Ekspektra: Journal Business & Management, Volume 9, Number 1, Page 33-46
ISSN 2549-3604 (Online), ISSN 2549-6972 (Print)
DOI: http://dx.doi.org/10.25139/ekt.v9i1.9527

Applications Artificial Intelligence (AI) and Machine Learning (ML) in the Mobile Banking Services Industry: A Bibliometric Review

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(Submit: 30th December 2024, Revised: 2nd January 2025, Accepted: 5th February 2025)

ABSTRACT

This study aims to explore the research on AI and ML Applications in Mobile Banking Industry Services conducted by previous researchers. Data was collected from the Scopus database using five keywords with the addition of terms and phrases, namely OR and AND according to the researcher's theme. The search results resulted in 283 publications on related issues. The data was analyzed using the VOS-Viewer and Biblioshiny applications in R-Studio. The results of the bibliometric analysis with biblioshiny describe the five categories identified by the researchers, namely: articles, sources, authors, institutions and countries described in each of the 10 most relevant images. Meanwhile, the results of bibliometric analysis with VOS-Viewer are described using Co-occurrence with item analysis of all keywords, which shows that Artificial Intelligence and Machine Learning citations are often used or encountered in research. So, the results of the study show an explanation that among the five categories, there are relationships with each other that have been identified, including the development of articles every year, which shows that in a period of 5 years, there has been a fairly rapid increase, especially in 2023-2024. There is the most dominant relevant source among other sources, namely Lecture Notes in Networks and Systems, connected with the most relevant institutions shown in Christ (Deemed To Be University), as well as showing scientific production in various countries, one of which is India, this can be a source of insight for new researchers in the growing future.

Keywords*: AI, ML, Mobile Banking, Finance*

1. INTRODUCTION

The use of AI and ML has changed the way businesses operate in recent years (Davenport et al., 2020). The banking sector is no exception, artificial intelligence (AI) and machine learning (ML) are delivering major changes that can be implemented to improve operational efficiency and improve customer experience in the use of Mobile Banking applications (Guerra & Castelli, 2021)**.**

The availability of large digital data resources and advances in algorithms and computing enable the banking industry to adopt AI more broadly. This can provide impetus and demand in the banking industry for the need of more flexible and responsive

services to global trends, this trend is also reinforced by demographic shifts, where many millennials prefer the convenience of online and mobile transactions (Salunkhe, 2019). One of the AI features often used in Mobile Banking is Chatbots and Biometrics, which can be a tool for detection, security and information in financial transactions (Raúl et al., 2024). So, it is not surprising that, with the increasing number of generations, Mobile Banking has become one of the most efficient and flexible transaction alternatives. Mobile Banking is often used because of useful features according to customer needs. Therefore, the researcher used bibliometric analysis to provide a comprehensive overview of the current research conditions, namely AI and ML applications in the use of Mobile Banking (Mehndiratta et al., 2023)**.**

Banks leverage increased consumer understanding to personalize their products and services. ML algorithms analyze customer data, starting with transaction services, managing accounts, and making payments. Several banks are already implementing AI to improve customer service, including chatbots, natural language processing, and sentiment analysis. On the service, Chatbots functions to communicate with customers as bank representatives (Amelia et al., 2024). In addition, before making a transaction, of course, you need a Biometric method, namely fingerprint scanning or facial recognition, that is useful for authenticating customer identity (Raup et al., 2022). So that customer identity can be verified safely and easily when transacting.

The emergence of Chatbots has several uses, such as being interactive in conducting conversations or chatting like humans but using the help of AI and being able to study the history of activities carried out by customers so that they are able to complete information while providing fast, complete and accurate solutions (Karthigad, 2021)**.** In addition to chatbots, there are other uses of AI that help transaction activities that require authentication known as personal identity or personal biometrics consisting of fingerprint recognition, iris and photo so that activities can be verified easily, quickly and safely and avoid theft of M- Banking data (Plateaux et al., 2014). Overall, the application of AI enables the industry to automate business processes, big data processing and deep analytics to provide faster and more accurate solutions for customers. In addition, using AI can also improve efficiency on the internal side of banking, including decision-making, risk management, and fraud or cyber detection (Ris et al., 2020).

In the context of growing technology with M-Banking research breakthroughs over the past period, there has been a review of researchers on AI and ML in Mobile Banking, providing an understanding of the sophistication of technology produced from smartphones and applications, so that customers choose to use M-Banking for their transaction needs (Payne & Peltier, 2018)**.** However, there hasn't been much research has provided a thorough understanding of how AI and ML applications can provide personalized experiences and customer satisfaction that can be achieved in Mobile Banking (Mehndiratta et al., 2023)**.** To address this gap, researchers use Bibliometric Analysis to explore previous research on AI/ML technology in the industry of Mobile Banking (Susanti & Reza, 2022)**.** Bibliometric analysis comes from the word bibliography meaning book and metric meaning to measure, so bibliometric is defined as measuring or analyzing books and literature using a statistical approach (Ayatullah & Maika, 2022). Sytematically, researchers analyze citations, themes and scientific publications based on case studies (Kalyani & Gupta, 2023). To provide a broad and comprehensive overview of artificial intelligence (AI) and machine learning (ML) in the industry of Mobile Banking and provide direction in the future (Karlina, 2022).

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Therefore, it is hoped that this research can provide the disclosure of the latest promising trends in the application of AI and ML in the banking industry from time to time so that it can be used for future researchers to add the latest trends through research. This is also important for the banking industry, which can provide an understanding of technology and benefits to the industry, with this study helping to build collaboration between banks and academics as well as support for governments and regulators in making more strategic decisions to adopt AI and ML to improve services in the future.

2. THEORETICAL FRAMEWORK AND HYPOTHESIS FORMULATION

In conducting research, the author must determine data collection methods and techniques to strengthen his research, so the researcher uses previous research as a support as well as a direction to explore a certain topic. By understanding the results of previous research, authors can design new, more innovative research and can expand on previous findings (Sanhaji & Hizbullah, 2024). Then, researchers found two previous studies related to bibliometrics and the topic of AI and ML in Mobile Banking. The first study was written by Melly Susanti and Heru Kreshna Reza (2022), who conducted a study on *A bibliometric and Visualized Analysis of Mobile Banking Research Using VOSviewer* with the keyword *Mobile Banking*, which is sourced from the Scopus database through Publish or Perish which is used to search for data as well as collect data in the form of articles and find A total of 200 publications from 2012 to 2016. The purpose of this study is to find out the development of research related to consumer behavior in using Mobile Banking.

Meanwhile, the second study written by Ayman A. Alsmadi, Ahmed Shuhaiber, Loai N. Alhawamdeh, Rasha Al and Manaf Al-Oka on *Twenty Years of Mobile Banking Services Development and Sustainability: A Bibliometric Analysis Overview* (2000-2020) with the keyword *Mobile Banking* sourced from the Scopus database was found as many as 1206 research papers, this researcher used bibliometric analysis and content analysis through software Excel, as a form of data to be processed and VOSviewer to get data results. The purpose of this study is to analyze the development of keywords related to *Mobile Banking issues* and the influence of the use of Mobile Banking at the Global Level with a period of 20 years.

The use of VOSviewer in the two studies above is to understand the structure and development in one scientific field, starting from identifying relationships between keywords, authors, institutions and journals based on publication data that can be visualized in the form of network maps with different colors, sizes and distances and has a function to show the strength of certain topic relationships so that from the data results can be called clusters or groupings of a trend that has been Unidentified (Bukar et al., 2023).

So, the researcher approaches the bibliometric method by using software including VOSviewer or Publish or Perish to collect a database of articles as well as analyze research trends, so that the next researcher can conduct and use similar trends or topics but with different themes and theories that will be used by the next researcher in the future. That way, the trends identified are growing from year to year. However, there are still a few trends related to Mobile Banking, so researchers conduct research to strengthen understanding and insight in the banking industry.

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3. RESEARCH METHOD

This study uses a quantitative method while the analysis carried out by the researcher uses bibliometric analysis by collecting literature results obtained from the Scopus database (Febrianti, 2024). Article search using the Scopus database on AI and ML Applications in Industry Mobile Banking. The search was carried out using three keywords, namely "Artificial intelligence applications", "Machine Learning" and "Mobile Banking" accompanied by relevant terms and phrases such as the addition of the phrase OR, AND and the terms AI, ML, Banking and Finance. The results of the article search resulted in 283 publications related to research issues. Then, the data of articles, sources, authors, institutions, and countries was collected using the biblioshiny application. As for the network of occurrences, the most common keywords are found using VOS-Viewer analysis. Bibliometric analysis is used to describe articles, authors, institutions, and countries showing each of the 10 most relevant images (Moral-muñoz et al., 2020).

4. RESULTS AND DISCUSSION

Key Information

This section discusses the main information about the application of artificial intelligence and machine learning in the Mobile Banking service industry based on the Scopus database. This data is a source for categories in research such as the growth of research publications in various countries in the world by year, relevant authors in publications, the number of relevant publications by institution and the most relevant publication sources. Although it only uses a span of 5 years, it is only in 2023 that it will become the center of research development in this field. There are two types of documents used to display publication data regarding artificial intelligence (AI) and machine learning (ML) applications in the Mobile Banking service industry, namely articles and conference papers, article document types with 107 documents and conference paper document types with 176 documents.

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Table 1: Data Information

Description	Result
KEY INFORMATION ABOUT DATA	
Time Range	2018:2024
Sources (Journals, Books, etc)	212
Document	283
Annual Growth Rate %	49.45
Average Age of Documents	1.64
Average citations per document	12.84
Reference	9541
CONTENTS OF THE DOCUMENT	
Keywords Plus (ID)	2143
Author Keywords (DE)	883
WRITER	
Writer	988
Single-authored document author	26
AUTHOR COLLABORATION	
Single-written documents	26
Co-Authors per Doc	3.64
International co-authors %	18.73
DOCUMENT TYPES	
Article	107
Conference Paper	176

Sources: Biblioshiny (2024)

Growth in the number of Articles per year

The results of the literature search using the Scopus database with three keywords "artificial intelligence applications OR AI", "machine learning OR ML" and "Mobile Banking OR banking OR finance" resulted in 283 documents. The document was published from 2018 to 2024. These documents are sourced from the type of document articles and conference papers. Graph 1 shows the growth of the number of articles per year.

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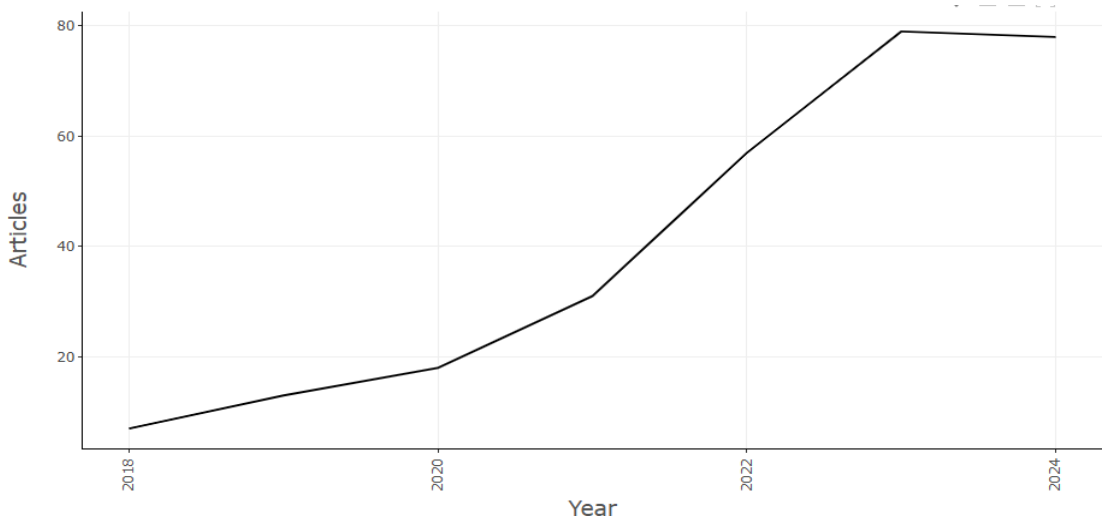

Figure 1: Growth in the number of articles per year
Sources: Biblioshiny (2024)

Based on Figure 1, the development of article production with the theme of artificial intelligence (AI) and machine learning (ML) applications in the Mobile Banking industry tends to increase from year to year. In the 2018-2020 period, articles slowly increased but consistently, meaning that researchers slowly built a more solid scientific network until in 2020-2023, there was a significant surge in the production of research articles in the field of technology that discusses Machine Learning and service in use Mobile Banking. So that This happened in 2023, which is the highest peak. The number of article publications according to the 5-year period was 79 articles, of which all the articles were sourced from 72 publications that were dominated by one source, namely *"Lecture Notes In Networks And System"* which consists of 4 articles. However, in 2024, there will be an increase with the number of 12 articles on the dominant source. However, the number of publication sources has also decreased from 72 to 56 sources. That way, the total number of article publications in 2024 is 78 articles, with a discussion of education technology and access to information to reflect commitment and collaboration in knowledge (Hidayat & Rizqi, 2020).

Relevant Resources

Based on the results of data analysis using Biblioshiny, there are ten most relevant sources for AI and ML themes in the industry of Mobile Banking, shown in Figure 2.

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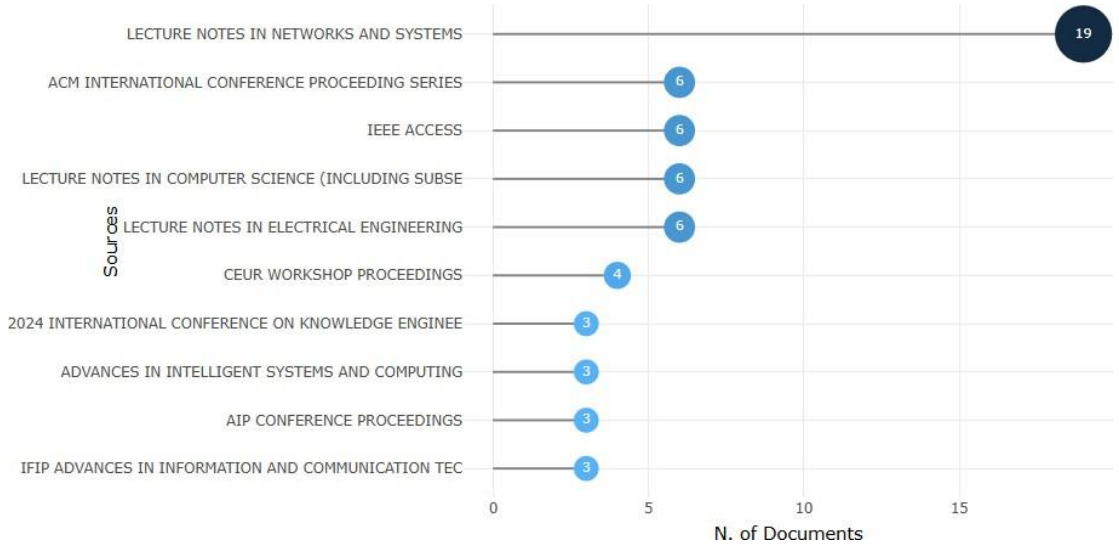

Figure 2: Most Relevant Resources
Sources: Biblioshiny (2024)

Figure 2 explains that the first of the ten most relevant sources in the research publications of artificial intelligence (AI) and machine learning (ML) applications in the industry of Mobile Banking is Lecture Notes in Networks and Systems, with a total of 19 articles, This source includes a wide range of research in network and communication systems, and this is evident from the contributions of the most authors who use the it is Kumar and his colleagues who show a significant focus of research on learning the use of ML Techniques in the world of banking and finance (Salmah & Murti, 2020). Of course, this also applies to other sources, which cover the fields of information technology, machine learning, artificial intelligence, and computer science. Apparently, the source that ranked first reached its peak of production in 2024, so, this number is included in the most sources among the 212 publication sources that can be identified in the study. Because it is also known that there is a relationship with the development of the production of the number of articles per year, where, related sources are indeed superior in article production in 2024.

By including relevant sources in the study, it is possible to find out how many publications there are and the significant impact of the credibility and relevance of the topic on each source. One benefit arises from having access to the latest research trends, increasing the validity of research, and spreading knowledge more widely so that it can be accessed by the global scientific community.

Most Relevant Authors

Based on the results of bibliometric analysis using biblioshiny, there are 988 authors in the publications identified in this study and the number of articles written by a single author is 26 articles. Graph 3 shows the ten most relevant authors for related themes.

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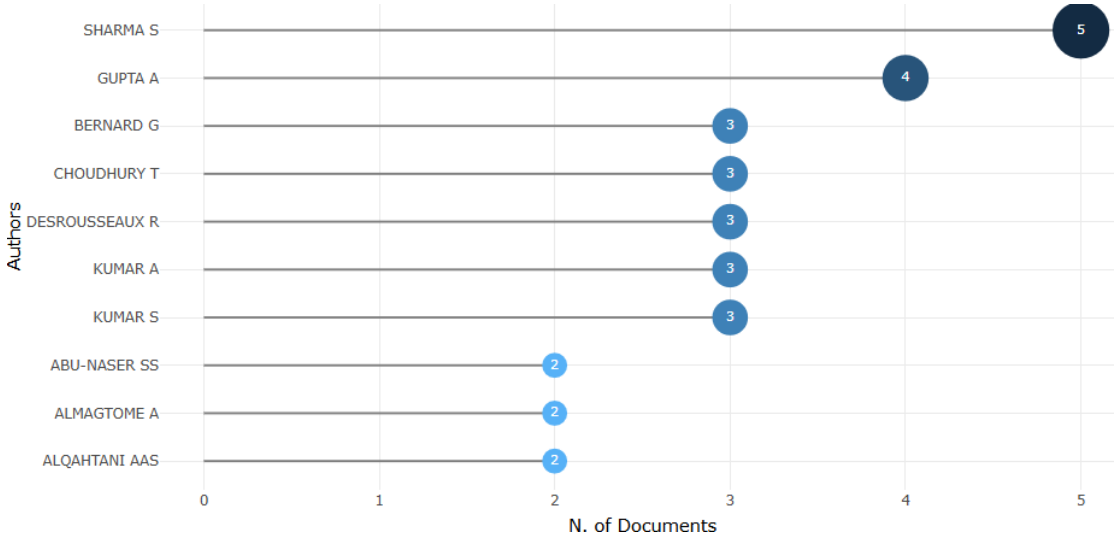

Figure 3: Most Relevant Authors
Sources: Biblioshiny (2024)

Figure 3 shows the most relevant authors, where the researcher took the 10 most relevant authors. In the first place is occupied by Sharma S with the acquisition of 5 articles published in 5 publication sources with 1 article each on related publication sources. This is also influenced because Sharma S is known in his research as the main author, so he is able to identify research topics and able to integrate research findings into a complete and persuasive narrative (Fadhilasari et al., 2022). In addition, Sharma S is also a researcher in artificial intelligence and often conducts interesting research in the field of science (Fahimirad & Kotamjani, 2018).

While for the second place is occupied by Gupta A, and followed by other co-authors, this happens because not all members of the research team prioritize scientific publications, some may focus on data collection, experiments and administration so that their contributions are not reflected in the number of publications (Ubwarin et al., 2021).

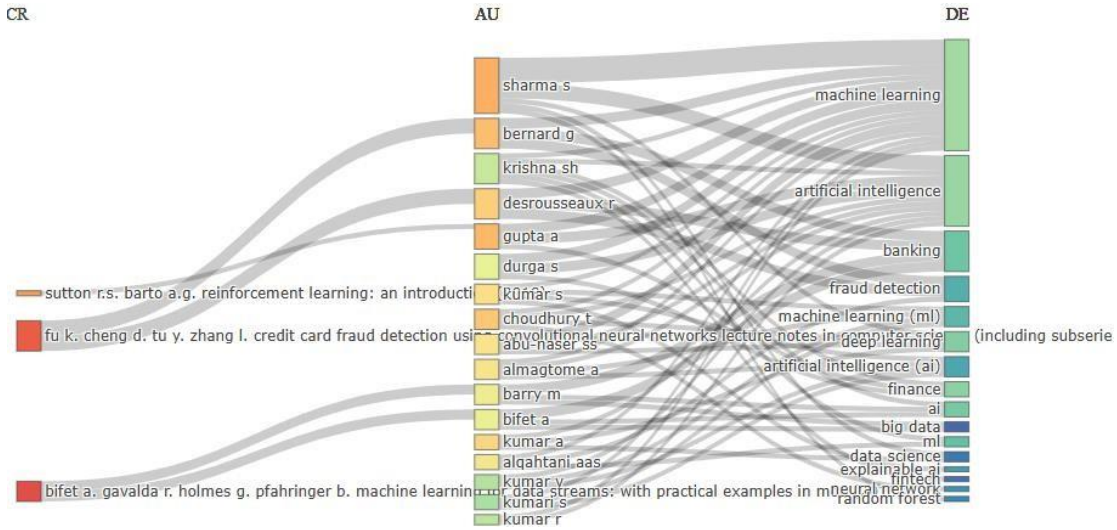

Figure 4: Three Field Plot
Sources: Biblioshiny (2024)

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It can be seen in Figure 1 that the article written by Sharma S uses the most keywords about "*Machine Learning*", Where in several articles, he writes about the application of machine learning techniques in banking risk management, including operational risk and liquidity. In his research, he found that there are still many areas in banking risk management that have not been adequately explored and can benefit significantly from the application of machine learning, as well as discussing the adoption model of Mobile Banking services that are governed by the use of machine learning technology and artificial intelligence (Leo et al., 2019). This is done for the knowledge of information from an image, although there are still few who discuss the trend of AI and ML research themes in Mobile Banking. This image only shows keywords used by researchers related to previous research to become topics and trends as well as future directions.

Most Relevant Institutions

Based on the results of data analysis using bibliometrics, there are ten relevant affiliations/institutions regarding the related research theme in Figure 5.

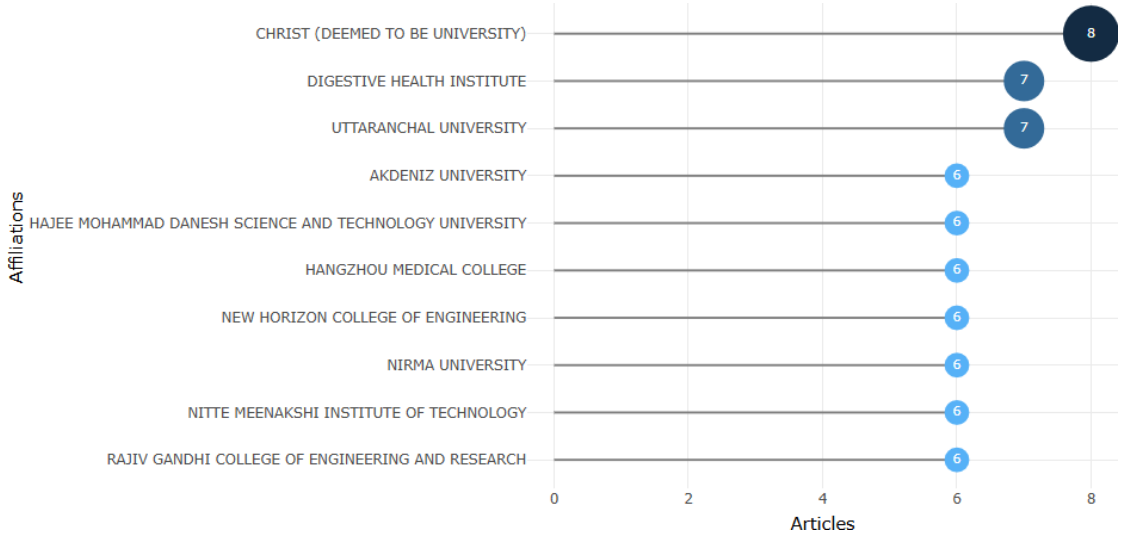

Figure 5: Most relevant Institutions
Sources: Biblioshiny (2024)

Figure 5 explains that of the ten most relevant institutions/organizations in the study, there is one institution that stands out the most, namely *Christ* (*Deemed To Be University*), with a fairly high number of article publications. In addition, it turns out that Christ is a university from India that was previously called *Christ College*, this is known from the source of *the Christ University website*. Of course, this institution is very significant with the category of national scientific production, so it is appropriate that India is dubbed as the country with the highest frequency of scientific publication contributions. The institutions that specialize in the health sector appear in the most relevant graphs because researchers use AI and ML keywords in searching for data, so that their research is also identified, but researchers only research on first-ranked institutions.

The comparison of superior institutions with other institutions can be influenced because each institution may have different networks and research fields, as well as the lack of cooperation at the international level (Zen, 2019).

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State Scientific Production

The researcher also discusses ten countries that contribute to scientific publications on artificial intelligence and machine learning in industry *Mobile Banking*, based on data obtained by researchers, found that INDIA country ranks first with 409 frequencies of scientific publications related to research, this is reviewed from the country's production every year and occurs in 2024. and then followed by the USA with 99 frequencies. Meanwhile, the tenth place is occupied by the state of INDONESIA with the acquisition of 14 frequencies. It is known that 9 out of 10 countries that contribute to scientific publications, if combined with the number of frequencies, have not been able to exceed the number of frequencies owned by the INDIAN country, which can be seen in Table 2.

Table 2: State Scientific Production

Country	Frequency
INDIA	409
USA	99
UK	52
CHINA	40
AUSTRALIA	37
FRANCE	23
SAUDI ARABIA	22
MALAYSIA	19
BANGLADESH	14
INDONESIA	14

Sources: Biblioshiny (2024)

Overall, this illustrates the inequality of contribution distribution between countries, where some countries, especially India, hold the dominant portion, while other countries have a more evenly distributed distribution but with lower numbers, so there is a significant variation in representation or activity among these countries. Moreover, India is known for its vast number of Engineering, Scientists and AI research and is the fourth-largest producer of AI-related scientific papers since 2020. This factor adds to India's innovation ecosystem to become one of the world's leading research centers (Chahal et al., 2021).

In addition, in India, many researchers discuss AI and ML in the banking industry that focuses on using features of *chatbots* for customer service automation, and then focuses on fraud detection and customer segmentation. Banks in India are working with fintech startups to improve customer experience, reduce costs and improve operational efficiency (Radhika K, 2024).

So it is very relevant and natural, why in this contribution to scientific publicity, India is the country with the greatest frequency among other countries. It is also interrelated with the Institutions identified by the researcher that the category is indeed of Indian origin.

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Keyword Event Network

In the analysis of the keyword occurrence network, the researcher used the V0S-Viewer analysis shown in Figure 6. In the figure, the network of events contained in the topic of AI and ML in the *Mobile Banking* industry occurs in 6 interconnected clusters. Cluster 1 is marked in red, and it includes *artificial intelligence, AI learning, AI methods, banking sectors, blockchain, chatbots, and machine learning*. Furthermore, cluster 2 is marked in green covering *finance*, *financial transactions* and *customer experience*, then cluster 3 is marked in dark blue, which includes AI *technology*, *financial sector and system*. Then, in cluster 4 it is marked in yellow, which includes bibliometric analysis and *finance industry*, while in cluster 5 it is marked purple, which only includes machine learning and the last in cluster 6 it is marked in light blue, which covers *the banking industry*.

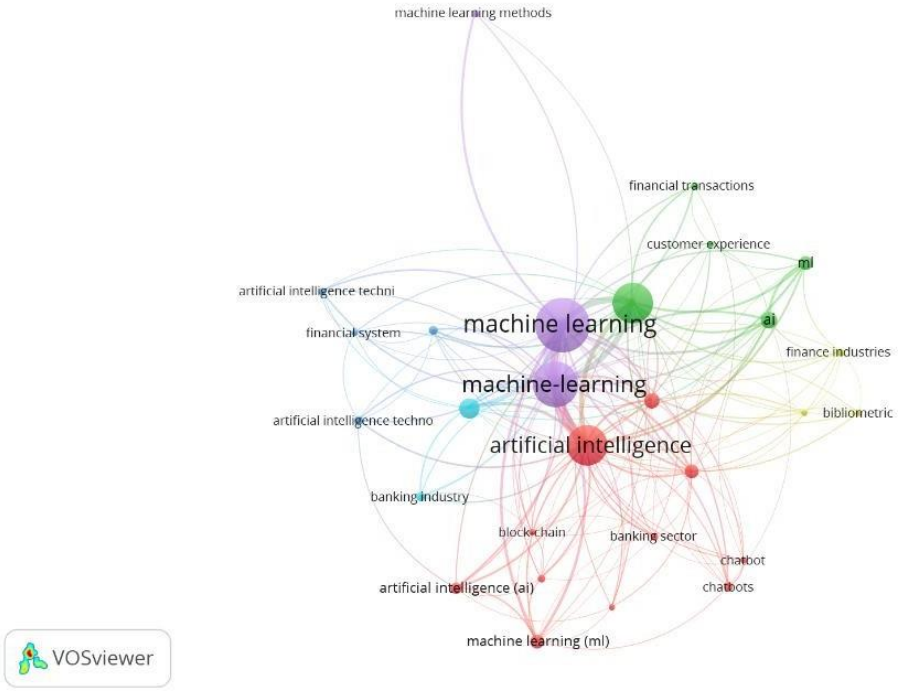

Figure 6: Keyword Event Network
Sources: Biblioshiny (2024)

In the event network, it can be displayed that keyword events that are often encountered and interconnected with other networks, namely clusters 1 and 5, include *artificial intelligence* and *machine learning*.

5. CONCLUSIONS, IMPLICATIONS, SUGGESTIONS AND LIMITATIONS OF THE RESEARCH

This research shows that the application of AI and ML in the Mobile Banking industry has experienced rapid development in recent years, using Bibliometric Analysis with data collection obtained through the Scopus database with keywords related to AI, ML and Mobile Banking, documents obtained as many as 283 publications using the period from 2018 to 2024, where in the development of the number of articles per year there has been a decrease and increase. The findings suggest that technological developments are a temporary trend, and part of a broader digital transformation. Therefore, academics and practitioners need to continue to explore the application of

more advanced AI to improve the efficiency of banking services.

Meanwhile, the results of the research literature review show indications that AI has a significant impact and has been widely used in digital banking business models, especially in transaction security, service personalization and customer service automation. The method used in this study is Bibliometric analysis with a coercive approach, which is carried out using the Biblioshiny data processing program and the VOS-Viewer application. Bibliometric analysis with Biblioshiny is used to describe the number of articles per year, sources, authors, institutions and countries shown with each of the 10 most relevant images. Moreover, the VOS-Viewer application is used to describe a network of keyword events that are often encountered or interconnected in scientific publications. Based on bibliometric analysis with biblioshiny, it shows that the most publications occurred in 2023, where the most relevant source results are *Lecture Notes in Network and System*, with the most prolific author contributing being Sharma S, while *Crist* (*Deemed To Be University*) became the most active institution in this research and scientific publications were dominated by the state India, US and UK. Meanwhile, academic institutions and universities in other countries, including Indonesia, must increase participation in research related to AI and ML in the banking sector. Results of bibliometric analysis with the VOS-Viewer application with *Co-occurrence* show that the network of keyword occurrences often encountered and interconnected is *Artificial Intelligence* and *Machine Learning*. There is a significant relationship among all research categories, such as the development of articles per year related to relevant sources and institutions, which are also related to state scientific production.

This research can provide opportunities and an overview for a more in-depth and comprehensive follow-up study of current research trends. Some topics that need to be explored further are service personalization, the impact of AI on customer satisfaction and the development of better security system optimization based on AI and ML in Mobile Banking services.

REFERENCES

Amelia, I., Azzahra, Y. N., Abda, A., & Azmi, Z. (2024). Pemanfaatan Artificial Intelligence Dalam Akuntansi: Kajian Literatur Review. *Akuntansi*, *3*(1), 129–140. https://doi.org/10.55606/AKUNTANSI.V3I1.1472

Bukar, U. A., Sayeed, M. S., Razak, S. F. A., Yogarayan, S., Amodu, O. A., & Mahmood, R. A. R. (2023). A Method For Analyzing Text Using VOSviewer. *MethodsX*, *11*, 102339. https://doi.org/10.1016/j.mex.2023.102339

Chahal, H., Abdulla, S., Murdick, J., & Rahkovsky, I. (2021). *Mapping India's AI Potential*. https://doi.org/10.51593/20200096

Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How Artificial Intelligence Will Change The Future of Marketing. *Journal of the Academy of Marketing Science*, *48*(1), 24–42. https://doi.org/10.1007/s11747-019-00696-0

Fadhilasari, S., Fadhilasari, I., Septiyani, R. E., Sunan, N., & Surabaya, A. (2022). Penerapan Model Pembelajaran Kooperatif Tipe Stad Dalam Meningkatkan Kemampuan Menulis Karya Ilmiah Di Masa Pandemi Covid-19. *Jurnal Edukasi Khatulistiwa : Pembelajaran Bahasa Dan Sastra Indonesia*, *5*(1), 1–11. https://doi.org/10.26418/EKHA.V5I1.53287

Fahimirad, M., & Kotamjani, S. S. (2018). A Review on Application of Artificial Intelligence in Teaching and Learning in Educational Contexts. *International*

Journal of Learning and Development, *8*(4), 106–118. https://doi.org/10.5296/IJLD.V8I4.14057

Ganis Sanhaji, K., & Irsyaad Hizbullah, A. (2024). Pemanfaatan Artificial Intelligence Dalam Bidang Kesehatan. *EDUSAINTEK: Jurnal Pendidikan, Sains Dan Teknologi*, *11*(1), 234–242. https://doi.org/10.47668/EDUSAINTEK.V11I1.999

Guerra, P., & Castelli, M. (2021). Machine Learning Applied To Banking Supervision A Literature Review. *Risks*, *9*(7), 1–24. https://doi.org/10.3390/risks9070136

Hidayat, E. Y., & Rizqi, M. A. (2020). Klasifikasi Dokumen Berita Menggunakan Algoritma Enhanced Confix Stripping Stemmer dan NaÃ¯ve Bayes Classifier. *Jurnal Nasional Teknologi Dan Sistem Informasi*, *6*(2), 90–99. https://doi.org/10.25077/TEKNOSI.V6I2.2020.90-99

Kalyani, S., & Gupta, N. (2023). Is Artificial Intelligence And Machine Learning Changing The Ways Of Banking: A Systematic Literature Review And Meta Analysis. *Discover Artificial Intelligence*, *3*(1). https://doi.org/10.1007/s44163-023-00094-0

Karlina, U. dan. (2022). Analisis Bibliometrik: Perkembangan Penelitian Dan Publikasi Mengenai Koordinasi Program Menggunakan Vosviewer. *Jurnal Pustaka Budaya*, *9*(1), 1–8. https://doi.org/10.31849/pb.v9i1.8599

Leo, M., Sharma, S., & Maddulety, K. (2019). Machine Learning in Banking Risk Management: A Literature Review. *Risks 2019, Vol. 7, Page 29*, *7*(1), 29. https://doi.org/10.3390/RISKS7010029

M. Wahyu Ayatullah, & M. Ruslianor Maika. (2022). Analisis Bibliometrik Perkembangan Fashion Muslim: Publikasi Ilmiah Di Negara-Negara Dunia. *Syarikat: Jurnal Rumpun Ekonomi Syariah*, *5*(1), 155–170. https://doi.org/10.25299/syarikat.2022.vol5(1).9432

Manser Payne, E., & Peltier, E. a. (2018). Mobile Banking And AI-Enabled Mobile Banking: The Differential Effects Of Technological And Non-Technological Factors On Digital Natives' Perceptions And Behavior. *Journal of Research in Interactive Marketing*, *12*(3), 328–346. https://doi.org/10.1108/JRIM-07-2018-0087

Mehndiratta, N., Arora, G., & Bathla, R. (2023). The use of Artificial Intelligence in the Banking Industry. *2023 International Conference on Recent Advances in Electrical, Electronics and Digital Healthcare Technologies, REEDCON 2023*, *03*(07), 588–591. https://doi.org/10.1109/REEDCON57544.2023.10150681

Moral-muñoz, J. A., Herrera-viedma, E., Santisteban-espejo, A., Cobo, M. J., Herrera-viedma, E., Santisteban-espejo, A., & Cobo, M. J. (2020). Bibliometric in science. *El Profesional de La Informa- Ción*, *29*, 1–20.

Plateaux, A., Lacharme, P., Jøsang, A., & Rosenberger, C. (2014). One-time Biometrics For Online Banking And Electronic Payment Authentication. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, *8708*, 179–193. https://doi.org/10.1007/978-3-319-10975-6_14

Radhika K, S. R. G. (2024). Artificial Intelligence In Indian Banking Sector: An Overview. *MSNIM Management Review*, *2*(2).

Raúl, J. V., Laberiano, A. A., Pedro, M. V., & Cesar, Y. A. (2024). Financial Revolution: A Systemic Analysis Of Artificial Intelligence And Machine Learning In The Banking Sector. *International Journal of Electrical and Computer Engineering*, *14*(1), 1079–1090.

https://doi.org/10.11591/ijece.v14i1.pp1079-1090

Raup, A., Ridwan, W., Khoeriyah, Y., Supiana, S., & Zaqiah, Q. Y. (2022). Deep Learning dan Penerapannya dalam Pembelajaran. *JIIP - Jurnal Ilmiah Ilmu Pendidikan*, *5*(9), 3258–3267. https://doi.org/10.54371/jiip.v5i9.805

Ris, K., Stankovic, Z., Avramovic, Z., Ris, K., Stankovic, Z., & Avramovic, Z. (2020). Implications of Implementation of Artificial Intelligence in the Banking Business with Correlation to the Human Factor. *Journal of Computer and Communications*, *8*(11), 130–144. https://doi.org/10.4236/JCC.2020.811010

S. Karthigad, V. S. D. C. P. D. D. S. G. N. N. (2021). Banking Chatbot (B-Bot. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, *12*(10), 5795–5804. https://doi.org/10.17762/turcomat.v12i10.5394

Salmah, S., & Murti, A. (2020). Dampak Digitalisasi Terhadap Peran Front Office Dalam Bisnis Perbankan. *JIMFE (Jurnal Ilmiah Manajemen Fakultas Ekonomi)*, *6*(2), 145–156. https://doi.org/10.34203/JIMFE.V6I2.2055

Salunkhe, R. T. (2019). Role of Artificial Intelligence in Providing Customer Services with Special Reference to SBI and HDFC Bank. *International Journal of Recent Technology and Engineering (IJRTE)*, *8*(4), 12251–12260. https://doi.org/10.35940/IJRTE.C6065.118419

Sukma Febrianti. (2024). Sustainability Finance Dan Green Investment: Literature Review Dengan Metode Prisma. *Manajemen : Jurnal Ekonomi*, *6*(1), 95–106. https://doi.org/10.36985/manajemen.v6i1.1151

Susanti, M., & Reza, H. K. (2022). A Bibliometric and Visualized Analysis of Mobile Banking Research Using VOSviewer. *East Asian Journal of Multidisciplinary Research*, *1*(10), 2377–2388. https://doi.org/10.55927/eajmr.v1i10.1947

Ubwarin, E., Hattu, J., Leasa, E. Z., Corputty, P., & Leatemia, W. (2021). Pelatihan Penulisan Jurnal Ilmiah Di Sekolah Tinggi Ilmu-Ilmu Sosial (STIS) TUAL. *Community Development Journal : Jurnal Pengabdian Masyarakat*, *2*(2), 317–319. https://doi.org/10.31004/CDJ.V2I2.1744

Zen, Z. (2019). Inovasi Pendidikan Berbasis Teknologi Informasi : Menuju Pendidikan Masa Depan. *E-Tech : Jurnal Ilmiah Teknologi Pendidikan*, *6*(2). https://doi.org/10.24036/ET.V2I2.101346