



# Research Cluster on Fintech Development in Türkiye

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This study aims to analyze the development and research trends of Financial Technology (FinTech) in Türkiye through a bibliometric approach. The data used in this study were obtained from 52 scientific publications indexed in the Scopus database using the keyword “FinTech in Türkiye.” The analysis was conducted using VOSviewer to visualize bibliometric networks, including keyword co-occurrence, author mapping, and thematic clustering. The findings reveal that research on FinTech in Türkiye has grown significantly and can be categorized into four main clusters: (1) FinTech, financial systems, and sustainable economic development; (2) green finance and FinTech; (3) digital transformation and FinTech innovation; and (4) social and economic impacts of FinTech. The results indicate that FinTech plays a crucial role in enhancing financial inclusion, improving the efficiency of financial systems, and supporting sustainable development goals (SDGs). Furthermore, the integration of FinTech with green finance highlights its potential in promoting environmentally sustainable investments, while digital transformation—particularly through artificial intelligence and emerging technologies—acts as a key driver of innovation in the financial sector. Despite its significant contributions, the study also identifies several challenges, including regulatory issues, digital inequality, data security concerns, and institutional readiness. Therefore, a comprehensive and well-regulated approach is necessary to ensure the sustainable growth of the FinTech ecosystem in Türkiye. This study contributes to the existing literature by providing a systematic mapping of FinTech research and offers insights for future research directions, policymakers, and industry practitioners.

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## INTRODUCTION

The development of digital technology in recent decades has driven significant transformations in various sectors, including the financial sector. Financial Technology (FinTech) is emerging as an innovation that integrates technology with financial services to improve financial efficiency, accessibility, and inclusion. The development of technology, which has become increasingly rapid lately, is certainly an opportunity to be applied in various fields, one of which is the economy and finance. The existence of financial technology is projected to become an attractive technology and enable various companies to compete effectively in the future. In Türkiye, the development of FinTech shows an increasingly rapid trend as digital technology penetration increases, regulatory support, and people's need for faster and more flexible financial services (As-Salafiyah et al., 2022).

This phenomenon not only has an impact on changing the business model of financial institutions, but also contributes to economic development, financial inclusion, and the achievement of Sustainable Development Goals (SDGs). In addition, the integration of FinTech with strategic issues such as green finance and digital transformation makes this topic even more relevant to be studied comprehensively.

As the number of scientific publications related to "FinTech in Turkiye" increases, an approach is needed that is able to systematically map research developments. Bibliometric analysis is one of the effective methods to identify research trends, topic clusters, and future research development directions. By utilizing Scopus indexed publication data and analysis using VOSviewer, this study aims to provide a comprehensive overview of the FinTech research landscape in Türkiye.

In particular, this study aims to: (1) identify the trend of FinTech-related publications in Türkiye, (2)

map the main clusters in FinTech research, and (3) analyze the future direction of research development. The results of this study are expected to make an academic contribution as well as a reference for researchers, practitioners, and policymakers in developing a sustainable FinTech ecosystem.

## METHOD

In this study, various scientific journal publications related to the theme "*Fintech in Turkiye*" around the world were used as data sources. Data was collected by searching for journal publications indexed by the Scopus database using the keyword "*Fintech in Turkiye*". After that, scientific articles or journals relevant to the research theme will be selected based on the publication data that has been collected. There are 52 journal articles published from the research theme "*Fintech in Turkiye*". The development of publication trends related to the research topic is analyzed using the VOSviewer software, which can generate bibliometric maps and allow for more detailed analysis (Antonio et al., 2021).

In order to build a map, VOSviewer uses the abbreviation VOS which refers to Visualizing Similarity. In previous studies, the VOS mapping technique has been used to obtain bibliometric visualizations which are then analyzed. Furthermore, VOSviewer is able to create and display a map of the author's journal based on co-citation data or a keyword map based on joint incident data (Napitupulu et al., 2024; Rusydiana et al., 2021). Therefore, in this study, an analysis of journal maps related to "*Fintech in Turkiye*" will be carried out, including author maps, and keywords which will then be analyzed as research paths that can be carried out in the future through clusters on *keyword mapping*.

This study uses a descriptive qualitative approach with meta-analysis and descriptive statistical literature studies based on 52 journal publications that discuss the theme "*Fintech in Turkiye*". Meta-analysis is

a method that integrates previous research related to a specific topic to evaluate the results of existing studies. Furthermore, the qualitative method used in this study is also referred to as a constructive method, where the data collected in the research process will be constructed into a theme that is easier to understand and meaningful. The sampling technique used in this study is the purposive non-probability sampling method, which aims to fulfill certain information according to the desired research objectives.

## RESULT AND DISCUSSION

### Research Map

The image below describes the keyword trends that emerged in the research on the theme "*Fintech in Turkiye*" and the larger form is the most widely used word in journal publications with the theme "*Fintech in Turkiye*".

As for the mapping, the keywords that appear the most in the publication "*Fintech in Turkiye*" include fintech, sustainable development, investment, and green finance, which are then divided into 4 clusters, as follows:

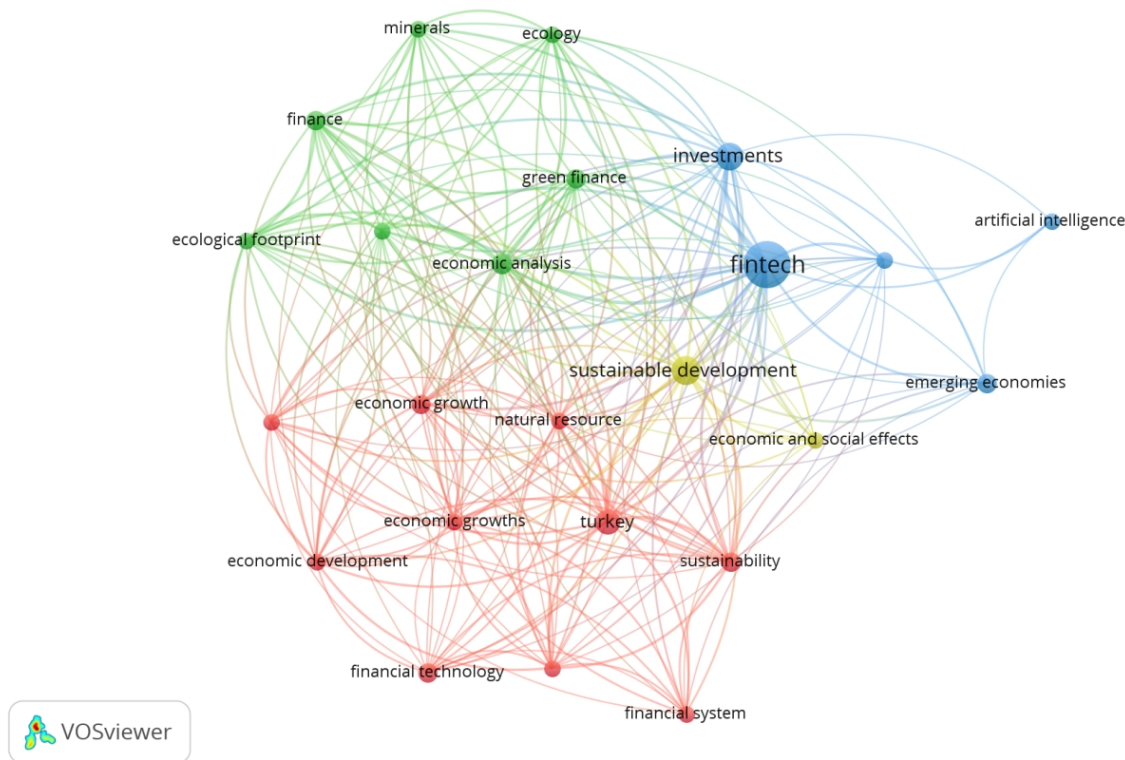


Figure 1. Research Cluster

### Cluster 1: Fintech, Financial Systems, and Sustainable Economic Development

This cluster has 10 keyword items, namely economic development, economic growth, economic growths, financial system, financial technology, green economy, natural resource, sustainability, sustainable development goal, turkey. The first cluster reflects the

relationship between financial technology and economic development and sustainability. The keywords that appear show that fintech is positioned as a strategic instrument in encouraging economic growth while supporting the sustainable development agenda. Thus, this cluster emphasizes the role of fintech at the macro level, especially in transforming the financial system towards a more inclusive and sustainable economy.

Sharma et al (2025) fintech plays an important role in expanding financial inclusion and fostering sustainable economic development through technology integration, financial literacy, and financial system strengthening. In addition to highlighting potential transformations such as the use of artificial intelligence and digital media, this book also underscores key safeguards related to security, privacy, and trust in the digital financial ecosystem. Tchidi & Zhang (2025) also point out that there is a positive and significant relationship between FinTech and economic development. In addition, there is a positive and significant relationship between financial inclusion and economic development. It confirms that financial inclusion serves as an important mechanism by which financial technology influences economic development.

Another study from Chouchene et al (2026) also proves that FinTech adoption has a positive and statistically significant effect on the performance of the SDGs. The effect is much stronger in developed countries, while remaining positive but smaller in developing and developing countries. This highlights the role of digital finance and green finance inclusion in advancing sustainable development, while also emphasizing the importance of infrastructure quality, regulation, and institutional readiness. Jain (2024) argues that the fintech revolution has significantly transformed the financial industry and increased financial inclusion by offering digital financial services, thereby contributing positively to the SDGs by providing increased access to funds and financial services, which in turn has resulted in increased savings opportunities for a large portion of society.

Furthermore, Shah (2026) explains the role of financial technology (fintech) in increasing financial inclusion, and its role in addressing related challenges such as excessive digital debt. His research also underscores the importance of aligning financial developments with sustainable practices to address

pressing socio-economic challenges. Azmeh & Al-Raei (2024) found in their research that there is a predominantly positive effect of Fintech variables on economic growth, especially through the improvement of digital payment systems. His research also underscores a significant positive interaction between the use of digital payments and the density of ATMs, which suggests a synergistic relationship that improves the performance of traditional banking systems. Instead, there is a substitution effect, where increased reliance on mobile technology reduces the relevance of traditional financial infrastructure, potentially hindering broader economic growth. Abdulla et al (2022) explore the influence of Fintech on sustainable development (economic, social, and environmental) by focusing on the existing literature. Previous literature and theories have shown that there is a significant influence of Fintech on sustainable development, but these influences differ in different countries and situations.

### Cluster 2 : Green Finance and Fintech

This cluster contains 7 keyword items, namely ecological footprint, ecology, economic analysis, environmental technology, finance, green finance, minerals. The second cluster focuses on the relationship between financial technology, environmental technology, and ecological sustainability. The emergence of keywords in this cluster shows increasing attention to the impact of financial activities on the environment. In this context, green finance plays an important role in directing investment to environmentally friendly sectors and minimizing ecological degradation. Therefore, this cluster highlights the importance of integrating the financial system with the principles of environmental sustainability.

A number of relevant studies on this topic include Xu et al (2025) who found that Fintech facilitates green finance development, financial efficiency and green innovation are important channels

used by Fintech to encourage green finance, and there is heterogeneity in the impact of Fintech on green finance at various levels of financial development. In particular, the influence of Fintech on green finance is more pronounced in regions with higher levels of financial development. [Geetha & Biju \(2024\)](#) explain that green FinTech drives the green economy through its diverse impact on all aspects of the financial sector, thereby channeling climate finance and promoting sustainability. It has the power to increase inclusivity, openness, trust, and democratization, thereby reducing information asymmetry and greenwashing. Therefore, FinTech integration can be a breakthrough in removing the barriers that existed before conventional green financing.

[Zhou et al \(2022\)](#) also stated that fintech and green finance significantly drive green economic growth. At the same time, the impact of fintech and green finance on green growth has a clear regional heterogeneity. [Chien et al \(2025\)](#) state that FinTech significantly improves the transparency and efficiency of green finance markets, especially in countries with developed economies and a good regulatory environment. In addition, FinTech also plays an important role in emerging markets, reducing the structural challenges of green finance development by improving access to funds and improving risk management. The study also found that, although FinTech encourages the development of green finance in various markets, the risks it poses are very different for developed and developing markets.

[Bonsu et al \(2025\)](#) also affirmed that Fintech and green finance play an important role in improving banks' ESG performance in the long term. In addition, it was also found that Fintech significantly supports the development of banks' green finance, with a more significant effect on higher quantiles. Government policies positively moderate the impact of Fintech and green finance on the ESG performance of banks. [Wan et al \(2023\)](#) found that Fintech developments can

significantly drive green finance growth. In addition, the influence of Fintech developments on banks with high net income. Additionally, it was found that Fintech facilitates the growth of green finance by improving banks' risk management capabilities and operational capabilities. [Khan & Shahid \(2025\)](#) explain that Fintech was found to drive financial inclusion, lower transaction costs, and improve service accessibility, while green finance channeled capital into "low-carbon" technologies, renewable energy, and infrastructure that is resilient to climate change. Integrated evidence shows that these mechanisms are mutually reinforcing: digital platforms improve access to and monitoring of sustainable investments, and green finance increases the demand for transparent and efficient Fintech systems.

### **Cluster 3 : Digital Transformation and Fintech Innovation**

This cluster contains 5 keyword items, namely artificial intelligence, digital transformation, emerging economies, fintech, investment. The third cluster represents the dimension of technological innovation in fintech development. Keywords such as artificial intelligence, digital transformation, fintech, and investment show that fintech development is closely related to the advancement of digital technology. Innovations such as artificial intelligence and digital transformation are the main drivers in improving the efficiency of financial services, expanding financial inclusion, and driving investment growth, especially in developing countries. This cluster places technology as the main driver in the fintech ecosystem.

A number of relevant studies, including [Al-Majali et al \(2026\)](#), explain that digital transformation has proven to be a key factor in increasing fintech inclusion through strengthening technology infrastructure, open innovation, and entrepreneurial growth mechanisms. It emphasizes that the success of fintech development does not only depend on

technology but also on the ability of organizations to manage innovation collaboratively and inclusively. [Aktürk et al \(2025\)](#) assess the compatibility of fintech with the ethical and operational framework of Islamic finance, with a special emphasis on interest-free banking, risk sharing, and transparency. In addition, his research evaluates the potential benefits and barriers associated with the digitalization of the Islamic financial sector, including sustainable growth and the advancement of innovative solutions.

[Liu et al \(2024\)](#) discuss the transformative impact of emerging digital technologies on the digital transformation of the financial industry, focusing on the integration of Generative Artificial Intelligence (GenAI), humanoid robots, and the Metaverse within the framework of Industry 5.0. Industry 5.0 emphasizes a human-centered approach to technology, where human-AI collaboration plays a central role in reshaping financial services. [Al-Omouh \(2026\)](#) found that AI applications have a strong influence on FinTech innovation and cybersecurity. In addition, the path analysis supports the importance of FinTech innovation in improving operational excellence and customer satisfaction. These results contribute to a better understanding of the factors and consequences of FinTech innovation in terms of the adoption of AI solutions and broaden the debate regarding the impact of innovative intelligent digital transformation on the performance of financial institutions.

[Srivastava et al \(2025\)](#) explain that the development of fintech in India shows how digital transformation is able to revolutionize the financial system by improving service efficiency, security, and expanding financial inclusion, especially for previously underserved groups. The surge in global investment and the adoption of technologies such as mobile banking affirm the role of fintech as a key driver of economic growth and innovation in the financial sector. [Jaiswal & Satyanisth \(2025\)](#) show that research on fintech and

sustainable development is growing, with a primary focus on digital innovations such as electronic payments, blockchain, and alternative financing that contribute to financial inclusion, environmental desirability, and economic resilience. The thematic mapping identifies four main clusters, namely fintech innovations for poverty, ESG integration, digital transformation and financial behavior, and regulatory and institutional support, reflecting a multidimensional approach in this study.

[Hassan et al \(2022\)](#) analyze the symbiotic interaction between artificial intelligence and financial technology apart from the shared goal of increasing enterprise innovation. Blockchain technology and robo-advisors reflect FinTech's growth from back-end systems to today's digital payment tiers. With an emphasis on risk management, customer service, and fraud detection, the research highlights how artificial intelligence can improve financial services. The research also discusses how predictive analytics and artificial intelligence drive wealth management and how blockchain and artificial intelligence are impacting traditional banking.

#### **Cluster 4 : Social and Economic Impacts of Fintech**

This cluster has 2 keyword items, namely economic and social effects, sustainable development. The fourth cluster highlights the social and economic impacts of fintech development within the framework of sustainable development. With the emergence of keywords such as economic and social impacts and sustainable development, this cluster describes the results of the integration of technology, financial systems, and environmental aspects. In this context, fintech not only contributes to economic efficiency but also has implications for social welfare, reducing inequality, and increasing financial inclusion. Therefore, this cluster emphasizes that the success of fintech

implementation must be measured not only in terms of the economy but also in terms of its social impact.

A number of relevant studies, including [Song & Appiah-Otoo \(2022\)](#), explain that fintech makes a significant contribution to economic growth, both in aggregate and through components such as third-party payments, credit, and insurance, with varying impacts in various regions. The identified cause-and-effect relationship confirms the two-way relationship between fintech and economic growth, showing that the development of financial technology and economic expansion are mutually reinforcing. [Dabbous et al \(2025\)](#) show that FinTech positively influences sustainable economic development and has a positive social impact. The findings also confirm that FinTech improves environmental sustainability.

[Mertzanis \(2023\)](#) explains that fintech has a significant positive influence on the performance of the social environment, albeit on a relatively moderate scale and with a delayed effect. These findings confirm that fintech's contribution is not only limited to economic aspects, but also includes social and environmental dimensions in the long term. [Arslan et al \(2022\)](#) found that Fintech services, particularly electronic money, play an important role in reducing uncertainty around business operations. FinTech also offers growth opportunities for BOP (Bottom of the Pyramid) entrepreneurs and creates social value by providing transaction security, convenience, and reducing cash theft. At the same time, Fintech contributes to social value by improving the skills of BOP entrepreneurs as well as developing consumer skills.

[Abuamria & Ajouz \(2025\)](#) explain that the development of fintech shows an important role in promoting sustainable finance and socially impactful investments through the use of technologies such as blockchain, artificial intelligence, and digital payment systems, expanding financial inclusion and improving the efficiency of capital allocation. While providing

opportunities to reduce social disparities and support sustainable development, fintech also faces challenges such as digital divides, regulatory disparities, and data protection issues. [Kammoun et al \(2020\)](#) explain that countries in the MENA region show that fintech plays a role as a driver of economic growth and innovation, although it can also have macroeconomic impacts such as increased inflation if not balanced with the right policies. These findings confirm that the effectiveness of fintech is strongly influenced by political stability as well as the quality of supportive regulations and institutions.

## CONCLUSION

Based on the results of a bibliometric analysis of 52 scientific publications with the theme "FinTech in Turkiye", it can be concluded that research on FinTech in Turkiye shows significant and increasingly diverse developments. The mapping using VOSviewer identifies four main clusters that reflect the focus of the research, namely: (1) the relationship between FinTech, the financial system, and sustainable economic development; (2) the integration of FinTech with green finance; (3) digital transformation and technological innovation in FinTech; and (4) the social and economic impact of FinTech implementation.

The findings show that FinTech plays an important role in driving financial inclusion, improving the efficiency of the financial system, and supporting economic growth and the achievement of the SDGs. In addition, the integration of FinTech with green finance strengthens efforts towards sustainable development, while technological innovations such as artificial intelligence and digital transformation are the main drivers of the sector's development.

However, the research also reveals challenges that need to be considered, such as the digital divide, regulatory issues, data security, and infrastructure and institutional readiness. Therefore, FinTech development

in Türkiye requires a holistic approach, including policy support, strengthening regulations, and improving people's digital literacy and finance.

In the future, research on FinTech in Türkiye still has wide opportunities, especially in exploring integration with the Islamic economy, strengthening green finance, and its impact on social inclusion and economic resilience. Thus, this study provides a solid basis for the development of further research and policy formulation that supports an inclusive and sustainable FinTech ecosystem.

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