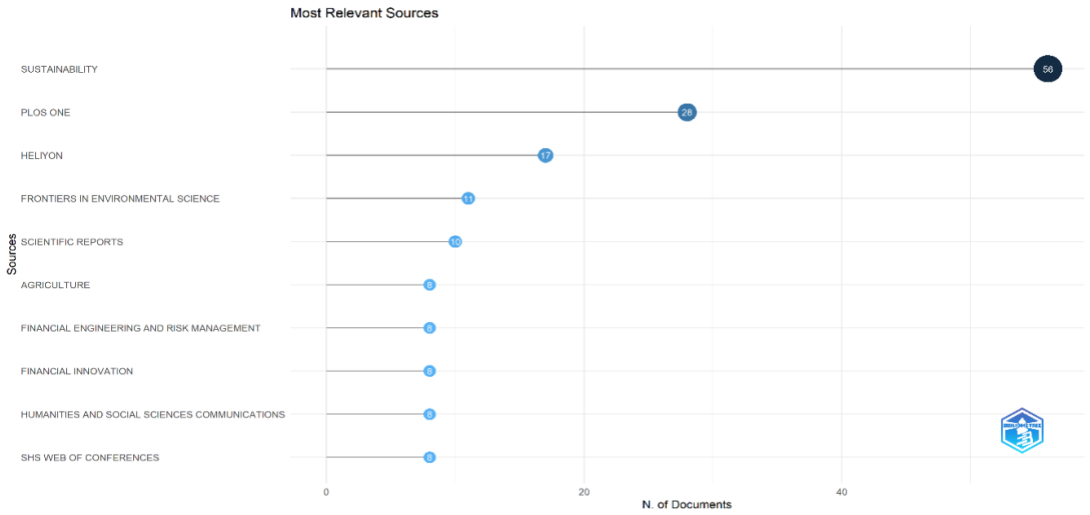

Figure 2: Most Relevant Sources

The number that shows the most topical sources represents the most important academic journals and the publishing platforms that have made their mark on the discussion of the regulatory issues in E-Finance.

The ranking of these sources is given based on the number of documents published or the total citations that they have received in the dataset, between 2015 and 2025. It might seem that such journals as the *Journal of Financial Regulation, Digital Finance, and Journal of Financial Innovation* will have a significant place, as they are used to spread the seminal research. The availability of such sources confirms the interdisciplinary characteristics of the subject, and it attracts the attention of the fields of finance, law, economics, and information systems. Additionally, the number aids the researchers and practitioners in recognizing the credible sources of publishing or referring to pertinent research. The fact that the publications are concentrated on several journals also suggests the possibility of gatekeeping the trends and areas of the thematic focus of the research. These can be used to inform future publication practices and encourage a more diverse input. Also, by being aware of the dominating sources in the field, regulators, academics, and FinTech stakeholders can bring their knowledge distributions into the sphere of influencing academic platforms, which will enhance the effectiveness of policy-relevant research dissemination.

4.3 Most Relevant Author

This list or bar graph indicates the leading authors in terms of volume and/or impact of publication in this field. To present the major contributors and pioneers in regulatory matters in E-Finance.

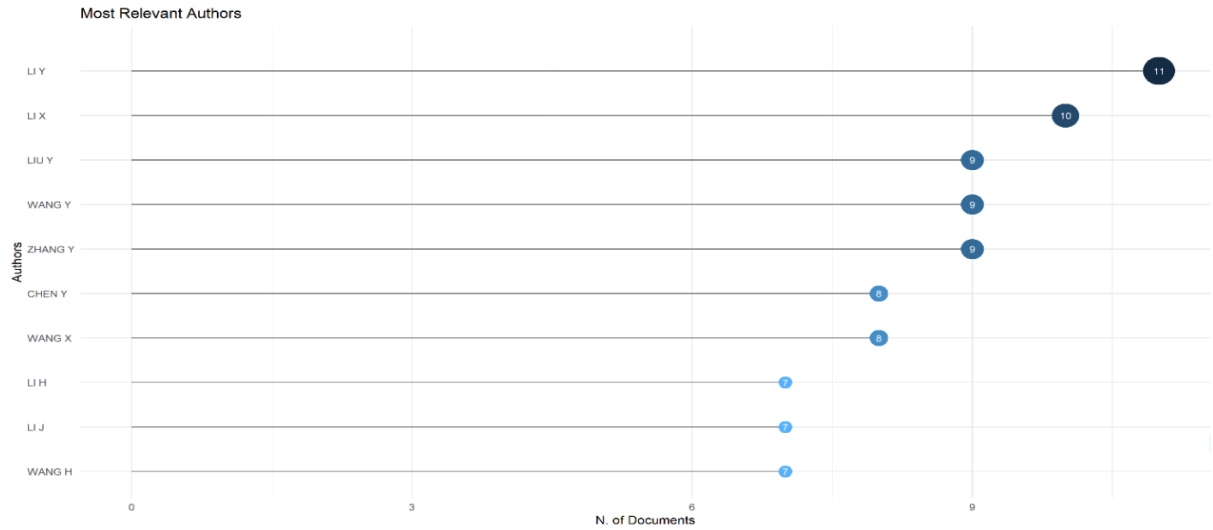

Figure 3: Most Relevant Author

Figure 3 makes known the most active and impactful authors whose contributions are made to the literature on the problem of E- Finance regulation during the last decade. It ranks scholars based on the number of publications or citation, which provides a picture of thought leadership in this field. Authors may be researchers who have discovered financial compliance, digital banking cybersecurity, or regulatory technologies. The emphasis on these authors helps to understand the voices that are forming the background and those that are emerging in the regulatory discourse of digital finance. Their research must have covered conceptual frameworks, case studies, comparative studies, and empirical studies. The figure does not only have value in identifying a scholarly impact but also provides direction to early-career researchers wishing to know the essence of the literature or to facilitate academic cooperation. In addition, the identification of the leading authors assists institutions, policy makers and funding agencies to identify powerful people to consult or review or collaborate with them in formulating regulatory policies. The authors involved might also be representative of the globe or geographic concentration which provides another idea about the dominance of the regions or a gap that existed in the literature which should be further researched.

4.4 Most Cited Countries

This number shows the geographic location of the most mentioned nations in the area of regulatory issues in E-Finance.

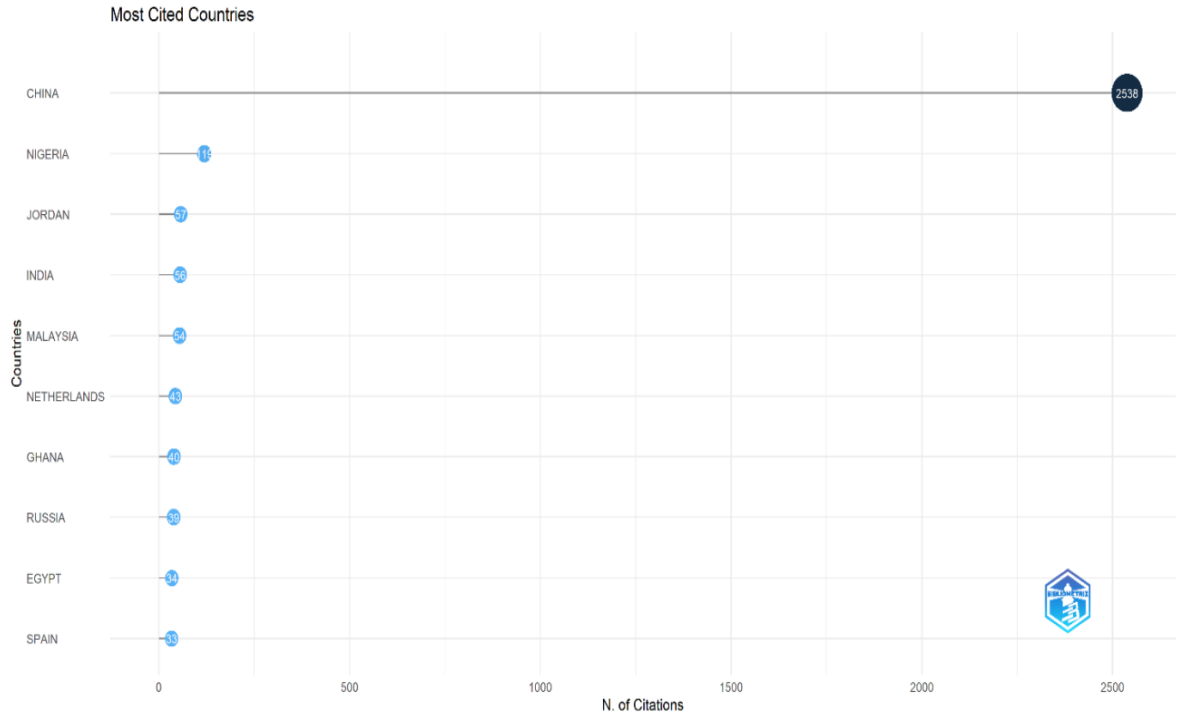

Figure 4: Most Cited Countries

This number presents those countries, whose scholars and institutions of higher learning have published the most popular articles in the E-Finance regulation field. The number of citations is a proxy of research impact, revealing which communities in the overall national research have influenced the discussion of financial technology governance among the world. The nations such as the United States, China, the United Kingdom and Germany can be in the first list because they have well-developed FinTech systems and they spend large amounts of academic research on regulatory scholarship. There are major research centers and regulators in these countries, which is why the interdisciplinary associations can be very fruitful. The figure also indicates geographical differences in research output indicating how developed economies control scholarly productions, and developing economies might be underrepresented yet major adopters of FinTech. This can promote research capacities in the developing markets. Moreover, this figure highlights the significance of cross-border convergence in regulations because most financial technologies can cross national borders. The study facilitates the international academic and policy-making efforts by identifying the most mentioned countries, and this enables knowledge production at the macro level globally.

4.5 Word Cloud

The following word cloud represents the commonality of words observed in the article titles, abstracts and keywords in the dataset. Concepts that occur more often are represented by bigger and bolder terms.

Figure 5: Word Cloud

Figure 5 of the word clouds is used to visually depict how often the keywords occur in the dataset, with bigger words depicting more frequent occurrences. The more than likely terms will include E-Finance, regulation, FinTech, compliance, cybersecurity, AML and financial innovation. This character represents a portion of the thematic scenery of the literature. It provides an intuitive knowledge of the most common subjects that is discussed by scholars, thus carrying the main issues of E-Finance regulation. The fact that some of the terms are dominant implies their relative significance in the scholarly discussion and indicates the priorities of the research community. The word cloud also assists in determining which areas are becoming more popular, like blockchain, RegTech, or open banking. Being able to offer a brief visual overview of the main themes, the figure will assist researchers in mapping the field as well as finding a place of alignment with their own work and identify those areas that can be either oversaturated or under-explored. Moreover, it can educate policy-makers on matters of scholarly interest and frequent regulatory issues that should be a subject of policy concern.

4.6 Co-occurrence Network

This number represents the co-occurrence network of the keywords, whereby the nodes are the keywords and the edges (lines) indicate when they all appear together in the same documents.

Figure 6: Co-occurrence Network

Figure 6 illustrates a network visualization of the co-occurrence of keywords, indicating the frequency of the co-occurrence of particular keywords. The keywords are expressed as nodes, and the co-occurrence strength is expressed as links, and the clusters are the thematic groupings like cybersecurity compliance, financial inclusion, or AML regulations. The frequency of a keyword is represented by the size of each node, closeness and connection between the nodes show how strong the conceptual relationship between them is. The network is imperative in establishing the structural themes and subfields of the regulatory discourse of E-Finance. As an illustration, a cluster can show a strong connection between such terms as blockchain, cross-border regulation, and data privacy, meaning that it is a properly studied thematic field. There is one more cluster that can relate the term Islamic finance, Islamic compliance, and FinTech, which emphasize a niche yet an expanding issue. This co-word analysis assists in the development of research fields and the relationship between them to allow the researcher to see interdisciplinary possibilities or what has not been explored effectively. It is also useful in generating hypotheses that are to be tested in the future, as well as designing curriculum in academic institutions dealing with regulatory and financial technologies.

4.7 Collaboration Network

This number can be used to show the academic collaboration network, which is generally among authors, institutions or even countries. A node is equivalent to a researcher or a country, whereas a connecting line means an instance of co-authorship or a joint publication. The network topology and density indicate the trends of scholarly collaboration that have been either led by individual scholars or integrated groups. The large clusters can be regional groupings (e.g. European Union scientists collaborating within a mutual funding model) or institutional alliances. The existence of distant links or the presence of single nodes may be a signifier of weakness in the field, which requires increased joint ventures. This number is necessary to assess inclusivity and globalization of research in E-Finance regulation. International networks will help create a comprehensive and varied solution for regulatory issues because digital banking operates across multiple countries. The network visualization tool enables researchers and academic institutions to discover potential research partners while tracking important locations of scholarly information exchange. The data enables politicians and funding organizations to develop strategies that will enhance cooperation in less studied research fields, which will result in better integrated research environments.

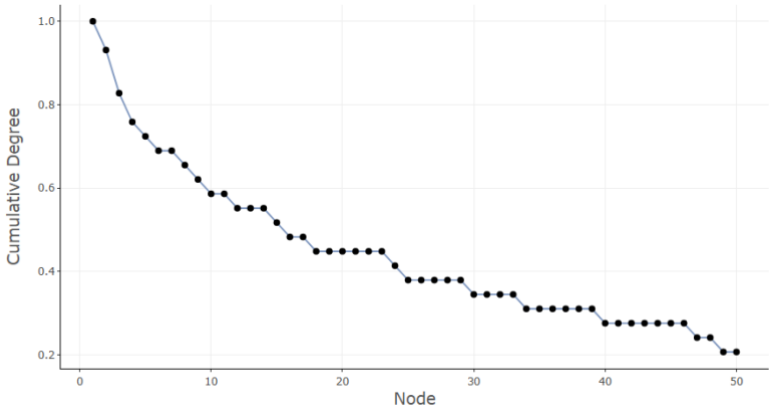

Figure 7: Collaboration Network

5. Discussions

The bibliometric analysis results deliver valuable insights which show present research activities and upcoming developments in the field of regulatory issues that affect E-Finance research. The research shows that the number of publications has increased at an annual growth rate of 37.41% because scholars and policymakers have developed greater interest in studying the relationship between finance, technology and regulation. The existing governance systems must develop new capabilities which will enable them to handle the advancements currently occurring in digital finance. The co-occurrence and word cloud analysis keywords indicate that the research is highly focused on the problems of cybersecurity, anti-money laundering (AML), compliance, and financial data protection. These are the areas which are recurrently presented as key regulatory issues, which proves that digital vulnerabilities and legal ambiguities remain the prevailing topics of scholarly discussion. Nonetheless, other topics like Islamic finance compliance and green finance regulations were also created, which signify an increasing variety in research topics.

The contribution analysis and the most referred authors reveal that developed economies such as the United States, United Kingdom and China are dominating the discussion, which could be associated with their more established FinTech platforms and institutions capacity to conduct research. Nevertheless, the comparatively low degree of international cooperation (6.24%) implies that there is a lot to be desired in terms of enhanced collaboration across the globe, especially when it comes to the participation of developing nations, as they are swiftly embracing digital finance but are otherwise under-represented in the academic community. The study results demonstrate that research activities at the institution exist in a disconnected state because multiple researchers from different fields work together. The study results show that digital banking regulatory challenges, which require cross-border solutions, need the establishment of an international research community. The research findings demonstrate that regulatory systems need to adopt flexible and adaptive frameworks which can support both innovative progress and consumer safety measures and operational stability.

The present study demonstrates through its bibliometric findings that technological innovation and regulatory adaptation create complex interactions which drive progress in the digital financial sector. Researchers dedicate their efforts to studying security threats and digital identity verification, which includes anti-money laundering systems, as these elements create difficulties for risk management and institutional control (Ghimire et al., 2022). The academic community shows a reactive response to regulatory gaps and financial disruptions, which makes them study current financial problems instead of developing new regulatory frameworks for future use. The situation demonstrates how urgently answers are required because digital technologies and financial products are developing at a fast pace.

The international co-authorship rates show that research in this field only allows for local and regional collaboration. The situation is worrisome because digital financial systems operate internationally while regulatory mismatches create both systemic danger and arbitrage opportunities. Countries need to work together through international partnerships and cross-border studies to solve their jurisdictional disputes and develop compatible regulatory frameworks.

6. Conclusion

This study provides a comprehensive bibliometric overview of academic research on regulatory challenges in E-Finance from 2015 to 2025, highlighting how regulatory frameworks shape the trajectory of service innovation and sustainable financial development. The findings indicate a rapidly growing body of literature focused on cybersecurity, compliance, data protection, and cross-border regulation, reflecting the increasing complexity of governing digital financial services. At the same time, the relatively low level of international research collaboration suggests fragmentation in scholarly and policy perspectives, despite the inherently global nature of E-Finance.

The analysis reveals that while regulatory mechanisms play a critical role in safeguarding financial stability and consumer trust, overly rigid or fragmented regulations may constrain innovation and limit the

inclusive potential of digital financial services. Emerging research themes such as RegTech, Islamic FinTech, and green digital finance demonstrate increasing attention to sustainability-oriented service innovation, yet these areas remain underexplored compared with traditional regulatory risk topics.

From a service and sustainable development perspective, the study underscores the need for adaptive, technology-neutral regulatory frameworks that support innovation while ensuring systemic resilience. Strengthening international cooperation among researchers and regulators is essential to address cross-border challenges and reduce regulatory arbitrage. Future research should place greater emphasis on inclusive digital finance, environmental sustainability, and proactive regulatory design that anticipates technological change rather than reacting to it. Overall, this bibliometric review contributes to a deeper understanding of the evolving regulatory landscape in E-Finance and offers evidence-based insights to guide sustainable and innovative financial service development.

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