

Islamic Bank Efficiency: Research Path from Scopus Database

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The purpose of this study is to see the development of Islamic bank efficiency research around the world published by journals on the theme. This research uses a qualitative method with a bibliometric analysis approach. The data used is secondary data with the theme of Islamic bank efficiency from the Scopus database from 2003-2023, with a total of 449 journal articles. Then, the data is processed and analyzed using the VosViewer application with the aim of knowing the bibliometric map of Islamic bank efficiency research development in the world. The results of the study found four clusters related to the efficiency of Islamic banks, including the calculation of Islamic bank performance, comparison of conventional and Islamic bank efficiency, Islamic bank efficiency, and determinants of Islamic bank performance. The authors with the most published articles are Fakarudin Kamarudin, Fadzlan Sufian, and M. Kabir Hasan. The three keywords that appear the most are efficiency, Islamic banks, and risk. The author affiliation, namely the university with the most publications, is dominated by universities from Malaysia. Three of them are International Islamic University Malaysia, Universiti Putra Malaysia, and University of Malaya. And the countries with the most publications related to related studies are Malaysia and Indonesia.

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INTRODUCTION

Efficiency is a financial concept that evaluates the extent to which invested inputs can produce outputs (Belanes et al., 2015). The measurement of efficiency level was first developed by Farrel (1957). Technical and allocative efficiency are criteria used to measure the efficiency performance of a business. Technical efficiency is measured through the ratio of outputs to inputs, while allocation efficiency is measured by considering the ability of a business to utilize production technology and pricing systems to achieve input maximization. An efficient business can produce more output per unit of input compared to its competitors. According to Hosen & Warninda (2014) the ability to produce maximum output with currently available inputs is a measure of expected performance. Then, Archer (2010) revealed that efficiency measures the extent of time, energy, and expertise spent. In this case, a production process can technically be said to be efficient if it produces as much output as possible with the amount of input it uses (Jatmiko, 2017).

Banks, like any other business, must consistently improve their operational efficiency. This is because customers will prefer more efficient banks as they incur less transaction costs than inefficient banks. Banks with a high level of efficiency are more likely to have the trust of customers to obtain favorable outcomes. Hence, there is a clear urgency for authorities and banks to maintain their efficiency. Therefore, in improving efficiency, there are several ways that can be applied by a business entity, especially banks, including increasing concentration and profitability (Hartarska et al., 2013) and increasing the number of loans (Bos and Millone, 2015).

Furthermore, the Islamic financial economy is currently on the rise, both in developing and developed countries. The financial industry and other forms of Islamic economic institutions are developing around the world, from the Middle East, Asia to Western countries such as the UK (Rusydiana et al., 2021). This is evident from the data from the State The Global Islamic Economy Report 2022 states that Islamic financial assets are valued at US\$3.6 trillion in 2021 and are expected to grow by 8.0% in 2022 to reach US\$4.9 trillion in 2025 with a 4-year CAGR of 7.9%.

Islamic banks, as one of the Islamic financial institutions, function to provide convenience for investment or buying and selling activities, as well as providing savings / banking services for customers in the real sector (Haq, 2015). Islamic banks can play an

important role in optimizing the economic prosperity of the community through banking, financing, and investment activities in accordance with Sharia principles. Therefore, efforts are needed to improve the performance of Islamic Banks more effectively and efficiently. However, the emergence of the Covid-19 pandemic, which began to spread massively at the end of 2019, was able to provide severe shocks not only in the social or health sectors, but also penetrated into the financial sector, especially the banking industry (Nicola et al., 2020).

The Covid-19 pandemic has had a worrying effect on the sustainability of the banking industry, which has also resulted in the instability of the financial sector and the national economy (Ningsih and Mahfudz, 2020). The financial sector plays an important role in real economic growth, both on a national and global scale (Abduh & Chowdhury, 2012; Grassa & Gazdar, 2014). Siringoringo (2007) explains that in macroeconomics, banking is a tool for setting monetary policy, and in microeconomics through the intermediation function, especially in lending, banks are the main source of financing for both individuals and companies. For this reason, along with continuing operational activities, Islamic Banks in particular must maintain the efficiency of operating costs that have been incurred for the efforts made to obtain their income (Haq, 2015).

There have been many studies related to the efficiency analysis of Islamic banks. However, research is also needed that describes the mapping of Islamic bank efficiency research. One of them is a study conducted by Ikra et al (2021), which conducted a bibliometric analysis of the efficiency of Islamic banks. The mapping of efficiency research on Islamic banks is very important to see the concept of a research framework for other researchers who will study the efficiency of Islamic banks. This research will try to map the efficiency research of Islamic banks using bibliometrics. Some problem formulations in this study include, first, how is the composition of research related to the efficiency of Islamic banking in general. Second, who are the authors, institutions and countries that write and publish the most journal articles related to the efficiency of Islamic banks. Third, how is the research development map seen from the keywords each year related to the efficiency of Islamic banks in the world.

PREVIOUS STUDY

The main difference between Islamic banks and conventional banks is that conventional bank operations are based on interest while Islamic banks follow the

principle of interest-free financing, which is in accordance with Islamic Sharia (Ikra et al., 2021). Currently, the growth of Islamic banks has increased significantly, because Islamic units offer separate Islamic banking products (Ramly & Hakim, 2017). Ramly & Hakim (2017) explain that in the development of the banking industry, competition is one of the important factors that must be considered. Competition not only occurs between Islamic banks and conventional banks, but also among Islamic banks themselves.

The efficiency of Islamic banks is the center of attention among managers, stakeholders, and policymakers with the production process of Islamic banks being more cost-effective and profitable than conventional banks due to lower funding costs and loan loss rates (Alam et al., 2019). According to Roghanian et al (2012) increased cost efficiency means achieving higher profits and increasing the chances of surviving in a competitive market where efficiency helps policy makers formulate future policies that affect the banking industry. Furthermore, Shamshur & Weill (2019) defined bank efficiency as the bank's ability to operate at lower costs related to lower lending or financing rates.

The concept of efficiency in microeconomics comes from producer theory which aims to achieve profit maximization or cost minimization from the producer's perspective (Rusydiana, 2018). In the producer theory, there is a production frontier curve that describes the relationship between input and output of the production process. The curve represents the maximum level of output that can be achieved from any use of inputs that represent the technology used by a company or industry (Ascarya & Yumanita, 2007). Furthermore, overall efficiency in banking can be in the form of; scale efficiency, where the bank experiences efficiency in a constant scale of results, scope efficiency, where scope efficiency can be achieved if the bank can operate in a diversified location, allocative efficiency, where the bank can achieve efficiency when the bank can produce various outputs that can maximize profits and finally technical efficiency, where this efficiency usually expresses the relationship between inputs and outputs in a production (Rusydiana, 2018).

Several empirical studies have conducted many studies related to the efficiency of Islamic banks, including Beck et al. (2013) examined the business model, efficiency and stability of Islamic and conventional banks. The results found that Islamic banks have lower cost efficiency compared to conventional banks. However, Islamic banks have better asset quality and capitalization intermediation ratios. The

better asset quality and capitalization possessed by Islamic banks cause the banks to be more resilient to the crisis and have a smaller probability of disintermediation during the crisis.

Rosman et al. (2014) analyzed the efficiency of Islamic banks in the Middle East and Asia during the crisis. The results concluded that Islamic banks were able to survive during the crisis even though most of the banks experienced inefficiency. The main factors that influence the inefficiency are the level of profitability and capital. Similar research was conducted by Sufian & Akbar Noor Mohamad Noor (2009) analyzing the determinants of changes in the efficiency of Islamic banks in MENA and Asian banking sectors. The results of his research stated that Islamic banks in MENA countries showed higher efficiency than Islamic banks in Asia. Furthermore, efficiency has a positive relationship with loan intensity, size, capitalization, and profitability. Higher bank efficiency is exhibited by banks with smaller market shares and low non-performing loan ratios.

Then, Mokhtar et al. (2008) analyzed the efficiency and competition of Islamic banking in Malaysia. The results explained that on average, most Islamic banks experienced an increase in efficiency during the study period. Although the efficiency level of Islamic commercial banks is higher than Islamic business units, the efficiency level is still below conventional banks. And Safiullah & Shamsuddin, (2019) studied the risk-adjusted efficiency and corporate governance of Islamic banks and conventional banks. Their research found that Islamic banks have higher cost efficiency, while lower revenue efficiency on a risk-adjusted basis. The greater the risk of the bank it can reduce cost efficiency but can increase revenue efficiency. In addition, the presence of a stronger sharia supervisory board also increases the efficiency of Islamic banks.

Furthermore, another empirical study relevant to this research is Rusydiana et al (2018) who analyzed the development of DEA efficiency research of Islamic banks. The results of his research found that the number of publications of Islamic Bank DEA application research results from 2004-2019 experienced a significant increase and most were published in the International Journal of Islamic and Middle Eastern Finance and Management. Network visualization shows that the DEA Islamic Bank application research development map is divided into 4 clusters. The author who published the most research results on the DEA application of Islamic Banks was Fakhruddin Kamarudin. In addition, the largest contributor to the publication of

research results on DEA Islamic Bank is the Faculty of Economics and Management, Universiti Putra Malaysia.

Then, Ikra et al (2021) explained the bibliometrics of Islamic bank efficiency literature. The results found that the growth of Islamic banking efficiency literature began to increase since 2008 with an annual growth rate of 12.5%. The results of science mapping (i.e. cocitation network, bibliometric merging and co-authorship network) reveal that there are three underlying research streams of Islamic banking efficiency literature: growth of Islamic banking efficiency literature, stability and authenticity of Islamic banking operations and methods in Islamic banking efficiency literature.

And research from Shah et al (2021) examines bibliometric literature related to efficiency in Islamic banks. This study uses 99 articles published between 2002 and 2019 taken from ISI Web of Science and Scopus contributed by leading authors, journals, and regulatory agencies. The results of his research concluded a mapping of empirical studies namely the effect of variable choice, changes in variable choice, differences in the application of the law of return in various global locations, organizational size, efficiency during the crisis, the cost of Sharia compliance, a

framework for analyzing the efficiency of Islamic banks and the effect of supervision.

METHODOLOGY

The method used in this research is a mixed method, which is a combination of quantitative and qualitative methods. Quantitative method is used in bibliometric analysis, while qualitative method is used in literature study. This study uses secondary data with the theme of Islamic bank efficiency from the Scopus database 2003-2023 obtained from the official Scopus website. The data used came from the search keyword "Islamic bank efficiency" with a total of 449 articles accessed on January 9, 2023. This study adopts the method used by Kumar et al. (2020) which uses the literature study method and bibliometric analysis in its study. In this study, VOS Viewer software was used as a quantitative analysis tool. While literature studies are used to analyze the results of previous research.

RESULT AND DISCUSSION

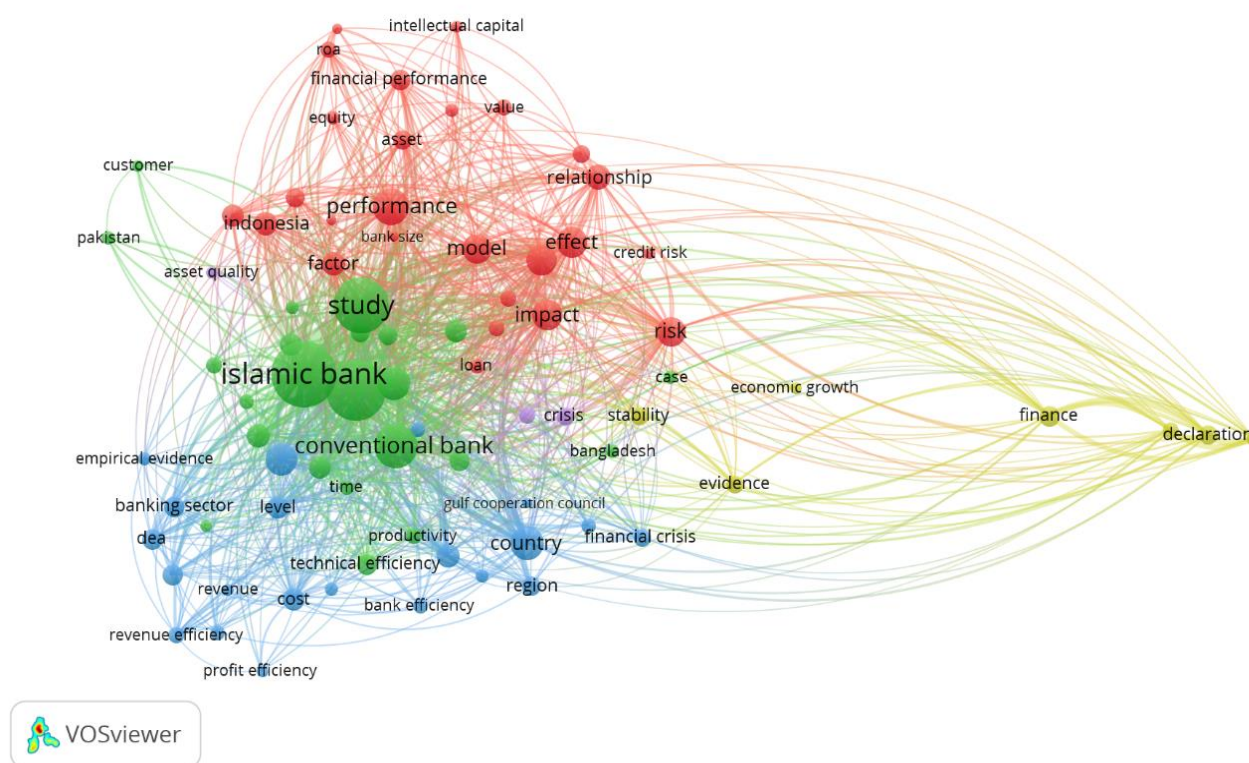


Figure 1. Research Cluster

Table 1. Research Pathway b based on VOS Viewer output

Clusters	Word extraction	Sub-themes
1-Red (29 items)	Asset, Bahrain, Bank Performances, Capital, Credit Risk, Crisis, Development, Economy, Effect, Equity, Factor, Financial Performance, Impact, Indonesia, Intellectual Capital, Liquidity, Loan, Model, Performance, Profitability, Relationship, Research, Return, Risk, ROA, ROE, Size, Variable Value, Variable	Measure of Islamic bank performance
2-Green (24 items)	Analysis, Asset Quality, Bangladesh, Case, Commercial Bank, Comparison, Conventional Bank, Customer, Difference, Efficiency, Islamic Bank, Islamic Banking, Knowledge, Literature, Malaysia, Originality Value, Pakistan, Practical Implication, Productivity, Scale, Study, Technical Efficiency, Term	Comparison of conventional and Islamic banks
3-Blue (17 items)	Addition, Bank Efficiency, Banking Sector, Cost, Cost Efficiency, Country, Data Envelopment Analysis, DEA, Determinant, Efficiency Level, Empirical Evidence, Profit, Profit Efficiency, Revenue, Revenue Efficiency, Sample	Islamic bank efficiency
4-Yellow (9 items)	Declaration, Economic Growth, Economics, Evidence, Finance, Interest, Interest Statement, Org, Quarterly Review	Determinants of bank performance

Research path 1: Measure of Islamic bank performance

Cluster 1 discusses the performance of Islamic banks which is influenced by various internal and external factors of the bank itself. [Platonova et al., \(2018\)](#) examined the relationship between CSR and Islamic bank performance in the GCC by finding that the financial performance of Islamic banks can improve with the disclosure of CSR activities. CSR disclosure has a long-term impact on the performance of Islamic banks.

[Frag et al. \(2018\)](#) stated that the financial performance of Islamic banks will increase with the increasing size of the sharia supervisory board (DPS). Even interestingly, a larger DPS size results in lower agency costs and when contracts are increasingly restricted it will increase agency costs.

[Nawaz & Haniffa, \(2017\)](#) discussed the effect of intellectual capital. In their research it was found that the additional value of intellectual capital has a positive effect on accounting performance where accounting kinea has a positive influence on the efficient use of capital and human capital.

[Ghayad, \(2008\)](#) stated that the performance of Islamic banks is not only influenced by internal factors of Islamic banks from quantity variables such as financial ratios alone but also qualitative variables such

as bank managerial. Islamic banks should have qualifications in the field of trade and finance to ensure better quality of supervision and consultation.

[Nawaz \(2019\)](#) found that Islamic banks and banks with Islamic principles invest more in human capital. Investment in human capital has a significant positive impact on market value in the period before and after the financial crisis.

Based on these findings, it is concluded that the measure of Islamic bank performance can be seen from the quantitative side but also qualitative. CSR disclosure, the presence of DPS, bank managerial, and investment in human resources also affect the performance of Islamic banks.

Research path 2: Comparison of conventional and Islamic banks

Cluster 2 discusses the comparison of the performance of Islamic banks and conventional banks. [Beck et al. \(2013\)](#) found that Islamic banks have lower cost efficiency but better asset quality and capitalization intermediation ratios. With better asset quality and capitalization, Islamic banks are more resilient to the crisis and have less likelihood of disintermediation during the crisis.

[Johnes et al. \(2014\)](#) stated that Islamic banks and conventional banks have balanced gross efficiency

figures, higher in type efficiency, and lower in other types of efficiency. The low efficiency of Islamic banks is related to the lack of product standardization, while net efficiency reflects the higher managerial capabilities of Islamic banks.

Safiullah & Shamsuddin, (2019) found that Islamic banks are higher in cost efficiency but lower in revenue efficiency on a measured risk basis. The greater the bank risk, the lower the cost efficiency but the higher the revenue efficiency. The presence of a stronger Islamic supervisory board also improves the efficiency of Islamic banks.

Bitar et al. (2020) found that the limitations generated by sharia law can widen the efficiency gap between Islamic and conventional banks. Bank efficiency is also not only influenced by the level of capital and liquidity of the bank but this is still doubtful for Islamic banks. (Hardianto & Wulandari, 2016) (Hardianto & Wulandari, 2016) explained that Islamic banks have a higher intermediation ratio and proportion of fee income to operating income but lower efficiency.

Based on this explanation, it can be concluded that Islamic banks have a higher level of technical and cost efficiency than conventional banks. However, the level of revenue efficiency and allocative efficiency generated is still lower than conventional banks.

Research path 3: Islamic bank efficiency

Cluster 3 discusses the measurement and level of bank efficiency. Rosman et al. (2014) examined the efficiency of banks in the Middle East and Asia during the crisis. The results showed that Islamic banks were able to survive during the crisis although most of the banks experienced inefficiency. The main factors affecting the inefficiency are the level of profitability and capital.

Sufian & Akbar Noor Mohamad Noor (2009) stated that Islamic banks in MENA countries show higher efficiency than Islamic banks in Asia. Efficiency has a positive relationship with loan intensity, size, capitalization, and profitability. Higher bank efficiency is shown by banks with smaller market share and low non-performing loan ratio.

Mokhtar et al. (2008) explained that on average, most Islamic banks experienced an increase in efficiency during the study period. Although the efficiency level of Islamic commercial banks is higher than that of Islamic business units, it is still below that of conventional banks.

Wanke et al. (2016) found that variables related to cost structure have a negative impact on efficiency.

Equity savings in accordance with Islamic principles can help improve bank efficiency.

Kamarudin et al. (2019) discussed the efficiency of banks in Malaysia, where market forces, banks, liquidity, and management quality affect efficiency improvement. Cost and profit efficiencies are calculated and compared to identify their influence on bank profitability.

Based on the results of the research that has been done, the level of efficiency is closely related to the financial structure of the bank such as capital, loans, and profit levels. In addition, Islamic banks are able to survive in times of crisis and with Islamic financial principles, a higher level of efficiency can be produced.

Research path 4: Determinants of Islamic bank performance

Cluster 4 discusses external bank factors that affect the performance of a bank. Hussain et al. (2020) found that freedom of speech and accountability increase revenue efficiency in conventional and Islamic banks. Although political stability and the degree of non-violence and control of corruption showed a negative relationship. The implication of this study is that it is possible to identify governance-related issues that can significantly affect bank efficiency.

Sufian & Kamarudin (2015) examined the internal and external factors that affect the income efficiency of Islamic banks. The study found that bank size, asset quality, capital, quality and liquidity management significantly affected the efficiency of Islamic banks in Indonesia, Malaysia and Brunei during the study period.

Ben Khediri et al. (2009) found that capital and management efficiency increase bank profitability. Their results show that bank profitability is positively related to economic growth, inflation and bank concentration. The paper shows that Islamic bank profitability is higher in countries with better socio-economic conditions and a better legal system.

Harun et al. (2020) explained that the level of CSR in Islamic banks in the GCC countries is still very low with a negative influence on bank performance. Meanwhile, governance and firm value show a positive influence. Chowdhury & Rasid (2015) found that macroeconomic factors and inflation have a positive and significant effect on bank profitability, while GDP has no significant effect. Research by Eljelly (2013) found that macroeconomic variables have an insignificant effect on bank performance, while research by (Mezzi, 2018) found that macroeconomic factors have a positive and significant effect on bank profitability. (Mezzi, 2018)

shows that the ownership structure and the number of sharia boards have no significant effect.

Based on this research, it can be concluded that there are external factors that affect the performance of

Islamic banks including economic growth, inflation, to socio-economic conditions and the legal system that runs in a country.

Table 2. Summary of Bibliometric Information of Islamic Bank Efficiency

No.	Keywords	Author	Affiliation	Country
1.	Efficiency	Kamarudin F.	IIUM	Malaysia
2.	Islamic bank	Sufian F.	Universiti Putra Malaysia	Indonesia
3.	Risk	Hassan MK.	University of Malaya	United Kingdom
4.	Asset	Wanke P.	Universiti Kebangsaan Malaysia	Saudi Arabia
5.	Malaysia	Abdul-Majid M.	Universiti Teknologi MARA	Unied states
6.	Return	Nassir AM.	Sfax University	Tunisia
7.	Cost	Azad MAK.	Universiti Utara Malaysia	Pakistan
8.	Indonesia	Isseldin M.	Universiti Sains Islam Malaysia	Bangladesh
9.	Liquidity	Pappas V.	University of New Orleans	France
10.	Technical efficiency	Barros CP.	University of Indonesia	United Arab Emirates

To find the most discussed themes in the banking efficiency literature, *co-occurrences/co-word* analysis was used. Co-occurrences analysis links keywords that appear in the same title, abstract or keyword list. The three keywords that appeared the most were efficiency, Islamic banking, and risk. Efficiency is the main keyword because it is the focus of the topic discussed. Efficiency in banks is important because it is one of the benchmarks of a bank's performance. This is because most articles state that the efficiency of Islamic banks is still below the efficiency of conventional banks. In addition, efficiency is often associated with the risks faced by banks.

In this Islamic bank efficiency literature, the three authors with the most published articles are Fakarudin Kamarudin, Fadzlan Sufian, and M. Kabir Hasan. The first author who published the most articles is Fakarudin Kamrudin from Universiti putra Malaysia with 18 documents. Most of his literature discusses each type of efficiency ranging from cost efficiency, revenue efficiency, and profit efficiency. Next is Fadzlan Sufian from MARA University of Technology with 17 documents. Fadzlan Sufian's literature is dominated by discussions on the comparison of the efficiency of Islamic and conventional banks. Some of his writings are also collaborations with Fakarudin Kamarudin. The third place is M. Kabir Hassan from the University of New Orleans with 8 documents. The literature from M. Kabir Hassan mostly discusses external factors that affect the efficiency of Islamic banks ranging from CSR, ESG, and corruption in a country.

Furthermore, the author's affiliation, namely the university with the most publications, is dominated by

universities from Malaysia. Three of them are International Islamic University Malaysia, Universiti Putra Malaysia, and University of Malaya. The number of publications of each affiliation is 27 for IIUM, 24 from University Putra Malaysia, and 23 from University of Malaya. Some of the literature from the three universities was contributed by Fakarudin Kamarudin and Fadzlan Sufian.

Malaysia is the country with the most published literature related to the efficiency of Islamic banks. Topics discussed range from the measurement of Islamic bank efficiency in Malaysia, comparison of the efficiency of Islamic banks and conventional banks, determinants of efficiency and performance of Islamic banks, to the comparison of Islamic bank performance in Asian and Middle Eastern countries. It is natural that most of the authors and affiliated authors are from Malaysia. The next two countries are Indonesia and the United Kingdom. The topics discussed in the literature related to Indonesia are not much different from Malaysia with the topic being widely discussed, namely the issue of Islamic bank *spin-offs*. The next country is the United Kingdom which is the center of Islamic finance in the West.

CONCLUSION

Bank efficiency, especially Islamic banks, is still an important topic discussed in Islamic economics and finance. This can be seen from the development of the topic of Islamic bank efficiency which has expanded over time. This study uses bibliometric analysis with VOSviewer software with the finding that there are four

clusters related to the efficiency of Islamic banks, including the calculation of Islamic bank performance, comparison of conventional and Islamic bank efficiency, Islamic bank efficiency, and determinants of Islamic bank performance. Apart from that, DEA is one of the methods most widely used to measure efficiency levels, not only in the banking industry (Rusydiana & Nugroho, 2017). This study presents references to previous studies that can be used as a reference for further research. For regulators, it can also be used as a reference in making policies to support the development of the banking sector and to re-evaluate the policies that have been issued. For practitioners, this study can be used as a reference in determining policies to be taken to improve banking performance in the future. However, this study certainly also has limitations including the database used, which only comes from Scopus. Future studies can add databases such as Web of Science, Dimensions, or PubMed.

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APPENDIX

Results of bibliometric analysis on keywords

No.	Keywords	Occurrences	Relevance
1.	Efficiency	403	1.35
2.	Islamic bank	364	1.13
3.	Risk	103	0.36
4.	Asset	77	0.86
5.	Malaysia	76	0.38
6.	Return	75	0.73
7.	Cost	71	0.41
8.	Indonesia	57	0.62
9.	Liquidity	55	0.47
10.	Technical efficiency	55	0.96

Results of bibliometric analysis on publishing organizations

No.	Organization	Number of publications	Citation	Total link strength
1.	IIUM	27	288	36
2.	University Putra Malaysia	24	500	50
3.	University of Malaya	23	530	60
4.	Universiti Kebangsaan Malaysia	20	340	35
5.	Mara Technological University	19	228	36
6.	Sfax University	16	96	13
7.	Universiti Utara Malaysia	14	269	19
8.	Universiti Sains Islam Malaysia	14	203	23
9.	University of New Orleans	13	194	25
10.	University of Indonesia	11	56	14

Results of bibliometric analysis on authors

No.	Author name	Document	Institution	Country	Citation
1.	Kamarudin F.	18	University Putra Malaysia	Malaysia	444
2.	Sufian F	17	MARA Technological University	Malaysia	531
3.	Hassan MK	8	University of New Orleans	United States	147
4.	Wanke P	7	Federal University of Rio de Janeiro	Brazil	240
5.	Abdul-Majid M,	7	University Putra Malaysia	Malaysia	212
6.	Nassir A M	6	Xiamen University	China	156
7.	Azad M A K	6	Islamic University of Ghazipur	Bangladesh	135
8.	Izzeldin M	5	Lancaster University	United Kingdom	316
9.	Pappas V	5	University of Kent	United Kingdom	241
10.	Barros CP	4	University of Lisbon	Lisbon	197

The results of bibliometric analysis in the following countries

No.	Country	Document	Citation	Total link strength
1.	Malaysia	149	2433	47
2.	Indonesia	75	260	12
3.	United Kingdom	42	1101	30
4.	Saudi Arabia	38	548	21
5.	United States	37	1403	26
6.	Tunisia	34	370	19
7.	Pakistan	24	325	14
8.	Bangladesh	22	250	12
9.	France	21	1196	21
10.	United Arab Emirates	20	276	12