

The Role of Customer Experience in Sustaining Open Banking Usage: A Bibliometric Review

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Article Info

Article history:

Received 18 August 2021

Received in revised form 9

September 2021

Accepted 24 September 2021

Keywords:

Open Banking

Customer Experience

Continuous Usage

Data Privacy

Abstract

Open banking has emerged as a cornerstone of digital financial transformation, bridging technological innovation with the needs of modern customers. This study explores key topics such as service quality, privacy, and security, which are critical factors in fostering customer satisfaction and loyalty. The findings reveal that technologies like blockchain and open APIs play a vital role in enhancing transparency and trust, while omnichannel strategies personalize user experiences. However, there are gaps in understanding the long-term relationship between privacy, security, and service quality, particularly in developing markets. This research provides practical insights for organizations to prioritize innovations that enhance customer experience and data protection. By expanding the scope of future studies and integrating multidisciplinary approaches, this study aims to lay the foundation for a more inclusive, secure, and sustainable open banking ecosystem.

Introduction

The banking sector has undergone a major transformation over the past few decades, driven by technological advancements and changing market dynamics. Traditionally, banks have played a central role in the financial ecosystem by maintaining exclusive control over customer financial data. This exclusive access provided banks with a competitive advantage in offering personalized financial products and services based on customer profiles. However, the emergence of the Open Banking (OB) concept has disrupted this model by allowing customers to share their financial data with third-party service providers, including fintech companies. To date, Open Banking policies have been adopted in more than 49 countries, with the primary goals of enhancing competition, fostering innovation, and expanding financial inclusion (Omarini, 2025; Babina et al., 2024). This open environment facilitates secure data sharing across platforms, creating a dynamic marketplace that offers a variety of new financial products and services designed to meet the evolving needs of customers (Omarini, 2025; Abbas et al., 2021; Alt & Puschmann, 2012).

Technological advancements have significantly transformed the financial sector, including the adoption of remote auditing (RA) and Open Banking. RA leverages modern communication technologies such as video conferencing and cloud-based platforms to improve audit efficiency and accessibility (Dezem et al., 2024; Tebergaoui et al., 2022). This technology not only saves costs and time but also enhances auditors' professional skepticism (Hawkins, 2017; Serag & Daoud, 2021).

Open Banking holds significant potential to enhance customer experience through more personalized financial solutions, greater transparency, and easier access. By integrating Application Programming Interfaces (APIs), Open Banking enables seamless connectivity

between banks and third-party service providers. Customers can benefit from integrated financial dashboards, real-time transaction tracking, and personalized financial advice (Omarini, 2025; Praveen, 2024; Zachariadis, 2020). Research indicates that consumers who actively use Open Banking services tend to have better financial literacy and improved financial decision-making capabilities (Babina et al., 2024). Moreover, Open Banking accelerates credit access by enabling alternative lenders to assess borrowers' creditworthiness based on comprehensive transaction data. This not only democratizes credit access but also promotes financial inclusion by providing greater opportunities for underbanked populations (Babina et al., 2024; Adelaja et al., 2024).

The success of Open Banking depends on continuous usage, which is influenced by customer trust, ease of use, and perceived value. Trust is a crucial factor, as customers must be confident that their financial data is handled securely and responsibly. Therefore, governments and financial institutions have established stringent regulatory frameworks to ensure data privacy and security (Omarini, 2025). Additionally, the ease of use of Open Banking applications, characterized by intuitive interfaces and seamless integration with existing financial tools, significantly affects user retention. Platforms that offer added value, such as personalized financial insights, automated budgeting tools, and tailored investment advice, are more likely to drive continuous customer engagement (Babina et al., 2024). For instance, digital banks and virtual financial platforms have experienced rapid growth in Asia, where customer-centric innovation drives the sustained adoption of Open Banking services (Babina et al., 2024; Bhatnagr et al., 2024; Shacheendran et al., 2025).

However, despite its numerous benefits, Open Banking also faces several challenges. One of the primary concerns is data privacy, as sharing financial data with multiple service providers increases the risk of data breaches. Regulators need to strike a balance between encouraging innovation and protecting consumers (Omarini, 2025; Babina et al., 2024). Additionally, regulatory discrepancies across different regions create barriers to the global standardization of Open Banking practices. Some countries implement mandatory data-sharing policies, while others rely on voluntary participation from financial institutions (Babina et al., 2024). Another challenge is the cost of developing and maintaining secure APIs, which can be a barrier for small banks and fintech companies entering the market (Omarini, 2025). Nevertheless, the benefits of Open Banking in enhancing customer experience and driving continuous usage outweigh these challenges, as evidenced by increased fintech investments and improved financial outcomes in countries that have adopted Open Banking (Babina et al., 2024).

Open Banking represents a significant step forward in the evolution of financial services. By enabling data sharing, enhancing customer experience, and promoting continuous usage, Open Banking has the potential to reshape the way individuals and businesses interact with financial institutions. However, realizing this potential requires collaborative efforts from stakeholders, including regulators, financial institutions, and fintech companies, to address regulatory, technological, and privacy-related challenges and create a secure, transparent, and user-friendly Open Banking environment for all (Omarini, 2025; Babina et al., 2024).

Customer experience (CX) plays a crucial role in the adoption of financial technology like Open Banking, as positive experiences drive trust, satisfaction, and user loyalty. A well-designed CX that emphasizes convenience, personalization, and data security can help overcome barriers such as a lack of trust and privacy concerns. However, research exploring specific CX dimensions, generational or segment-based preference differences, and the impact of technology and regulations on user retention remains limited. Furthermore, discussions on the local context in developing countries like Indonesia and the integration of Open Banking

into the financial ecosystem are still scarce. Addressing these gaps can optimize CX to support the sustainable adoption of financial technology.

This study aims to explore the impact of Open Banking on customer experience and the sustainability of service usage during the 2020–2024 period. Using a bibliometric analysis approach, this research not only provides a comprehensive overview of trends and developments in Open Banking literature but also offers strategic insights into the opportunities and challenges affecting its adoption. Bibliometric analysis enables the identification of key topic clusters, namely (1) Open Banking; (2) Customer Experience; (3) Data Security and Privacy; (4) Financial Service Innovation; and (5) Continuous Usage.

The bibliometric analysis approach provides advantages in mapping inter-topic relationships, identifying research patterns, and uncovering gaps in the literature that remain underexplored. Consequently, this study not only offers insights into trending topics but also directs attention to aspects that require deeper investigation. The findings are expected to strengthen the theoretical foundation for future research while providing practical contributions to stakeholders in optimizing the sustainable and strategic adoption of Open Banking technology.

Methods

This study employs bibliometric analysis methodology as part of the literature review. Bibliometric analysis involves examining the relationships between reported physical units, bibliographic units, and their substitutions (Broadus, 1987). This approach can reveal various aspects of publications, such as authors, frequently occurring keywords, and citations. Therefore, bibliometric analysis can be applied to analyze journal articles, books, or other scientific documents (Heersmink et al., 2010) by transforming qualitative information into quantitative data, allowing for the measurement of the strength and relevance of a study and its topic (Gelo et al., 2008).

Bibliometric analysis consists of two main components: performance analysis and scientific mapping analysis. Performance analysis measures individual contributions (such as authors, institutions, countries, and journals) and their impact through publication and citation data. Scientific mapping analysis maps the cognitive and social structure within a specific scientific discipline, both topologically and chronologically (Cobo et al., 2012). Its primary objective is to present a summary of bibliographic data to showcase the latest developments in the structure of scientific knowledge and research trends on a particular topic (Bhatt et al., 2022).

Data Sources & Analysis

The research data was obtained from Scopus.com. The search was conducted using the keywords: Open Banking, Customer Experience, and Continuous Usage. The search focused on scientific journals and conference proceedings published between 2014 and 2024. As a result, 85 relevant scientific papers were identified for further analysis. Data processing was carried out using VOSviewer software, which enables the visualization of relationships between documents and concepts. The data analysis includes:

Network Visualization

Displays relationships between keywords and articles based on their frequency of occurrence and interconnections between elements.

Overlay Visualization

Illustrates the temporal development of related research, highlighting keyword trends based on the year of publication.

Density Visualization

Maps the density of specific terms or topics in the analyzed research field, helping to identify key focus areas and research gaps that require further exploration.

The scientific journals used in this study were selected based on specific inclusion and exclusion criteria to ensure their relevance and contribution to the topic. The inclusion criteria include journal articles that specifically discuss Open Banking, particularly those related to Customer Experience and Continuous Usage. The selected publications consist of national and international scientific journals published between 2020 and 2024, in both English and Indonesian. The journal articles include empirical or theoretical research related to technology aspects, privacy, service quality, and customer satisfaction in the context of Open Banking.

Research Framework

This research framework is designed to systematically analyze the academic literature development on Open Banking, particularly focusing on Customer Experience (CX) and Continuous Usage.

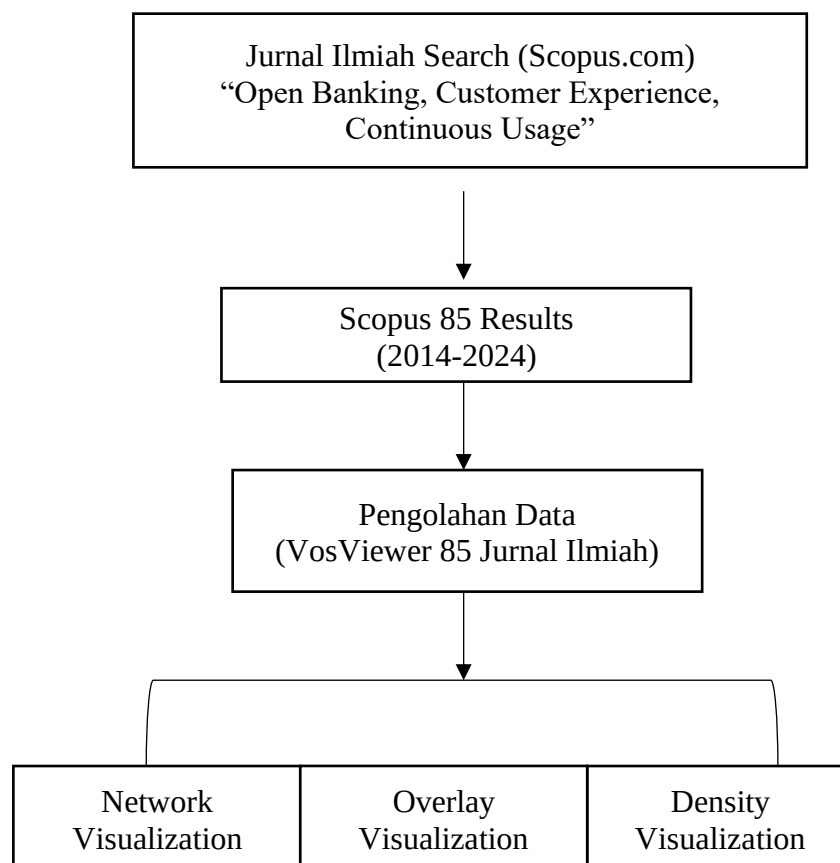


Figure 1. Research Framework

Results and Discussion

Descriptive Analysis

This bibliometric study analyzes 85 selected scientific papers published between 2014 and 2024, using VOSviewer to identify trends in the topics of Open Banking, Customer Experience, and Continuous Usage. The results indicate that customer experience, digital transformation, and data security are the primary research focuses, with technological innovations such as AI and FinTech playing a crucial role in enhancing customer satisfaction and loyalty.

Research on Open Banking reflects global contributions from various countries, particularly in Asia, including South Korea, China, India, and Indonesia, highlighting the region's rapid technological innovation. In Europe, countries such as the United Kingdom, Germany, France, Italy, and the Netherlands play a key role in regulatory development and banking digitalization. Meanwhile, the United States has made significant contributions to the development of innovative business models. Additionally, countries like Brazil, Australia, and Saudi Arabia have shown growing interest in the adoption and impact of Open Banking within their local financial sectors.

Table 1. Number of Open Banking Scientific Papers in Each Country

Country	Number of Papers
Korea Selatan	1
China	2
India	1
Indonesia	1
Inggris	2
Jerman	1
Prancis	1
Italia	1
Belanda	1
Amerika Serikat	2
Brasil	1
Australia	1
Saudi Arabia	1

Table 2. Most Cited Documents

No	Authors	Title	Year	Cited by
1	Chan R.; Troshani I.; Rao Hill S.; Hoffmann A.	Towards an understanding of consumers' FinTech adoption: the case of Open Banking	2022	94
2	Wang H.; Ma S.; Dai H.-N.; Imran M.; Wang T.	Blockchain-based data privacy management with Nudge theory in open banking	2020	77
3	Naseer S.; Khawaja K.F.; Qazi S.; Syed F.; Shamim F.	How and when information proactiveness leads to operational firm performance in the banking sector of Pakistan? The roles of open innovation, creative cognitive style, and climate for innovation	2021	39
4	He Z.; Huang J.; Zhou J.	Open banking: Credit market competition when borrowers own the data	2023	35

5	Gianiodis P.T.; Ettlie J.E.; Urbina J.J.	Open service innovation in the global banking industry: Inside-out versus outside-in strategies	2014	34
6	Ramdani B.; Rothwell B.; Boukrami E.	Open Banking: The Emergence of New Digital Business Models	2020	32
7	Mansfield-Devine S.	Open banking: opportunity and danger	2016	25
8	Dratva R.	Is open banking driving the financial industry towards a true electronic market?	2020	22
9	Iman N.; Nugroho S.S.; Junarsin E.; Pelawi R.Y.	Is technology truly improving the customer experience? Analysing the intention to use open banking in Indonesia	2023	20
10	Sivathanu B.	An empirical study on the intention to use open banking in India	2019	19

Source: Scopus.com

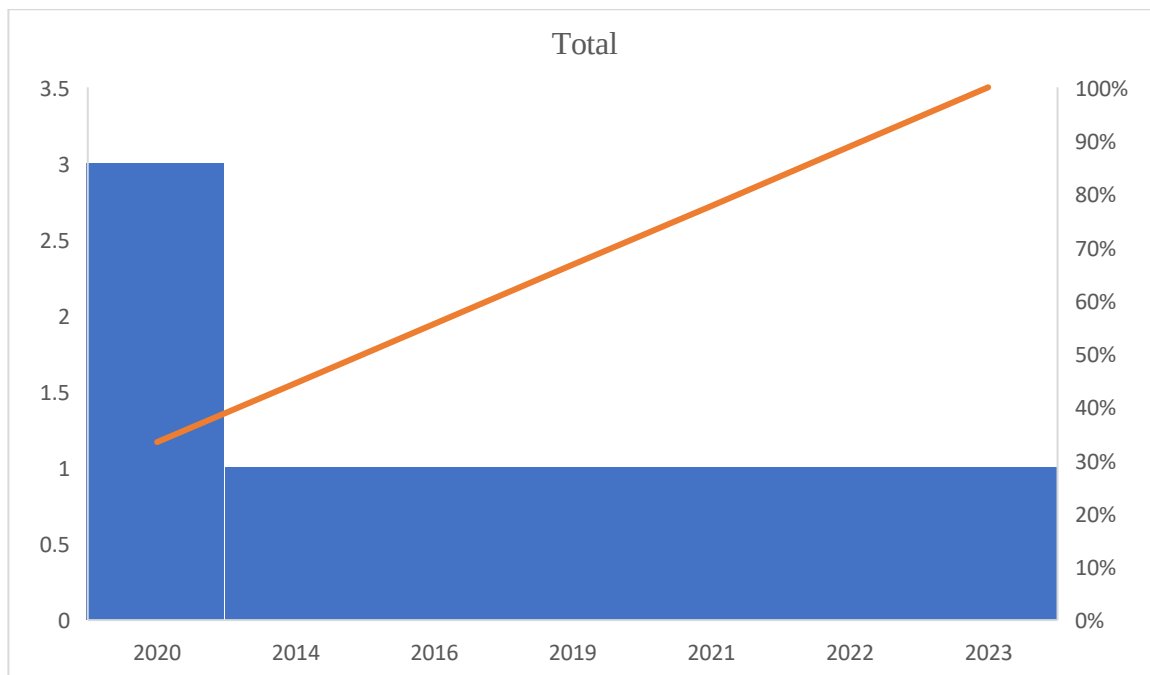


Figure 3. Number of Publications per Year

Based on Figure 3, the number of paper publications from 2014 to 2023 is shown, highlighting the top 10 most cited papers. In 2020, the number of publications peaked at its highest point, exceeding three publications. After that, a decline was observed in 2023, with only around two publications. Meanwhile, in other years, specifically 2014 to 2019 and 2021 to 2022, the number of publications remained relatively low, approaching zero. The line spanning 2020–2023 in the graph represents the cumulative citation trend, demonstrating consistent growth over time, reaching 100% in 2023. This graph illustrates that although the number of

publications fluctuates annually, the citations of these journals have significantly increased, indicating their relevance and impact in academic literature.

Co-Authorship Analysis

The Co-Authorship Analysis reveals close collaboration among authors, institutions, and countries in research on Open Banking, Customer Experience, and Digital Transformation. Researchers from Asia—including South Korea, China, India, and Indonesia—actively collaborate with institutions in Europe, such as those in the United Kingdom, Germany, France, Italy, and the Netherlands, as well as the United States, reflecting a cross-regional exchange of ideas. Additionally, South American countries like Brazil and Middle Eastern countries such as Saudi Arabia and Oman also exhibit collaborations with Asia to further explore adoption and innovation in digital banking. VOSviewer analysis uncovers a global network of authors that supports the development of literature and best practices in this field.

However, beyond mapping these collaborations, it is crucial to analyze their practical significance and impact on Open Banking research and implementation. For instance, the collaboration between technologically advanced countries such as South Korea and China with regulatory-driven markets like Europe and North America could drive the development of Open Banking technologies that cater to diverse regulatory environments. These cross-regional partnerships might facilitate innovation in secure data sharing, digital identity verification, and AI-driven banking services, which could then be adopted by financial institutions worldwide.

Furthermore, identifying key thought leaders and research hubs within this network would provide deeper insights into the direction of Open Banking research. Certain institutions or authors who are consistently involved in highly cited publications may play a pivotal role in shaping major developments, such as customer-centric Open Banking models or enhanced cybersecurity frameworks. Understanding their influence could highlight the major forces driving the industry's evolution.

Additionally, these international collaborations could contribute to regulatory harmonization and best practices that bridge differences in financial regulations. Joint research between institutions from markets with varying levels of Open Banking maturity could lead to policy frameworks that accommodate both innovation and compliance, making Open Banking more accessible across jurisdictions. Moreover, partnerships between financial institutions and tech firms from different regions may help shape new business models, ensuring that Open Banking remains adaptive to emerging global trends.

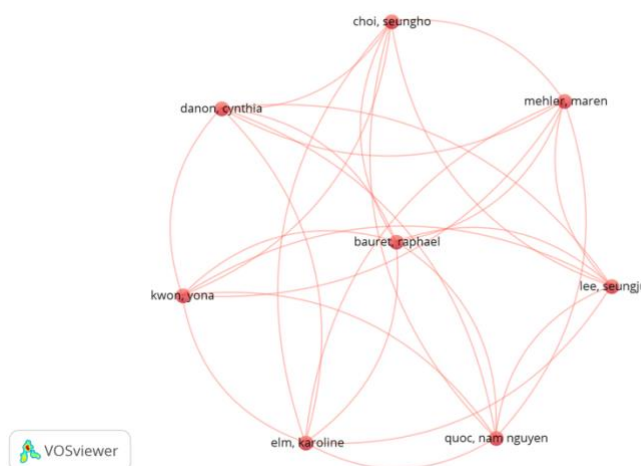


Figure 4. Co-Authorship Analysis

By incorporating these perspectives, the analysis not only illustrates the presence of international cooperation but also provides meaningful insights into how such collaborations are shaping the future of Open Banking in theory and practice.

Based on Figure 4, the Co-Authorship Analysis reveals a strong collaborative network, with Bauret, Raphael serving as the central connecting hub, engaging in intensive collaboration with several other authors, such as Choi, Seungho, and Mehler, Maren. This relationship reflects their strategic role in integrating researchers from various clusters, thereby strengthening the research network in this field. The thickness of the lines between nodes indicates the intensity of collaboration, while the size of the nodes represents individual contributions to publications. This visualization serves as a strategic guide for expanding research collaborations, strengthening connections with key authors, and identifying new collaboration opportunities with less-involved researchers.

Thematic Analysis

Thematic analysis identifies that customer experience (CX) and the sustainability of Open Banking usage are influenced by service quality, trust, data security, and digital engagement. Service quality, such as transparency in privacy management and ease of access, is a key factor in building customer loyalty (Mutambik, 2023; Lee et al., 2021).

Blockchain technology and AI play a crucial role in enhancing trust and data security, while omnichannel strategies personalize user experiences, thereby improving customer satisfaction and retention (Ahmed et al., 2023; Ghosh et al., 2024; Fang & Zhu, 2023). Additionally, digital marketing through social media and fintech platforms further promotes more interactive customer engagement (Iman et al., 2023; Garg & Sahu, 2024). This study highlights that a positive customer experience and technological innovation are the key drivers of Open Banking's sustainable usage.

Table 3. Thematic Analysis

Thema	Description	Author	Result
FinTech Adoption	Research discussing the adoption of FinTech technology in the context of Open Banking.	Chan R. et al. (2022)	Consumers are more likely to adopt Open Banking if they understand the benefits of the technology and its security.
Data Privacy and Security	Focus on managing data privacy and security in Open Banking implementation.	Wang H. et al. (2020)	Blockchain and “Nudge” theory can improve data privacy management in Open Banking, providing greater security for users.
Innovation and Performance	The role of open innovation in improving operational performance and	Naseer S. et al. (2021), Ganioudis P.T. et al. (2014)	Outside-in innovation is more effective in creating added value for the banking industry than inside-out innovation.

	organizational sustainability.		
Customer Experience	The influence of Open Banking on customer experience and intention to use the service.	Iman N. et al. (2023), Sivathanu B. (2019)	Positive customer experience and easy access to technology are the main factors in intention to use Open Banking in Indonesia and India.
Business Models	Transforming traditional business models into digital models through the implementation of Open Banking.	Ramdani B. et al. (2020), Dratva R. (2020)	Open Banking encourages the emergence of new business models that focus on digital collaboration and efficiency in the financial industry.
Regulatory Impacts	The influence of policies and regulations on the implementation of Open Banking in various countries.	He Z. et al. (2023), Mansfield-Devine S. (2016)	Regulations that support data-based credit competition increase market fairness, but also present challenges in managing consumer data.

The Table 2 above analyzes the main themes in research related to Open Banking, covering aspects such as technology adoption, data security, innovation, customer experience, business models, and regulatory impact. The findings indicate that Open Banking adoption is influenced by technological literacy and enhanced data security, supported by solutions such as Blockchain. Additionally, open innovation and positive customer experiences drive service sustainability, while regulations play a crucial role in creating a fair market environment. Traditional business models are also undergoing a transformation toward digitalization, opening opportunities for cross-sector collaboration. This analysis highlights the strategic challenges and opportunities for Open Banking development.

Network Visualization Analysis

Network Visualization Analysis is a method used to visualize relationships between elements in a network, such as research data or social connections, to understand patterns and hidden clusters. This method is supported by software such as VOSviewer (Van Eck & Waltman, 2010) and UCINET (Borgatti et al., 2002). The research by Freeman (1977) on social network centrality and Newman (2003) on complex networks serves as a foundational framework for this analysis. The primary objective is to provide in-depth insights to support research and decision-making.

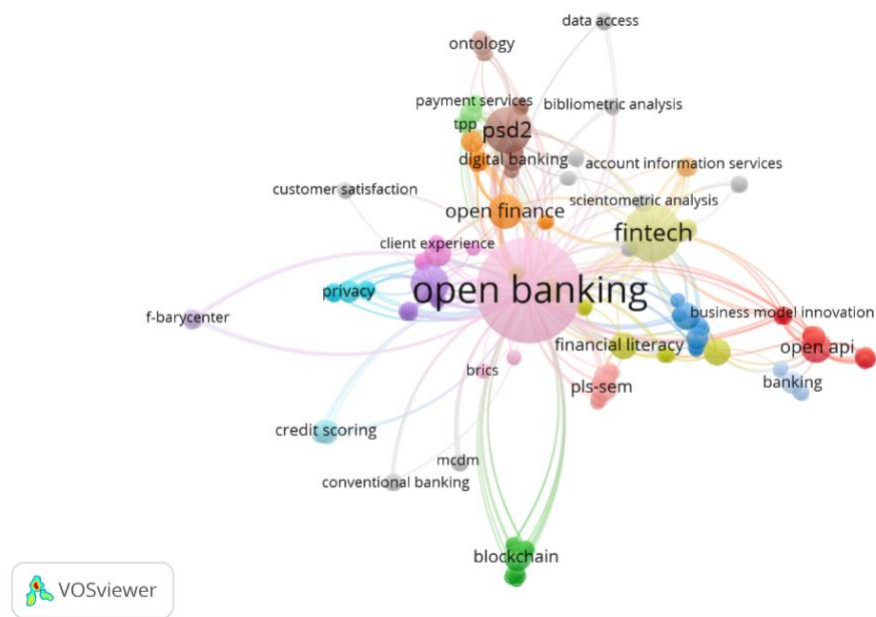


Figure 5. Network Visualization Analysis Results

Based on Figure 5, the network visualization map of Open Banking using VOSviewer illustrates the strong relationships between various key themes within the digital banking ecosystem. Open Banking serves as the central focus of this research, surrounded by several clusters representing critical topics such as technology, regulation, customer experience, and collaboration. The technology cluster, which includes Blockchain and Credit Scoring, highlights the significant role of technology in enhancing data security, transparency, and innovation in banking services. Meanwhile, the regulation cluster, featuring topics like PSD2 (Payment Services Directive 2) and Digital Banking, emphasizes the importance of international policies, particularly in Europe, in driving the global adoption of Open Banking.

Another crucial cluster focusing on customer experience, such as Privacy and Customer Satisfaction, underlines concerns regarding data protection and user satisfaction, which are essential for building customer trust and loyalty. Additionally, Open API and Business Model Innovation reflect how open API technology facilitates the development of more inclusive and innovative business models. This study also highlights the importance of Financial Literacy, which is linked through nodes like Financial Literacy, in improving users' understanding of the benefits and risks associated with Open Banking.

A multidisciplinary approach is evident through nodes such as Ontology, Bibliometric Analysis, and Scientometric Analysis, indicating the importance of data-driven analysis in measuring the overall impact of Open Banking. Furthermore, the success of Open Banking relies on collaboration among various stakeholders, including traditional banks, third-party providers (TPPs), and other institutions involved in providing account information services. This visualization confirms that Open Banking research extends beyond technology, encompassing regulatory aspects, customer experience, and global collaboration, all of which play a crucial role in shaping the future of the digital banking ecosystem.

Overlay Visualization Analysis

Overlay Visualization Analysis is a bibliometric visualization method that displays relationships between network elements based on time dimensions or specific categories. This method allows researchers to identify emerging research trends, topic developments, and concept relationships within a study field. By utilizing software like VOSviewer (Van Eck &

Waltman, 2010), overlay visualization can reveal the evolution of keyword relevance over time or compare contributions across different data groups. Its primary objective is to help researchers understand topic evolution and identify potential research directions.

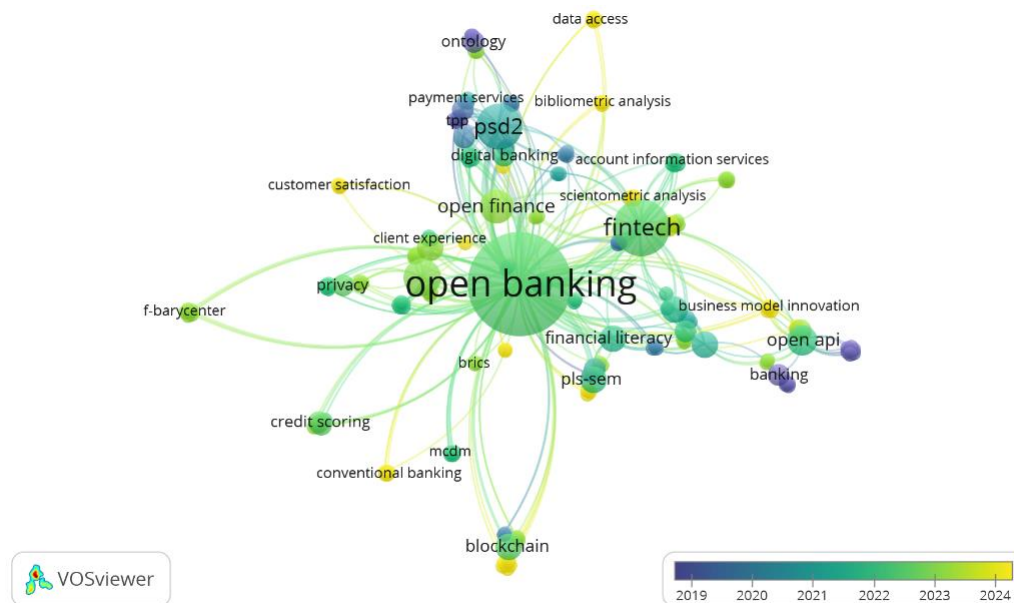


Figure 6. Results of Overlay Visualization Analysis

This VOSviewer visualization shows that Open Banking is at the center of research, with key themes such as FinTech, Blockchain, Privacy, and Open API, reflecting the crucial role of technology and regulations in supporting digital financial innovation. The development from 2019 to 2024 indicates a shift in focus from initial security and regulatory concerns toward customer experience, such as Customer Satisfaction and Client Experience, which have now become priorities for enhancing loyalty. Regulations like PSD2 and technologies such as blockchain serve as the main foundation for data interoperability and security. Recent research also highlights the importance of financial literacy and service personalization through digital strategies. These findings confirm that the sustainability of the open banking ecosystem depends on a balance between security, technological innovation, and customer needs.

Density Visualization Analysis

Density Visualization Analysis is a bibliometric visualization method that represents the frequency density of elements, such as keywords or documents, within a network. In this visualization, areas with high density are marked with brighter or warmer colors (e.g., yellow), while areas with low density appear in darker colors. Using software such as VOSviewer (Van Eck & Waltman, 2010), this method helps researchers identify the most frequently discussed topics or research areas, as well as the relationships between elements within the network. The primary objective is to visualize the main research focus and recognize gaps or new opportunities in a specific field of study.

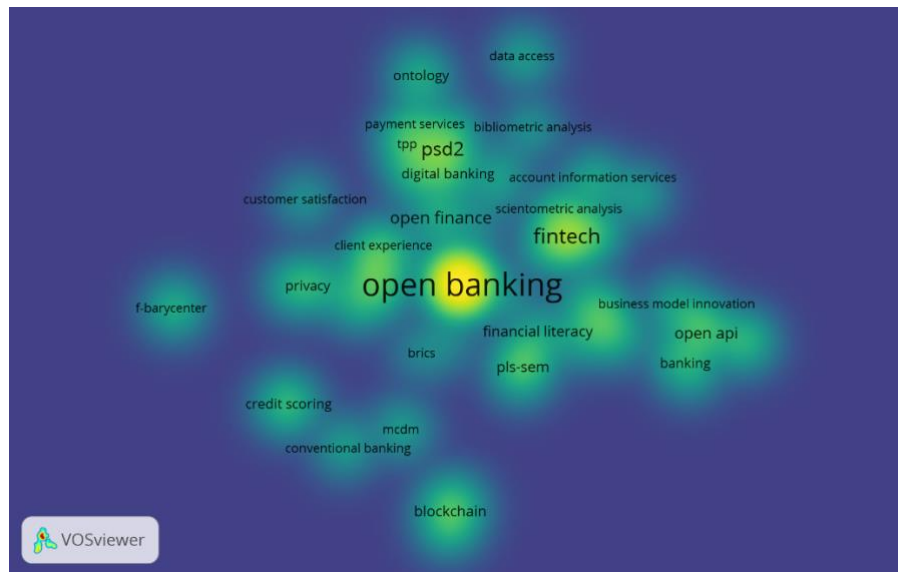


Figure 7. Results of Density Visualization Analysis

The heatmap visualization in Figure 7 highlights the intensity of research related to Open Banking, with key topics most frequently studied located at the core of the map, such as FinTech, Privacy, Open API, and Blockchain. Open Banking is positioned at the center with a bright yellow color, reflecting the primary focus on technological innovation in the financial system. The nodes for Privacy and Customer Satisfaction indicate a strong emphasis on data protection and user experience, which are crucial for fostering customer loyalty in digital financial services.

According to Figure 7, areas such as PSD2 and Digital Banking emphasize the significance of international regulations, particularly in Europe, in promoting data interoperability and trust within the Open Banking ecosystem. Technologies such as Blockchain and Open API emerge as key elements supporting data security, transparency, and service efficiency. Additionally, topics like Financial Literacy and Business Model Innovation highlight the need for financial education and the development of inclusive business models to support sustainable digital transformation.

The visualization also reveals that research on collaboration between traditional banks and FinTech companies, connected through Open Finance and Third-Party Providers (TPP), is a growing focus. Overall, this heatmap indicates that the success of Open Banking heavily relies on technology integration, strong regulatory frameworks, and personalized customer experiences, with ongoing research in these areas to create a more inclusive and sustainable financial ecosystem.

Conclusion

Global research indicates that Open Banking has become a central focus within the digital banking ecosystem, with significant contributions from Asian countries such as South Korea, China, India, and Indonesia in technological innovation. Meanwhile, European countries such as the United Kingdom, Germany, and France play a key role in regulation and digitalization. The United States leads in developing innovative business models, while Brazil, Australia, and Saudi Arabia focus on adoption and its impact on local financial sectors. Technologies such as Blockchain and Open API contribute to enhancing data security, transparency, and efficiency, while regulations such as PSD2 support data interoperability to build consumer trust.

Customer satisfaction and privacy have now become top priorities, with challenges in understanding the long-term impact of customer experience (CX) on security, privacy, and user loyalty. To support the development of a more inclusive and sustainable Open Banking system, increased collaboration between traditional banks, FinTech firms, and third-party providers (TPPs) is needed to create a more integrated ecosystem. Additionally, financial literacy must be expanded to help the public understand the benefits and risks, while personalized service strategies can be implemented to enhance customer loyalty.

Moving forward, further research is needed to examine the effectiveness of omnichannel strategies in developing countries, the strengthening of security through blockchain technology, and the development of cross-cultural collaboration to drive innovation and sustainability in Open Banking. By balancing technological innovation, strong regulatory frameworks, and customer needs, the Open Banking ecosystem can evolve into a more inclusive, secure, and sustainable financial solution.

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