

# Publication Trend on Insurance Efficiency Studies

Annisa Kartika Ocktavia<sup>1</sup>, Siti Salmah<sup>2</sup>

<sup>1,2</sup>Tazkia Islamic University College, Indonesia

This study aims to determine the map of the development of research on the theme of insurance efficiency which is published in journals equipped with digital object identifiers. The research was conducted in August 2023. The data analyzed were 336 research journals related to insurance efficiency published from 1992 to 2023. During this period, the most research on insurance efficiency occurred in 2022 with 40 publications. The data is then processed and analyzed using the VOSviewer application program to determine the bibliometric mapping for the development of insurance efficiency research. The results show that cost efficiency, economy, evidence, firm, insurance firm, insurance sector, market, risk, originality value, relationship and stage data envelopment are the most widely used topics. The research development map for this theme is divided into 5 clusters. Cluster 1 consists of 11 topics, cluster 2 consists of 9 topics, cluster 3 consists of 9 topics cluster 4 consists of 5 topics and cluster 5 consists of 5 topics.

**Keywords: Insurance; Efficiency; Bibliometric; Publication Trend**

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Correspondence:

Annisa Kartika Ocktavia  
ocktaviaannisaokartika2@gmail.com

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## INTRODUCTION

The development of the financial industry has always been a major concern for a country, one of which includes insurance. The insurance that was first established was takaful insurance in Sudan in 1979, which was managed by the Dar al-Mal al-Islami Group. Dar al-Mal expanded its business to other European and Asian countries. There were at least four takâful and re-takaful insurances in 1983, which were based in Geneva, Bahamas, Luxembourg and England.

Insurance means bearing a loss. While in Arabic, insurance means peace of mind and eliminates fear (Maxum, 2015). The role of insurance is very important for the economy, especially in the welfare of society (Richardson et al., 2018). Insurance is divided into two, namely Islamic insurance and conventional insurance. According to the DSN MUI, what is meant by sharia insurance is an effort to provide mutual protection and assistance between a group of individuals or entities by investing in assets and/or tabarru' which raises patterns of return, with the aim of facing certain risks through agreements (contracts) that are in line with the principles sharia principles. Asma'Adawiyah (2019) states that sharia insurance is an alternative to conventional forms of insurance. In Islam, conventional forms of insurance are considered not permissible because they contain elements such as usury, gharar and maysir which are not in accordance with religious principles. Meanwhile, Islamic insurance has a different approach. Executed based on the principles of gotong royong, shared responsibility, and collective protection. The concept of tabarru' (grants) is at the core of Islamic insurance, illustrating the spirit of mutual assistance and sharing of guarantees among participants.

In the ICD report – Refinitiv Islamic Finance Development Report, the development of sharia insurance in the world continues to increase (ICD, 2022). This is in accordance with the report on the growth of Islamic finance in Indonesia showing the growth of Islamic finance increased by 16.76% from the previous year which indicates that the Islamic financial industry is growing and resilient in line with the global economic recovery. From this growth, it was recorded that the Islamic Fund experienced the most significant growth, namely 33.7%, followed by the Takaful sector of 17.7%. So that measuring efficiency is an important thing to do in order to sustainably increase the economy and people's welfare, especially in the banking and insurance sectors.

Several studies related to insurance, namely by Miftakhul Jannah & Nugroho (2019) shows efforts to

increase the existence and potential of the sharia insurance market, namely with the existence of special regulations governing sharia insurance, insurance agents must be able to bridge information to the public regarding products, systems, uses and benefits. Meanwhile, a study by Siswanto & Hasanah (2019), found the factors that affect the profitability of conventional insurance, namely efficiency, income, equity, size, capital, risk, regulatory, environment, loss ratio, expense and level of competition. This is appropriate Nurlatifah & Mardian, (2016) which states the importance of assessing the performance of insurance companies in order to increase the efficiency and productivity of insurance.

Against this background, this study aims to look at maps of the development of insurance efficiency over the 1992-2023 period using meta analysis. Items presented in the meta-analysis are related to the year of publication, author, document with the highest citation and research paths related to insurance efficiency based on clusters that have been processed in Figure 2.

## LITERATURE REVIEW

The Non-Bank Financial Industry (IKNB) is a banking financial institution, IKNB has more types of business entities. In addition, IKNB also has different roles and functions from banking financial institutions. IKNB refers to non-banking business entities operating in the financial sector, collecting and distributing funds to the public. One example is the insurance sector. The insurance industry is an industry that provides financial protection for policyholders in the form of compensation for unexpected risks. According to the Law of the Republic of Indonesia no. 40 of 2014 concerning Insurance, insurance is an agreement between an insurance company and a policyholder which forms the basis for premium receipts by insurance companies (Wahyono, 2021).

In the Indonesian context, the insurance industry consists of general insurance companies, life insurance companies, and sharia insurance companies. The Islamic finance industry in Indonesia has the potential to continue to grow and have great benefits for the economy. The sharia-based Non-Bank Financial Industry (IKNB) has also become a pillar of strength in the sharia finance industry, whose development is expected to contribute to the development of the sharia economy in Indonesia. In general, its activities are no different from conventional IKNB. However, there are some special characteristics, with products and transaction mechanisms based on sharia principles

(OJK, 2023). In Arabic, Islamic insurance is called Takaful using the concept of mutual cooperation using the tabarru contract (Azizah, 2019).

Efficiency comparison between Islamic and conventional insurance in Indonesia is a topic that is getting more and more attention in financial and economic studies. Several studies have been conducted to analyze the efficiency of the insurance industry in Indonesia. (Azizah, 2020) conducted an analysis of the efficiency of sharia insurance companies in Indonesia in the 2015-2018 period. This study uses the Data Envelopment Analysis (DEA) method to estimate the level of efficiency and level of productivity of Islamic general insurance companies and Islamic life insurance companies. The results show that the level of efficiency of Islamic insurance companies in Indonesia is still low. Some research results also show that the level of efficiency of Islamic insurance companies in Indonesia is still low (Alam et al., 2022)(Sunarsih & Fitriyani, 2018). Factors that affect the low level of efficiency include general and administrative expenses, payment of claims, investment income, investment, and tabarru' fundraising (Sunarsih & Fitriyani, 2018).

Furthermore (Afifah, 2020) also conducted research, this time by analyzing efficiency values and comparing efficiency ratios in Islamic and conventional insurance companies in Indonesia in 2018-2020. This study used the independent sample t-test method and took a sample of 19 sharia insurance companies (15 sharia life insurance companies and 4 sharia general insurance companies) and 23 conventional insurance companies (22 life insurance companies and 1 general insurance company). It turns out that the results of the study show that the efficiency value of Islamic insurance companies is higher than that of conventional insurance companies. Several bibliometric studies of Islamic insurance (Alshater, 2021); (Khan, 2020); and (Kusmayadi, 2021) considerable attention from researchers regarding efficiency studies as part of the performance of the Islamic insurance industry.

From the literature review, it can be concluded that there are differences in the level of efficiency between Islamic and conventional insurance companies in Indonesia. Several studies have shown that Islamic insurance companies have a higher level of efficiency compared to conventional insurance companies. However, there are still challenges in increasing the efficiency of the sharia insurance industry in Indonesia, such as general and administrative expenses, payment of claims, and collection of tabarru' funds. Many studies have been carried out using both parametric and non-

parametric methods regarding insurance efficiency. However, the focus on the efficiency level of Islamic and conventional insurance during and after the COVID-19 pandemic in Indonesia is still relatively limited.

The COVID-19 pandemic has had a significant impact on the financial and insurance sectors worldwide, including in Indonesia. Efficiency comparisons between Islamic and conventional insurance in the context of a pandemic are becoming increasingly relevant due to the specific challenges faced by society, companies and financial institutions. Several factors that need to be taken into account include changes in claim patterns, premium rate adjustments, economic recovery policies, and investment dynamics amid market uncertainty. (CNBC Indonesia, 2023) (Cont, 2022) (Fund Market, 2021).

Research that specifically addresses the efficiency of Islamic and conventional insurance during the COVID-19 pandemic and the post-pandemic period in Indonesia has the potential to provide in-depth insights into how these two types of insurance adapt and perform in the face of unique economic challenges. This information can assist decision-making in the insurance industry and provide valuable guidance for insurance companies, governments and the public in maintaining financial stability and protecting risks in turbulent times.

## RESEARCH METHODS

This study uses data from international and national paper publications related to the Islamic Digital Economy. Data collection through publication with Efficiency Insurance key data in the category of article titles, Dimension indexed abstracts. Data collected from 1992-2023. The result was 336 publications as of August 2023. Data in the form of year of publication, authors and citations were analyzed using Microsoft Excel 2019. As for the development trend of publications in Efficiency Insurance, keywords, authors and journals used were analyzed using VOSViewer software by inputting Digital-Object-Identifier (DOIs).

In addition, the development trend of the publication of insurance efficiency both sharia and conventional is analyzed using the VOSViewer software. The computer program that was introduced was called VOS Viewer. VOSviewer was developed for building and viewing bibliometric maps and is freely available to the bibliometric research community (see [www.vosviewer.com](http://www.vosviewer.com)). VOSviewer can create author or journal maps based on shared citation data or create keyword maps based on shared incident data. In

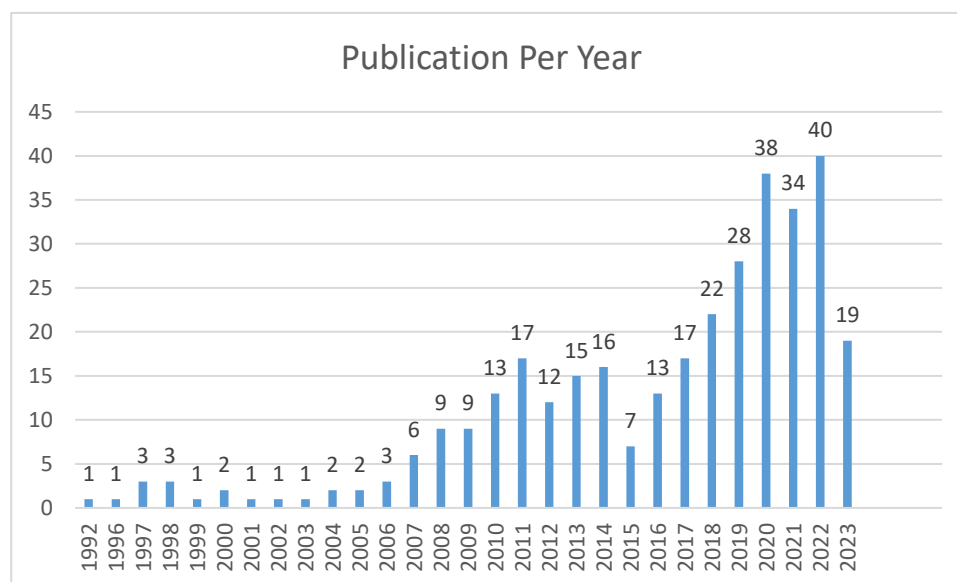
addition, the program offers users the ability to allow bibliometric maps to be examined in detail.

To build maps, VOSviewer uses the VOS mapping technique (Van Eck and Waltman 2007a), where VOS stands for visualization similarity. For previous studies using the VOS mapping technique. VOSviewer can display maps created using appropriate mapping techniques. Therefore, this program is used not only for displaying maps constructed using techniques such as multidimensional scaling. VOSviewer runs on a large number of hardware platforms and operating systems and can be started directly from the internet. VOSviewer can create author maps or journal maps based on co-author data and co-occurrence keywords, i.e. create author and keyword maps based on co-occurrence data. The program offers the reader that the map allows bibliometrics to be examined in detail.

Therefore, this program can display maps created using the VOS mapping technique and display maps constructed using the multidimensional scaling technique. VOSviewer runs on many hardware and operating system platforms and can be started directly from the internet (Slamet Rusydiana & Marlina, 2020). Other research using bibliometric especially in economic and finance topic for the example can be found at Az-Zahro (2022), Muadzah (2022), As-Salafiyah (2022), As-Salafiyah & Kartikawati (2022), and Kholiq et al., (2022).

## RESULTS AND DISCUSSION

This study reviews 336 research journals related to insurance efficiency published from 1992 to 2023. During this period, the most research on insurance efficiency occurred in 2022 with 40 publications.



**Figure 1:** Publications per year

Based on table 1 above, publications related to insurance efficiency, both sharia and conventional, fluctuate, accompanied by an increasing trend, most of the papers published by various journals with the theme of insurance efficiency. At the beginning of its emergence, publications regarding insurance efficiency from 1992 to 2009, only ranged from 1 to 9 publications. In 2010-2011 there was a slight increase which then dropped back to 7 in 2015. Furthermore, a significant

increase continued until 2020, namely 38 publications, dropping again to 34 in 2021 to 2022, which is the highest number of publications related to insurance efficiency, namely 40 publications, to decreased again in 2023 to 19.

In addition, publications are also classified based on authors who have contributed to publishing their publications on insurance efficiency, table 2 shows the top 5 author ratings.

**Table 1:** Top Authors

Writer	Number of Documents
J.David Cummins	8
Xiaoying Xie	8
Ram Pratap Sinha	7
Wen Min Lu	5
Joe Zhu	4

Table 1 above shows the five most productive authors of publications published on the theme of insurance efficiency both sharia and conventional in the last 10 years, namely 2014-2023. There are two authors who wrote 8 publications published on the theme of insurance efficiency, then three authors wrote 7, 5 and 4 publication titles. And other authors who are not listed

in the table above, wrote less than 4 publications published on the theme of insurance efficiency.

Furthermore, table 2 shows the top ranking of publication titles cited from the time of their publication until the time of writing this paper, most of the citations were dominated by publications published from 1999-2014.

**Table 2:** Top Citations

Citations	Title	Author
899	Efficiency Decomposition In Two-Stage Data Envelopment Analysis: An Application To Non-Life Insurance Companies In Taiwan	Kao, Chiang; Hwang, Shiuh Nan
615	Data Envelopment Analysis	Cooper, William W; Seiford, Lawrence M; Tones, Kaoru
479	Additive Efficiency Decomposition In Two Stages DEA	Chen, Yao; Cook, Wade D; Li, Ning; Zhu, Joe
372	Efficiency Decomposition In Network Data Envelopment Analysis: A Relational Model	Kao, Chiang
212	Consolidation And Efficiency In The Us Life Insurance Industry	Cummins, J.David; Tennyson, Sharon; Weiss, Mary A
160	International Evidence On The Impact Of Regulator And Supervision On Banks Technically Efficiency: An Application Of Two Stage Data Envelopment Analysis	Pasiouras, Fotios
153	Merger And Acquisition In The Us Property Liability Insurance Industry: Productivity And Efficiency Effects	Cummins, J.David; Xie Xiaoying
147	Economics Of Scope In Financial Services: A DEA In Efficiency Analysis Of The Us Insurance industry	Cummins, J.David; Weiss, Mary A.; Xie Xiaoying; Zhi, Hongnim
112	Multi Period Efficiency And Malmquist Productivity Index In Two Stage Production S	Kao, Chiang; Hwang, Shiuh Nan
111	Intellectual Capital And Performance In The Chinese Life Insurance Industry	Lu, Wenmin; Wang, Wei-Kang; Queh, Kian Long



These keywords are divided into 5 clusters above which are arranged in the form of colored circles indicating the clusters, this data can be used to determine the trend of keywords at the end of the year. The bibliometric analysis shows several keywords that are widely used in the research that is the object of study. The keywords that appear the most are indicated by a growing circle. While the linkages between keywords show how much they are related to other keywords, it was found that the most familiar keywords were mosque, role, Indonesia.

## Research Path

### Cluster 1, Cost efficiency in the insurance industry

Refers to the level of cost efficiency in the insurance industry. Cost efficiency in the insurance industry can be measured through various indicators, such as the ratio of costs to income, the ratio of operational costs to premiums, and the like. Cost-efficient insurance companies will be able to generate greater profits from the premiums they receive, while still maintaining service quality and customer satisfaction. Several studies discussing cost efficiency in the insurance industry as written by [Tung et al. \(2008\)](#), that the property insurance company is responsible for realizing the cost of economic coverage, but this must be balanced with income coverage at the insurance company. Furthermore, the implementation of an electronic logistics information system (ELIS) has the potential to increase cost and operational efficiency in the HIS of the medical industry so that this better operational efficiency can result in cost savings by optimizing the use of resources and minimizing waste ([Berger et al., 2000](#)). According to ([Cummins & Xie, 2008](#)), found that acquired companies achieved greater cost efficiency gains than companies that were not involved in mergers or acquisitions.

### Cluster 2, Life insurance efficiency trends

Efficiency trends in the life insurance industry refer to patterns and changes in how efficiently life insurance companies operate over a given period of time. These trends can be influenced by a variety of factors, including technological advances, regulatory changes, market conditions, consumer preferences and management practices. Several empirical studies that discuss life insurance are by [Cooper et al., \(2000\)](#), [Chen et al., \(2009\)](#), [Molinari et al., \(2007\)](#). Measuring and seeing trends in life insurance is important to do as an evaluation for the sustainability of the benefits of life insurance ([Ari & Astiti, 2014](#)).

### Cluster 3, competition in the insurance industry

Competition in the insurance industry is critical because it drives companies to add value to customers, improve services, and innovate in products and business practices. Some aspects that are crucial in competition in insurance are prices and premiums, products and offers, service quality, technological innovation, marketing and branding ([Ari & Astiti, 2014](#)). Research written by ([Bikker & van Leuvensteijn, 2008](#)) analyze the factors that affect the nature of competition indirectly, measure the effects of competition and policy measures to properly promote competition. In addition, the study states that the result of a combination of state regulation, cartel pricing, and unusual legal aspects has resulted in the adoption of inefficient sales methods, supply shortages, and over-spending of funds ([Joskow, 1973](#)). ([Stelzer, 2015](#)) concluding laws affirming the state's authority to regulate the insurance business, was an implied decision, not only in favor of state versus federal control, but also in favor of limited competition rather than fully independent competition.

### Cluster 4, Efficiency level in the health sector

In cluster 4 in yellow, keywords appear related to matters related to 'level of efficiency', 'health sector', and 'policy'. If you pay attention to this data, it shows that the level of efficiency in the health sector can influence policy. The emergence of keywords in the bibliometrics also shows that this link is widely discussed in this year's research and has a significant impact on the economy ([Suar et al., 2020](#)). According to ([Sulku, 2012](#)) Health sector efficiency is critical for policy makers to make informed decisions, allocate resources effectively, and improve overall health system performance. By focusing on efficiency, policy makers can work to achieve better health outcomes, control costs, and equitable access to health services. Even the findings by [Jacobs, R. & Street, A. \(2006\)](#) say the pursuit of efficiency has become the main goal of policy makers in most health systems.

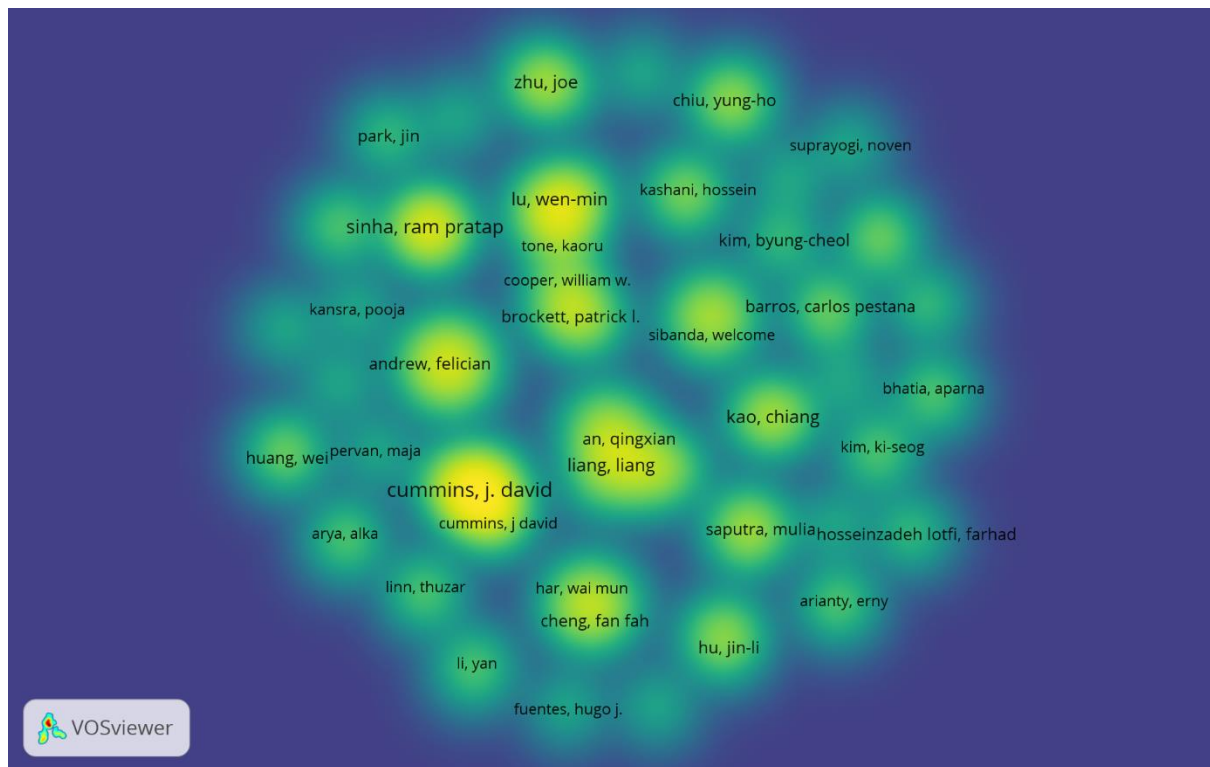
### Cluster 5, Impact of the pandemic on system development

The last cluster, purple cluster 5, shows several variables that are widely used as research objects, for example 'covid' 'development' and 'system'. This section proves that Covid provides development for systems, especially technology. Based on the findings ([Rosyid Ridlo Al Hakim, 2021](#)) The current era of digital technology is the time to place digital infrastructure to supervise global health cases. COVID-19 has driven the development of a faster and more efficient information

system to monitor and disseminate virus-related information. The system includes an online platform, mobile application and website that provides up-to-date information on cases, prevention guidelines and health resources. Then quoted from (Septiadi et al., 2022);(Kirana, 2022);(Tarigan, 2023);and(Ministry of Education and Culture, 2021) In summary, the COVID-19 pandemic has had a broad impact on various systems, including infrastructure development, the digital

economy, the education system, and student social welfare. These impacts highlight the need for adaptations and innovative solutions to reduce negative impacts and increase resilience in these systems.

Furthermore, using the VOSViewer software, the author's bibliometric mapping is obtained as shown in Figure 3 below. The bigger and brighter the halo that appears on the author's name, the more papers he publishes on the theme of insurance efficiency.



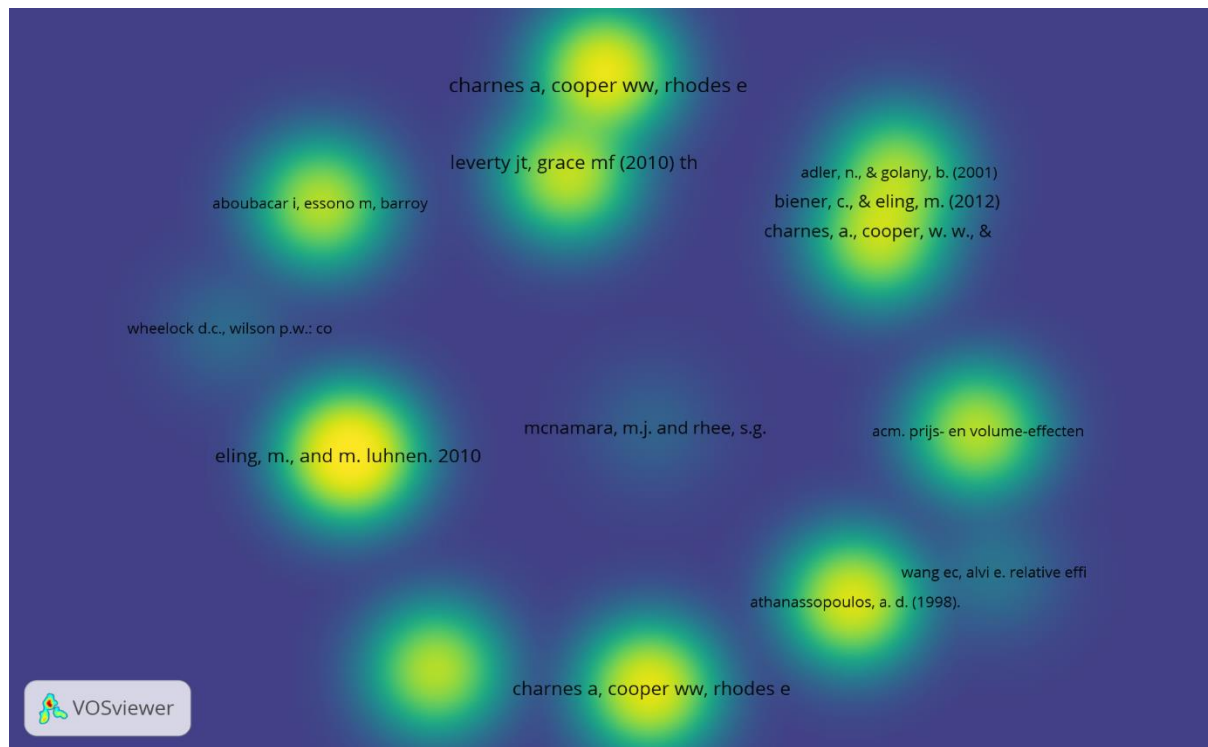
**Figure 3:** Author Bibliometric

Display cluster density, are items (labels) that are marked the same as the items that are visible. Each item point has a color depending on the density of the item at that time. It identifies that the color of the dots on the map depends on the number of items associated with other items. This section is very useful for obtaining an overview of the general structure of a bibliometric map by paying attention to which parts of the items are considered important for analysis. Through this worksheet, we can see the authors who have written the most publications.

Based on these results, a density map is displayed which is the result of an analysis using all published

articles on the theme of insurance efficiency, both related and unrelated. There are many clusters when sorted by author. The author's most popular publication related to insurance efficiency based on bibliometric mapping is J. David Cummins.

The order in this mapping may differ from the top ranking of authors if calculated manually, but besides calculating the quantity of published papers on the theme of insurance efficiency, VOSViewer also takes into account the number of links and their terms with other authors. Furthermore, the visualization of citation mapping is illustrated in bibliometric figure 4.



**Figure 4:** Bibliometric Citation

The results of data processing show that the paper that has been cited the most compared to other papers in the first order is the work paper [Charnes et al. \(1978\)](#) with the title "Measuring the efficiency of decision making units" and a paper by [Eling & Luhnen \(2010\)](#) title "Efficiency in the international insurance industry: A cross-country comparison". ([Biener & Eling, 2012](#)) title "Insurability in Microinsurance Markets: An Analysis of Problems and Potential Solutions" and ([Grace & Leverty, 2010](#)) entitled "Political Cost Incentives for Managing the Property-Liability Insurer".

## FINDINGS

Based on the bibliometric results above, it is known that the role of both sharia and conventional insurance is very important, especially in helping the welfare of society and financial stability. So that measuring the efficiency of insurance is important for the sustainability of the role of insurance for the community as discussed in various literature. Table 1 above shows related publications that have appeared since 1992 with a total of 336 related publications. This shows that measuring and identifying insurance efficiency has an important role in the development of financial and social welfare. In addition, this topic is interesting to be developed as an evaluation material and a basis for decision making.

Currently, the efficiency of both sharia and

conventional insurance is not maximized ([Wangi & Darwanto, 2020](#)). Even though Insurance is one of the non-bank financial institutions that have the highest performance, it has the opportunity to increase insurance economic assets if their income is managed properly by the manager for the economic empowerment of the ummah ([Yusrizal & Lubis, 2020](#)). Zakat and waqf as the most dominant sources of Islamic economics in mosques need to be managed properly ([Richardson et al., 2018](#)) so that it can provide many benefits for economic development with various allocation innovations that are poverty alleviation ([Bahari, 2019](#)).

The keywords that often appear in this study are life insurance, life insurance is part of the insurance industry. The insurance industry involves various types of insurance products that are offered to individuals, families, businesses and organizations to protect them from unexpected financial risks ([Badruzaman, 2019](#)). The role of life insurance in the economy includes protecting against financial risk, stimulating long-term savings, assisting with retirement planning, and providing individual and community financial stability ([Ari & Astuti, 2014](#)). ([Puspita & Satyo, 2018](#)) revealed Life insurance has an important role in managing financing risk, especially in the context of granting credit or loans by financial institutions or other creditors. So that life insurance is also an interesting topic to be

researched as an evaluation material for its development.

Furthermore, the theme of the digital economy is also widely used in insurance efficiency research, because the digital economy is closely related to insurance efficiency. Digitalization has had a major impact in increasing operational and service efficiency in the insurance industry (Lubis, 2021). The digital economy in the context of insurance includes the application of digital technology and innovation throughout insurance business processes, from interaction with customers to risk management (Pahrevi et al., 2022). The existence of the digital economy is present and has created significant changes in various aspects of the economy, one of which is insurance. So that the digital economy is an important topic to study as a basis for economic growth that is increasingly global and sophisticated (Faisal Bakti & Meidasari, 2018).

Of the 336 articles used in this study, the authors found five research lines from the five clusters described above. First, Cost efficiency in the insurance industry. Second, Life insurance efficiency trends. Third, competition in the insurance industry. Fourth, efficiency level in the health sector. Fifth, Impact of the pandemic on system development. These five research lines are of interest to future researchers on the theme of insurance efficiency.

In general, the various roles of insurance that have been studied in various published studies indicate that measuring insurance efficiency is an important thing that must be done in order to develop and enhance the role of insurance itself.

## CONCLUSION

The focus of this research is to try to find out how far the efficiency of both sharia and conventional insurance has developed in research, especially related to economic and financial research in the world. The results showed that there were several published papers with the theme Insurance Efficiency for the period 1992 to 2023, namely 336 studies using metadata sourced from the Dimensions ai database.

The results of this bibliometric study indicate that the map of research development in the field of insurance efficiency education is divided into types of co-authorship and co-occurrence, with the most popular author being J. David Cummins. Whereas in co-occurrence, the most popular keywords are 39, namely cost efficiency, economy, evidence, firm, insurance firm, insurance sector, market, risk, originality value, relationship, stage data envelopment, asset, company, conventional life insurance, general insurance company,

life insurance company, measurement, profit, revenue and spin, average, competition, dea model, DMU, relative efficiency, stage dea model, time, unit, sector, efficiency level, health sector, policy, hospital, tobit regression, covid, development, equity, system total factor productivity.

Furthermore, the theme that is widely used in this study is the digital economy. In addition, there are five research lines that can be used for further researchers. The research path was obtained from five clusters which were processed from the metadata of 336 articles which were then mapped, namely Cost efficiency in the insurance industry, Life insurance efficiency trends, competition in the insurance industry, Efficiency level in the health sector, and Impact of the pandemic on system development.

Much literature has examined the importance of measuring insurance efficiency, considering that insurance is a non-bank financial institution that has an important role in social welfare. Therefore, the government and regulators need to pay special attention to insurance efficiency. So that the development of insurance can be one way to reduce poverty and social inequality through existing empowerment programs.

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