



Bibliometric Review on Takaful Insurance: Application of R Biblioshiny

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Abstract

This literature review aims to examine the evolution of articles on Islamic insurance published by leading journals. The data are sourced from the Scopus database spanning the years 1985 to 2023. The data are then processed and analyzed using the bibliometric application R to establish the bibliometric map of Takaful development. The results showed that the number of publications on the subject of Islamic insurance has increased. The most popular author is Hassan Mk, and the keywords most used in this search are Takaful, Islamic Insurance, Insurance, Islamic Finance. Trend analysis reveals new challenges faced by Takaful companies, particularly in terms of governance and risk management. Further research on the topic of Islamic insurance, focusing not only in Malaysia but also in other Muslim countries, is therefore needed to foster the development of Islamic insurance companies.

Keywords: Takaful, Islamic insurance, Shariah insurance, bibliometric, R, biblioshiny.

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1. Introduction

Takaful is an Islamic alternative to conventional insurance. The word "Takaful" comes from the Arabic verb "Kafala", which translates as "guarantee" or "responsibility". It is an Islamic insurance model based on the principles of mutual aid and voluntary contributions. This model involves the separation of shareholders' and policyholders' funds, the distribution of underwriting profits to policyholders, Shariah-compliant assets and certification by the Shariah council. In a second definition, Takaful is defined as a system of Islamic financial protection involving a common guaranteed scheme against the pure risk of loss or damage to the life or property of the insured due to unforeseen circumstances by offering compensation. It is a scheme in which a group of "members" undertake the responsibility to help each other in the event of the occurrence of a risk specified in the insurance contract, through the payment of a periodic sum known as a "contribution". The "contributions" are used to create the "Takaful fund", to compensate "members" in the event of a risk (Fintiz 2023).

Worldwide, Takaful research has grown significantly, contributing to the creation of numerous Takaful companies. This suggests that understanding of the Takaful concept has improved among the general public, with many people needing insurance to protect their lives (Purnamasari & Alam, 2020). Given the enormous potential of Takaful, experts continue to encourage its development, particularly in Muslim-majority countries (Kusmayadi et al., 2021).

There is a growing demand for Shariah-compliant insurance, not only in Muslim-majority countries, but also in several European countries (Al-Amri & Hossain, 2017). This phenomenon highlights the importance of bibliometric studies on Takaful to obtain a comprehensive picture of the development and direction of the Takaful industry in the future. Bibliometric analysis of Takaful publications should contribute to a better understanding of the Takaful industry within the global community.

This research aims to perform a bibliometric analysis by mapping Takaful-related research as indexed in Scopus. Among the analyses undertaken as part of this study are the evolution of the number of Takaful research

papers published from 1985 to October 2023, productivity in terms of the number of Takaful research publications by author, country and source, the most cited documents, and the creation of a network and overlay visualization of Takaful studies based on author keywords.

This study addresses the following research questions:

- i. Q1: What is the current state of Takaful research, and what are its trends?
- ii. Q2: Who are the main contributors to Takaful studies in terms of authors, countries of origin and sources?
- iii. Q3: What are the most frequently cited documents?
- iv. Q4: What are the key words and themes in Takaful research?

To answer our research questions and achieve the objective of this article, our work will be divided into three parts. The first part will be dedicated to presenting the methodology used to conduct our bibliometric study on the subject of Takaful insurance, as well as the process for selecting the articles analysed.

The second part of our article will present the results of our bibliometric study. The aim of this section is to map articles concerning Islamic insurance, highlighting the authors, sources, most relevant keywords, and countries that have played a leading role in the publication of articles on Islamic insurance. Finally, the last section will be devoted to a discussion of the results obtained from our investigation.

2. Methodology

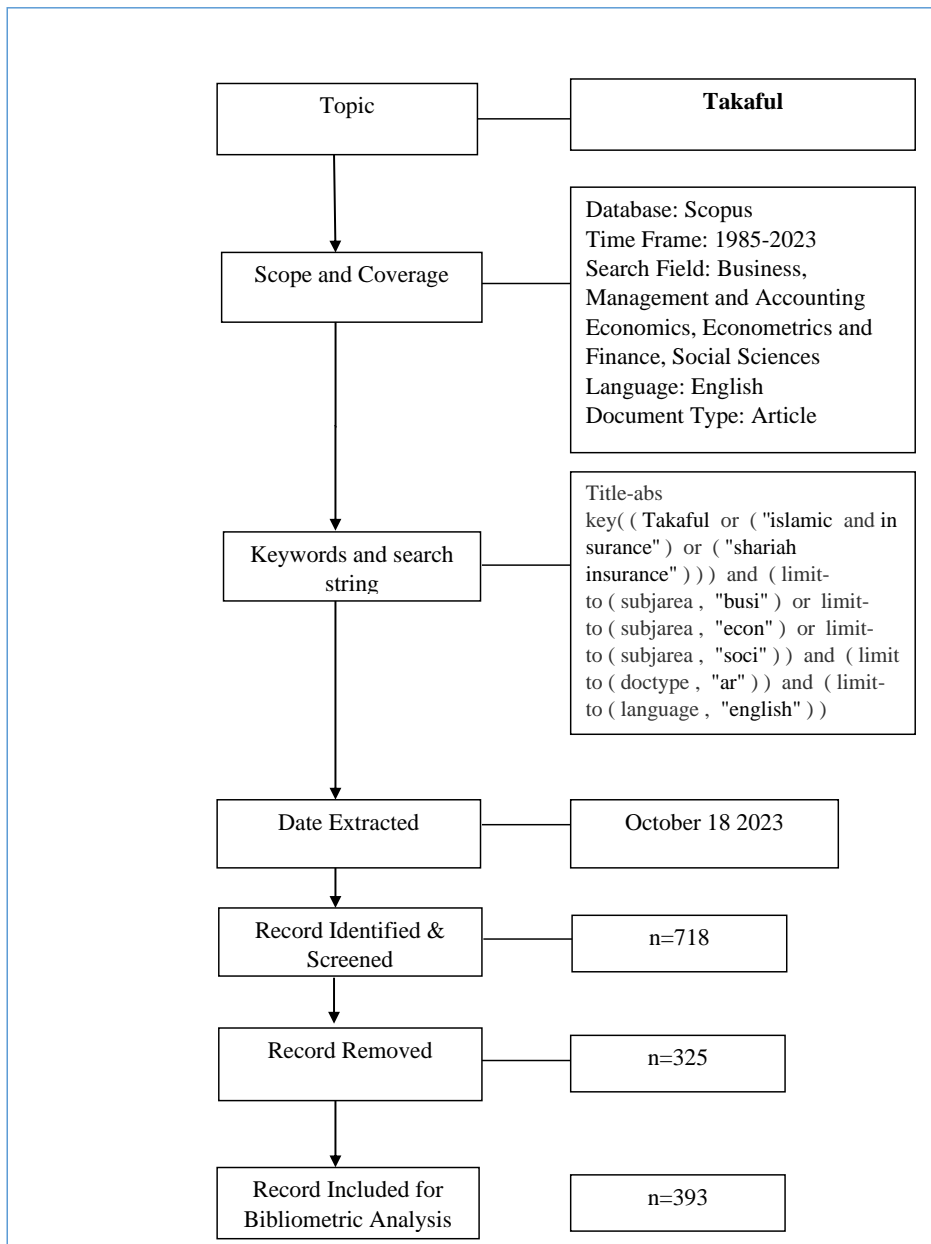
Bibliometric mapping is a research topic in the field of bibliometrics (Börner et al., 2003). Two aspects of bibliometrics can be distinguished: the construction of the bibliometric map and the graphical representation of the map. In the bibliometric literature, the construction of bibliometric maps is the main concern. Past research focused on the effect of differences on size similarity (Ahlgren et al., 2003) which has been tested by various mapping techniques (Boyack et al., 2005). However, the graphical representation of bibliometrics has received less attention. Although some researchers are keen on seriously investigating the problems associated with graphical representation (Chen, 2003), most articles published in the bibliometric literature rely on simple graphical representations provided by computer programmes. This current study uses the publication data of articles from various scientific journals on the topic of Islamic insurance "Takaful" research.

Our study addresses this gap by proposing innovative graphical representation techniques tailored for bibliometrics data. Through the development of interactive visualization tools, integration of multiple data sources, and evaluation of effectiveness, this research aims to fill this gap by advancing the state-of-the-art in graphical representations in bibliometrics. Undeniably, this study has the potential to advance graphical representation techniques in bibliometrics by exploring innovative visualization methods, tailoring representations to bibliometric data, developing interactive tools, integrating multiple data sources, and evaluating effectiveness for various stakeholders. Through these efforts, our study aims to enhance our understanding of scholarly communication networks.

This study uses R biblioshiny software to process data from scientific journal articles with the Islamic insurance term "Takaful" in the scopus database, because it offers an interactive and personalized experience for bibliometric analysis. Its seamless integration with R guarantees the power and flexibility of the statistical programming language. Thanks to its user-friendly interface and automatically generated scripts, it facilitates the reproducibility of analyses. Drawing on the active R community, it also offers additional extensibility and support. All in all, R Biblioshiny represents an attractive choice for efficient and flexible bibliometric analyses.

Our data was collected from Scopus database because it is considered to be the largest abstract indexing database, ensuring that important articles are not overlooked or excluded from the study (Abbas et al., 2022). This database also covers a wide range of topics and offers advanced search options to help researchers develop search strings with precise results, particularly in general fields. Indeed, our study focused on examining the knowledge structure of English journal articles between 1985 and 2020 regarding Takaful insurance, utilising the keywords 'Takaful,' 'Islamic insurance,' and 'Shariah insurance.' The analysis initially identified 718 relevant documents among the published papers. However, due to certain limitations, this number was reduced. The decision was made to specifically select articles in English based on the author's linguistic capabilities and the prevalence of English in the Scopus database. Additionally, research areas were narrowed down to Business, Management and Accounting, Economics, Econometrics and Finance, Social Sciences to yield more pertinent results related to the subject matter. Ultimately, the final number of selected articles amounted to 393, with 325 documents removed during the process, as depicted in Figure 1 below.

Figure 1: Research methodology

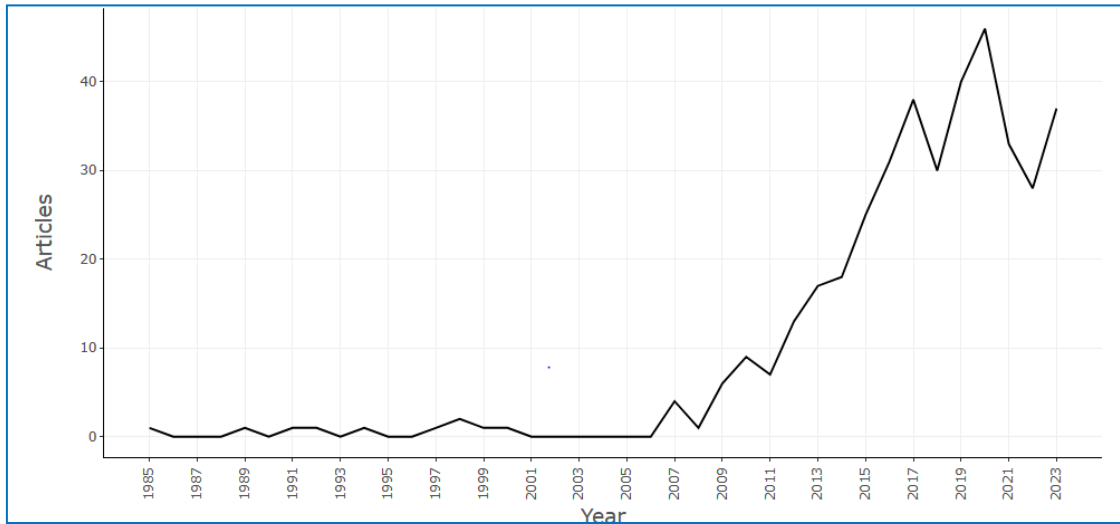


3. Analysis of the Results

3.1 Annual Scientific Production

There has been a marked increase in the number of articles on Takaful insurance, as evidenced by the number published articles every year. However, it is important to note that the first article published in this field dates back to 1985. Figure 2 illustrates the evolution of journal publications over the years. The figure also shows that, from 1989 to 2023, the highest number of publications on Scopus was reached in 2020, with a total of 46 research articles published in that year.

Figure 2 : Annual scientific production



Source: Author

In addition, the research is also based on the average number of citations in articles related to Islamic insurance in the fields of economic research and Islamic finance, both on average per year and per article. This research was conducted over a 26-year period, from 1985 to 2023. Table 1 below shows that the years 2019 and 2020 recorded the highest number of publications on the topic of Takaful in Islamic economic and financial research, with 40 and 46 articles published respectively. However, it is important to note that this does not exclude the possibility of an increase in the number of studies in 2023 compared to previous years, such as 2021 and 2022.

Based on the average total citations for each article, the highest peak was reached in 2007, with an average of 34.75 citations per article. In terms of average annual citations, the most cited studies were carried out in 2020, with an average of 2.15 citations per year, closely followed by 2007, with an average of 2.04 citations per year. These data indicate that articles published in 2007 and 2020 were more frequently cited than those published in any other years in the field of Islamic "Takaful" insurance.

Table 1: Total citations

Years	N	Citation by article	Citation per year	Citable Years
1985	1	1	0,03	39
1989	1	6	0,17	35
1991	1	8	0,24	33
1992	1	5	0,16	32
1994	1	9	0,30	30
1997	1	3	0,11	27
1998	2	9,5	0,37	26
1999	1	2	0,08	25
2000	1	2	0,08	24
2007	4	34,75	2,04	17
2008	1	4	0,25	16
2009	6	8,5	0,57	15
2010	9	24,56	1,75	14

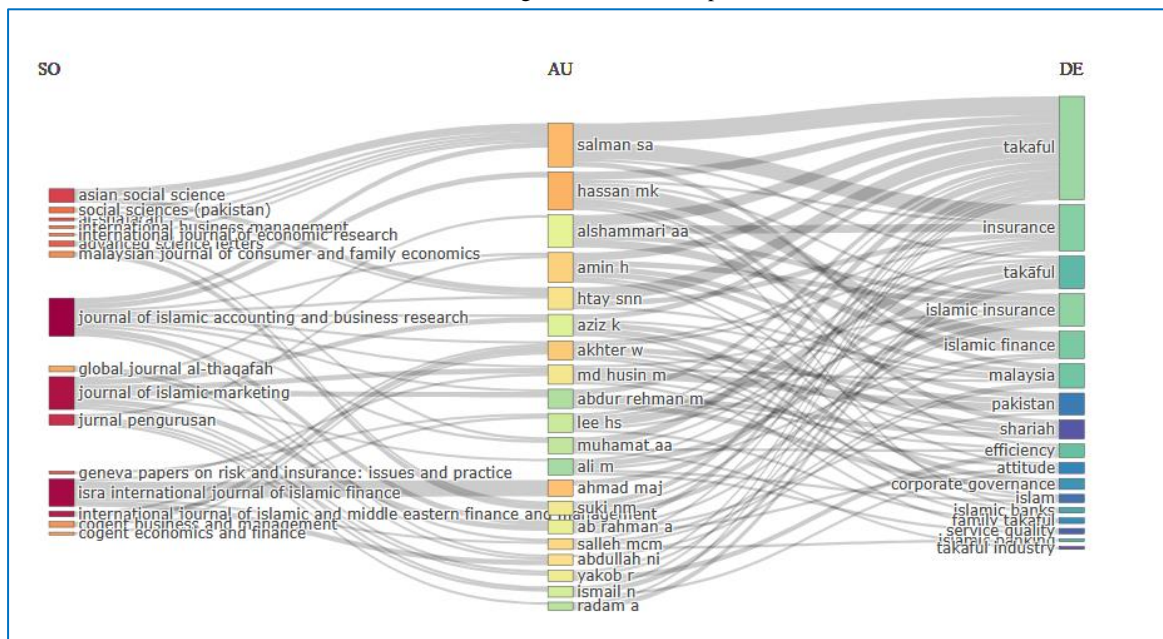
2011	7	21,57	1,66	13
2012	13	10,69	0,89	12
2013	17	10,88	0,99	11
2014	18	7,94	0,79	10
2015	25	12,36	1,37	9
2016	31	11,65	1,46	8
2017	38	9,05	1,29	7
2018	30	6,87	1,15	6
2019	40	8,03	1,61	5
2020	46	8,61	2,15	4
2021	33	4,18	1,39	3
2022	28	1,61	0,80	2
2023	37	0,59	0,59	1

Source: Author

3.2 Three-fields Plot

Figure 3 below is a diagram composed of three elements: the name of the publication journal, a list of authors' names and the themes/subjects used. The three elements are linked by a grey plot. Starting with the journal's name, each journal indicates the author who often contributes to its publication. Each author indicates the topic he or she often uses for research on Islamic insurance within the framework of Islamic economic and financial research. The size of the rectangle illustrates the large number of publications associated with each of these items.

Figure 3: Three-field plot



Source: Author

The figure above shows that in the first element, there are 16 indexed journals publishing articles on the theme of "Takaful" Islamic insurance. The journal that publishes the largest number of articles on the topic of Islamic insurance in Islamic economic and financial research is "Journal of Islamic Accounting and Business

Research", which is represented by a red rectangle linked to several authors, namely Salman Sa, Hassan Mk, Ab Rahman A, Amin H, Abdur Rehman M, Muhamat AA.

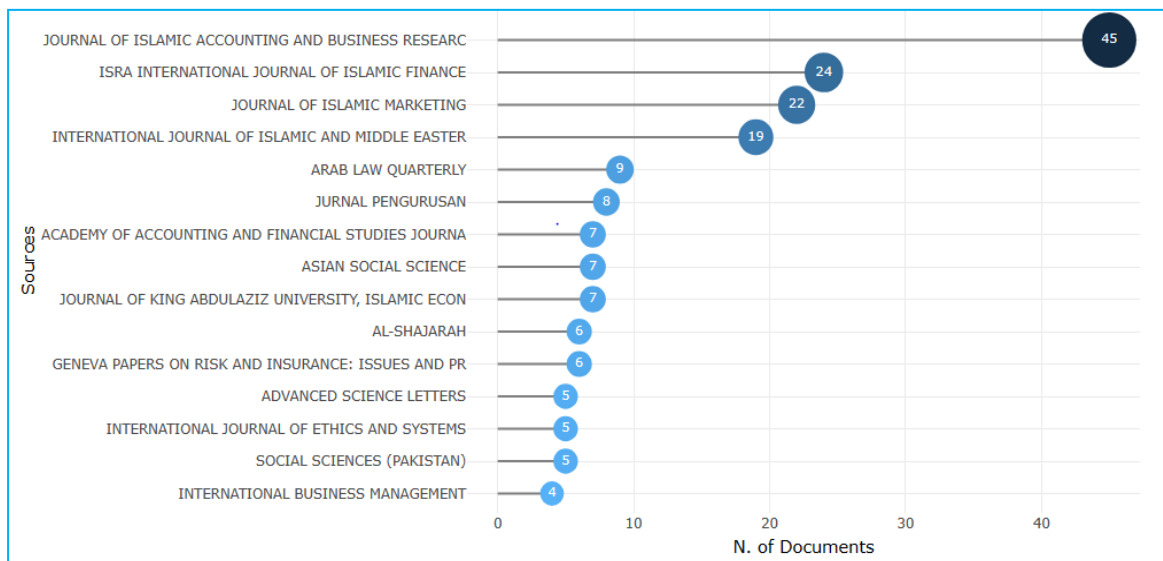
Next, the second element in the middle of the figure, showing the author's name, where several authors are linked to previous journals. In addition, the author will also be associated with often-used thematic keywords on the right of the figure. In this study, 20 top researchers were registered in this plot. The size of the rectangle indicates the respective quantity of research publications by each author. The authors who publish most often on Islamic Takaful themes in Islamic economic and financial research are Salman Sa, Hassan Mk, Alshammari AA, Amin A, Hty Snn, represented by orange and yellow rectangles.

Finally, the third element describes the research topic on the right of the figure. Each topic is linked to authors who write extensively on related subjects. The results show that 20 keyword search topics were listed. Among all the topics that appeared, the words "Takaful" and "insurance" are often marked by light green rectangles. This shows that "Takaful" and "insurance" are closely linked to research on the topic of Islamic insurance in Islamic economic and financial research.

3.3 Most Relevant Sources

Figure 4 below shows the number of research papers published by each journal according to the degree of relevance of the topic of Islamic insurance in Islamic economic and financial research. The data includes a list of the names of the main journals and the range of the number of papers published, presented in a bar graph. The darker the blue color, the greater the quantity and relevance of the research theme.

Figure 4: Most relevant source



Source: Author

“Journal of Islamic Accounting and Business Research” stands out in first place with the highest number of papers published, as shown in the dark blue bar chart, totaling 45 papers, thus outstripping all other journals. The third and fourth positions go to “Isra International Journal of Islamic Finance” and “Journal of Islamic Marketing” respectively, with 24 and 22 papers published. In contrast, the journals in last position are represented by light blue bars, suggesting that in terms of quantity and relevance, the topic of Islamic insurance seems less present. Furthermore, it is important to note that a total of 15 journals are listed among the most relevant data sources in this study.

3.4 Most Relevant Affiliations

Most Relevant Affiliations of articles published on the topic of Takaful" refers to the primary institutions, organizations, or affiliations associated with scholarly articles that are considered particularly pertinent or influential within the field of Takaful.

Table 2: Most relevant affiliations

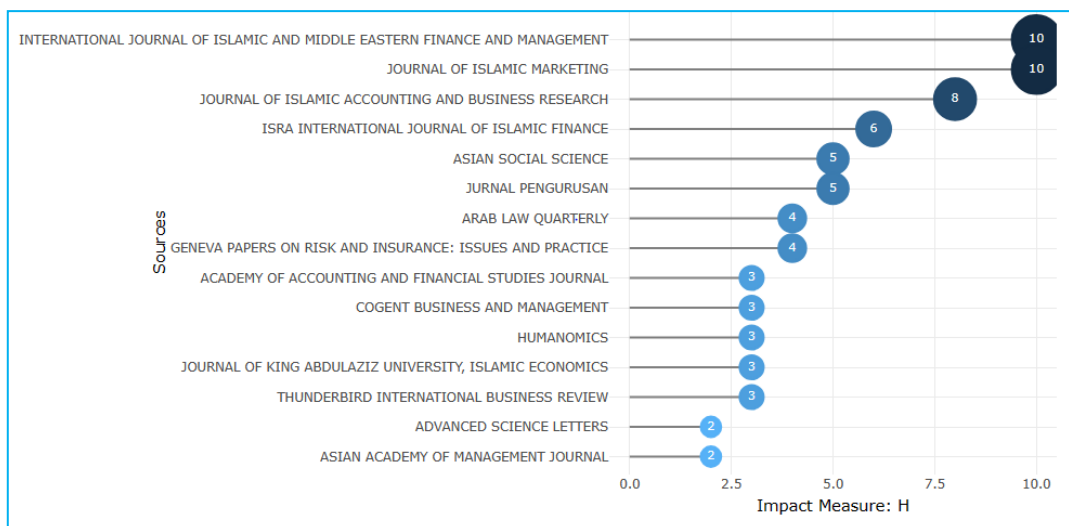
Affiliation	Articles
International Islamic University Malaysia	41
University Of Malaya	28
Universiti Sultan Zainal Abidin	23
Universiti Utara Malaysia	23
Universiti Kebangsaan Malaysia	21
Universiti Teknologi Mara	17
Universiti Sains Islam Malaysia	14
International Islamic University	12
Universiti Putra Malaysia	12
Comsats Institute Of Information Technology	11
Iqra University	11
International Shari'ah Research Academy For Islamic Finance	7
Istanbul Sabahattin Zaim University	7
Universitas Airlangga	7
University Of New Orleans	7

Table 2 gives an overview of the distribution of institutional publications in takaful studies. The International Islamic University Malaysia ranks first with 41 publications. Second and third are University of Malaya, with 28 publications, and Universiti Sultan Zainal Abidin, with 23 publications respectively. Not surprisingly, the International Islamic University of Malaysia dominates Takaful-related publications. This is because the International Islamic University Malaysia is the first campus in the world to integrate the Islamic sciences curriculum with the existing general sciences (Amin et al., 2013). As a result, researchers at the International Islamic University Malaysia have initiated numerous developments in takaful-related sciences.

3.5 Sources impact

Journal calculations are not based solely on the quantity produced or its relevance. However, this research is also conducted on the basis of the impact of each journal that publishes an article on the topic of Islamic insurance by calculating the journal's h-index, represented in a bar chart. The diagram below shows the journal's impact in blue. The darker the blue, the greater the journal's impact.

Figure 5: Sources impact



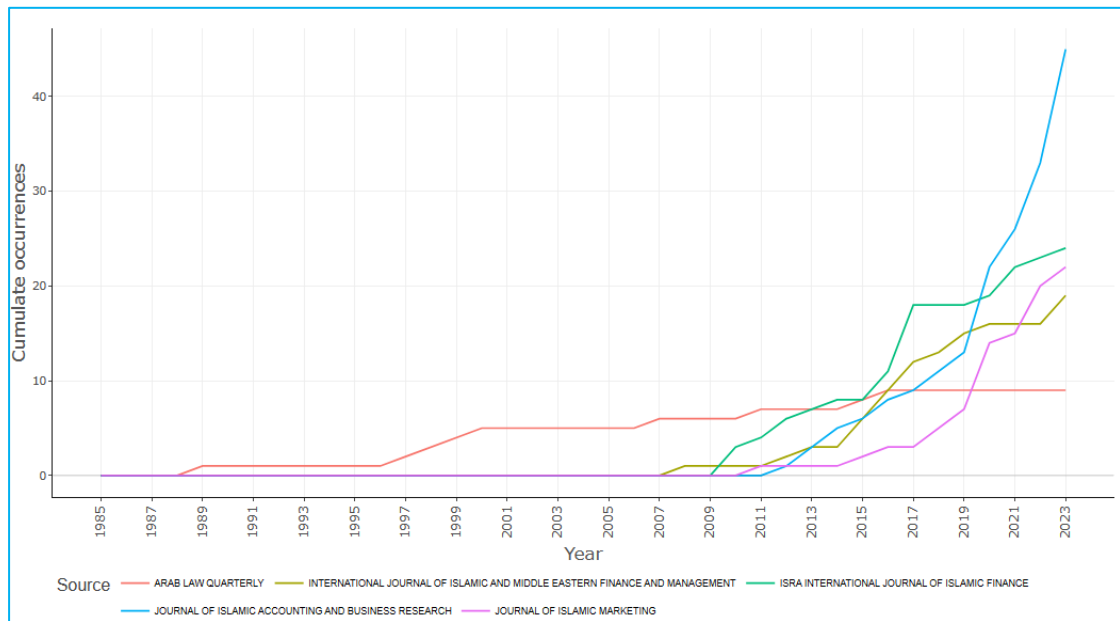
Source: Author

The data presented indicate that the "International Journal of Islamic Eastern Finance and Management" and the "Journal of Islamic Marketing" occupy first place with an h-Index of 10, highlighted by the dark blue color. In comparison, the third and fourth positions go to the "Journal of Islamic Accounting and Business Research" and the "Isra International Journal of Islamic Finance", with h-Index values of 8 and 6 respectively. For journals with an h-index of 2 and 3, there are highlighted with a bright blue color, suggesting that they have a less significant impact in terms of citations and influence compared to journals with a higher index.

3.6 Sources Growth

Our study also examines the evolution of journals that are a source of research on Islamic insurance in the fields of economic research and Islamic finance. The curve below shows the annual occurrence of each journal from 1985 to 2023. The curve shows that several journals began to grow between 2007 and 2011, and this upward trend continues to the present day. These include the Journal of Islamic Accounting and Business Research and the Isra International Journal of Islamic Finance. However, it should be noted that the "Journal Arab Law Quarterly" did not experience any significant evolution over the same period.

Figure 6: Growth of sources



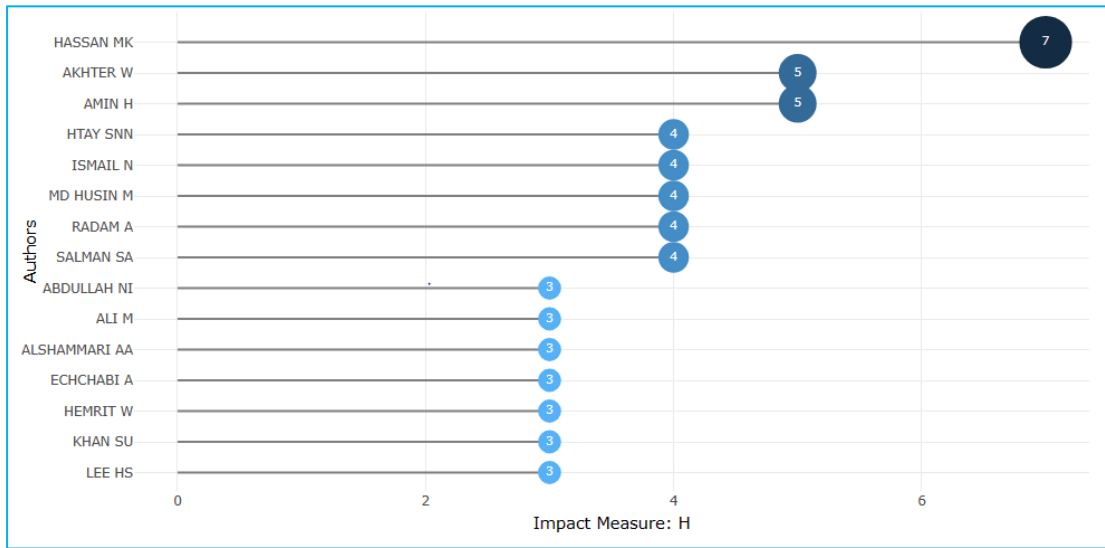
Source: Author

3.7 Authors Impact

Authors who have published their articles can also be sorted according to the impact they have had, based on the h-index. The h-index values range from 0 to 7.

Figure 7 below clearly shows that author Hassan Mk has the highest h-index, which is 7, marked in dark blue in the bar chart, testifying to his maximum impact in his publications. Next, there are two other authors with an h-index of 5, reflecting considerable impact, and a further five authors with an h-index of 4, also indicating a relatively good level of impact. Finally, the last seven authors have an h-Index of 3, which means they have a lower level of impact compared to authors with higher indices.

Figure 7: Author impact

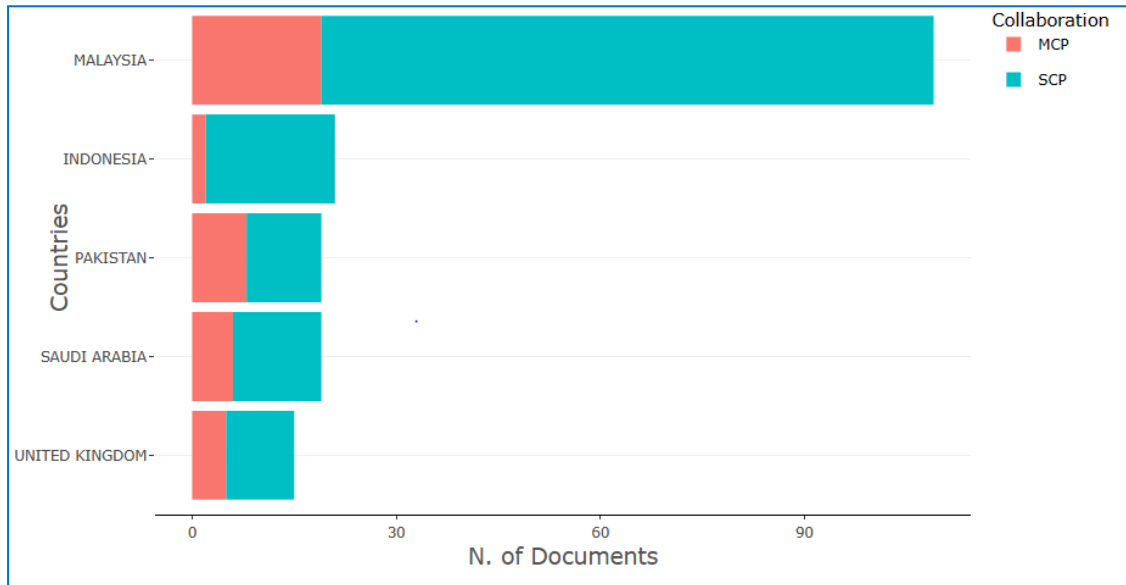


Source: Author

3.8 Corresponding Author's Country

The author's countries of correspondence in each article are illustrated in Figure 8, calculating the total form of collaboration between SCP (single country collaboration) or collaboration between a single country, and not MCP (multiple country collaboration) or collaboration between several countries. There are 5 main countries included in this data, and the range of paper quantity is from 0 to over 90 papers published on the topic of Takaful insurance.

Figure 8: Country of the corresponding author



Source: Author

The results show that Malaysia ranks first in terms of the number of authors who matches, with over 90 articles published. Indonesia follows in second place, with fewer than 30 published articles. Third and fourth place go

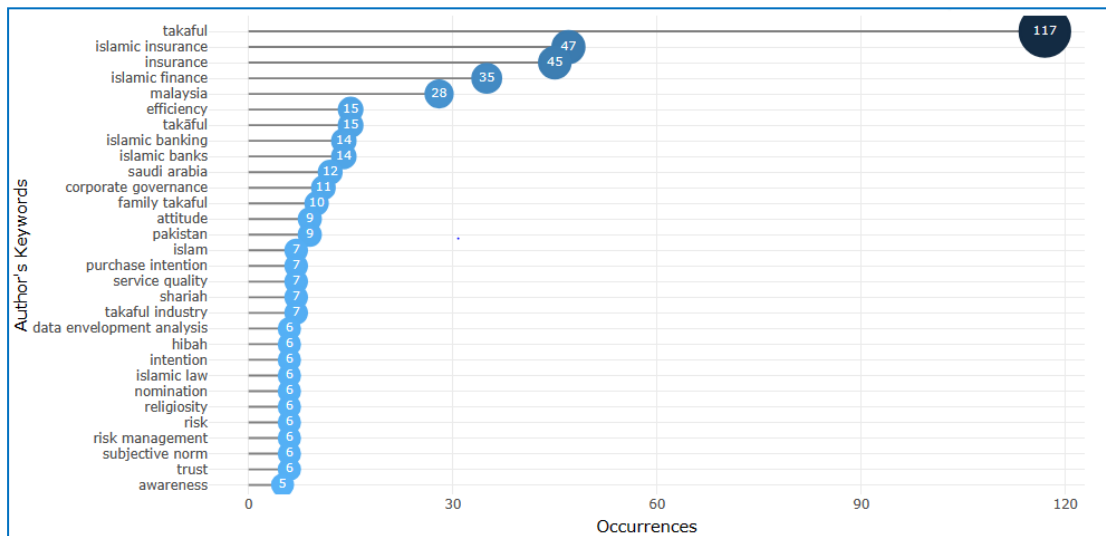
to Pakistan and Saudi Arabia respectively, with a total of 19 articles. Finally, the United Kingdom comes in fifth, with 15 articles published.

These data indicate that most articles on the subject of Islamic insurance are concentrated in Malaysia, where the Islamic financial industry is far more developed than in other countries.

3.9 Most Relevant Words

Our study also counted the relevant words used in the collection of documents that were the subject of the study, where there were several words with multiple occurrences ranging from 0 to 120 times. The first 30 words in the list, marked in blue in the diagram, show the comparison of the number of occurrences of each word used and its relevance to the theme of Islamic "Takaful" insurance. In fact, the most relevant words are shown in the dark blue diagrams.

Figure 9: Most relevant words



Source: Author

The word with the highest number of occurrences and most related to the research theme is the word "Takaful", used 117 times. In addition, the word "Islamic insurance" comes second with an occurrence of 47 times. The third and fourth most recurrent terms are "insurance" and "Islamic finance", with 45 and 35 occurrences respectively. This indicates that the theme of Takaful research is strongly associated with Islamic terms, which are frequently used in studies on the subject.

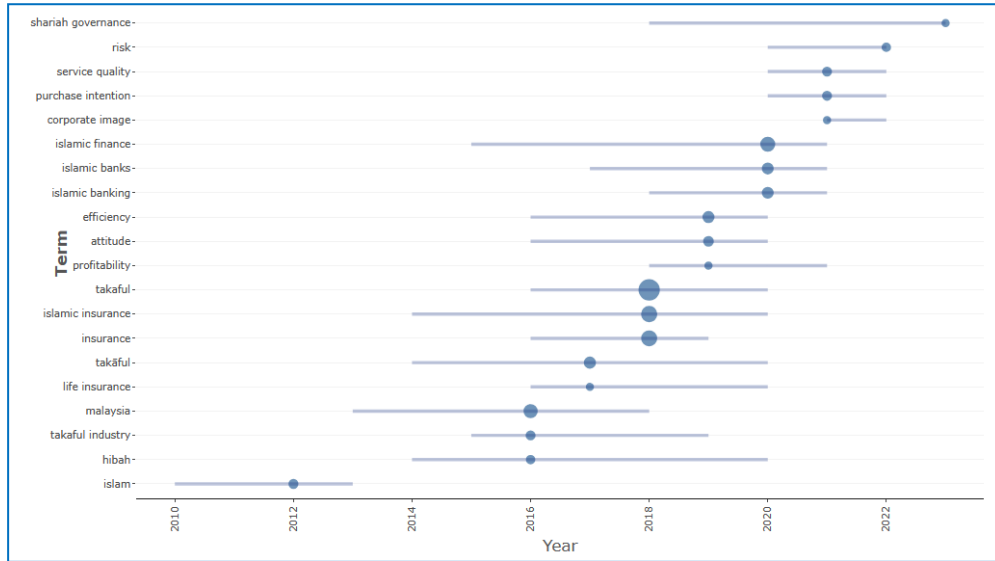
3.10 Word Tree Map

The tree map highlights the combinations of 50 available keywords used by the authors. Figure 10 enables us to identify them and use the word cloud to indicate what they represent: "Takaful", "Islamic insurance", "insurance", "Islamic finance" and "Malaysia".

3.14 Trend Topics

Theme trends are also part of this research. Figure 14 below gives an overview of theme trends from one year to the next, with a breakdown by year. The emergence of topics is also adjusted to the frequency of the number of words appearing in the search on the topic of Takaful insurance in Islamic economic and financial research.

Figure 14: Trend topics



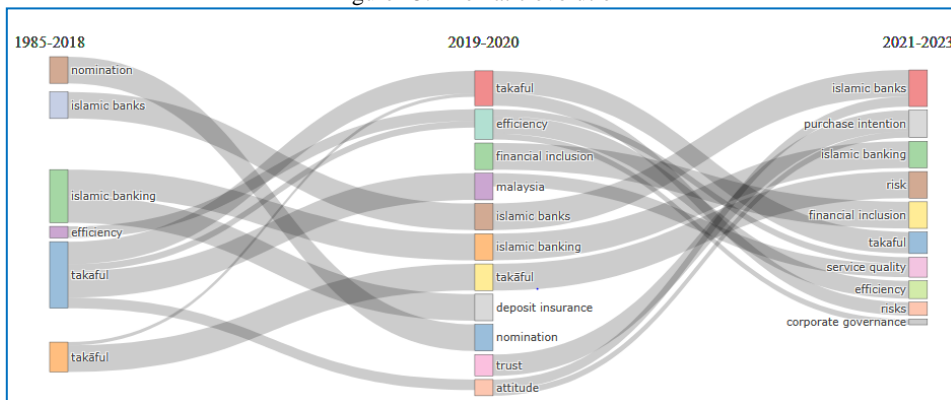
Source: Author

Figure 14 illustrates that the development of the topic has begun to experience a significant increase since 2016. According to the data described above, the topics that were frequently discussed between 2016 and 2018 are mainly related to Takaful insurance. Starting in 2019, new words began to appear, particularly those related to the adoption of Takaful insurance, such as "purchase intention," "attitude," as well as terms related to Takaful services such as "service quality" and "brand image." In addition, from 2022 onwards, some particularly interesting new words have appeared, including "risk" and "governance".

3.15 Thematic Evolution

The themes used in the articles being researched continue to change, particularly between recently published articles and those published long ago. The evolution of theme is illustrated in Figure 15 below. Although the theme of this research is Islamic insurance "Takaful".

Figure 15: Thematic evolution



Source: Author

The data reveal that several sub-themes are frequently addressed. The left-hand side highlights several themes that were widely explored from 1985 to 2018. There are six themes listed, each displaying a different size according to how frequently they are used. The "Takaful" theme occupies first place, followed by the "Islamic Banking" theme.

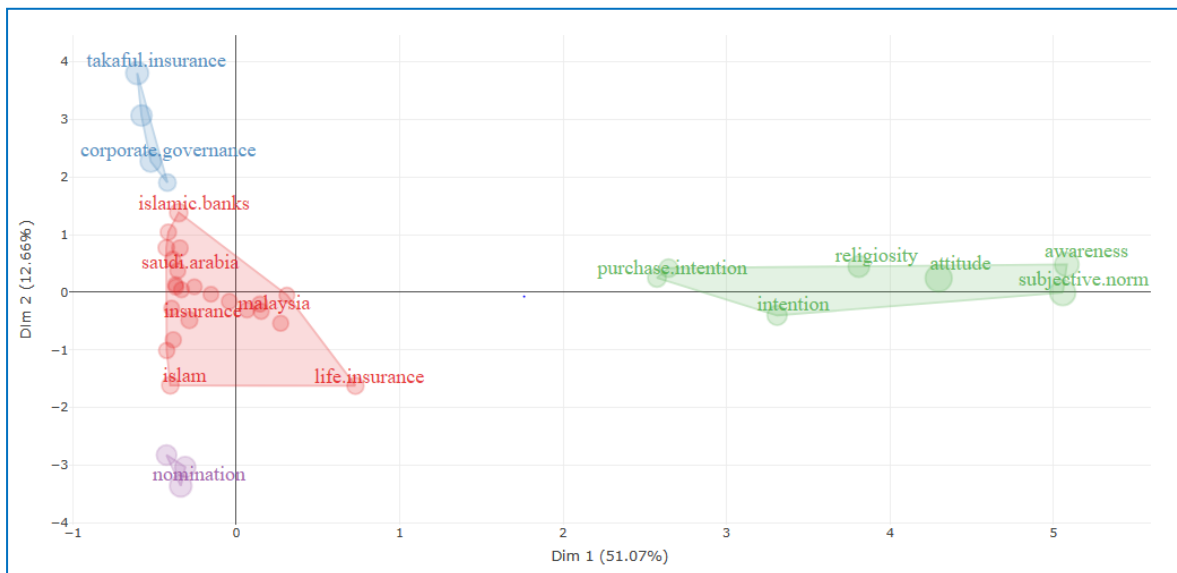
The second part of the central section highlights several themes that were frequently discussed between 2019 and 2020. Some of these themes have evolved from previously used themes and are related to their previous content. In addition, new themes have appeared in this section, including "financial inclusion," "efficiency," "attitude," "trust," and "deposit insurance."

The third section on the right reveals the themes most recently used between 2021 and 2023. Three new themes have appeared, namely "purchase intention," "service quality," "risk," and "governance".

3.16 Conceptual Structure Map

Our study also includes the creation of a conceptual structure map or contextual structure map for each word frequently used in Islamic insurance research papers. These maps are generated by dividing the words according to the relationships between them, established through zone mapping. Each word is positioned according to Dimension 1 and Dimension 2 values to create a mapping of words with similar values. This allows us to visualize relationships between words that have conceptual or contextual similarities.

Figure 16: Conceptual structure map - Method: MCA



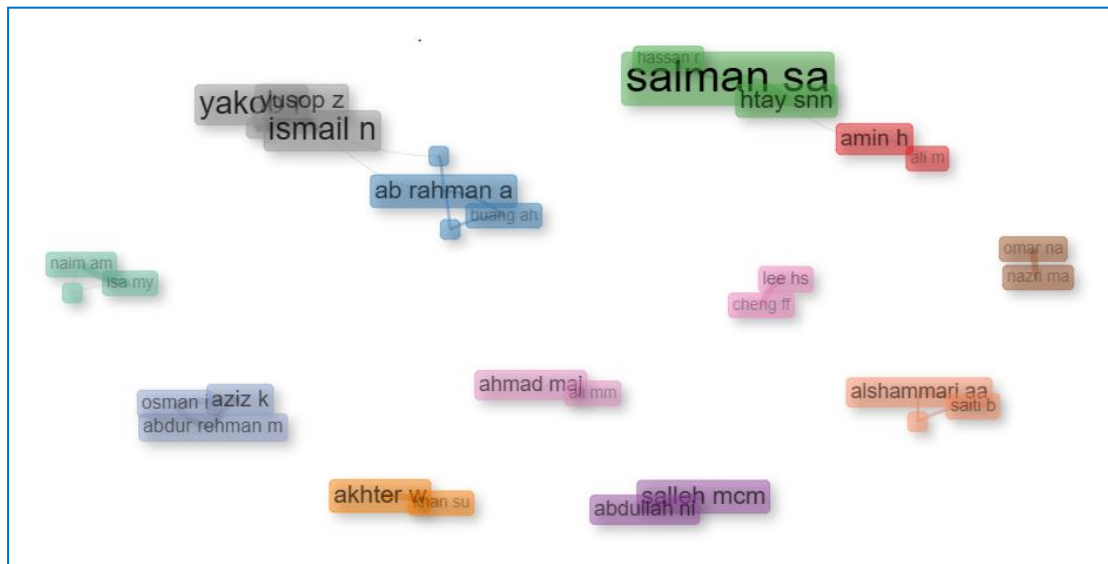
Source: Author

According to the figure above, there are three parts of the divided area, namely the red, blue and green zones, each of which contains words that are related to each other. The red and green zones are particularly rich in interconnected words, suggesting that many search documents establish relationships between the terms included in these two zones.

3.17 Collaboration Network

Figure 17 indicates a collaborative network of authors of articles on the subject of "Takaful" Islamic insurance. The figure below shows several authors' names, linked to each other. This relationship between authors is being indicated by groups of coloured equations and lines between one name and another. The size of each square also indicates the number of articles published on that theme.

Figure 17: Collaboration network



Source: Author

The data above highlight the collaboration between the 12 groups of authors, but there are three particularly important groups in this study. The first group, represented in green, shows the collaboration between Salman Sa, Htay Snn and Hassan R. The second group, in grey, highlights the collaboration between Yakob R, Ismail N, Yusop Z and Radam A. Finally, the third group, in blue, highlights the collaboration between Ab rahma A, Buang Ah, Abdutalib M and Md hussin M.

4. Discussion

The research results indicate a bibliometric analysis of journal articles with a numerical identifier, carried out with R Biblioshiny on the topic of Islamic insurance indexed in the Scopus database. Research related to Islamic insurance has become an important topic of interest due to the need to develop this industry. This need has prompted researchers to produce various scientific studies on Takaful. In recent years, there has been growing interest in the expansion of Takaful literature. This literature covers various aspects, including the principles of Takaful insurance, operating mechanisms, adoption factors, governance and risk management within Takaful companies.

This article on the subject of Islamic insurance bears witness to the continuing development of the Islamic insurance industry. Researchers certainly have plenty of ideas to contribute to the advancement of the Islamic insurance industry through research, so the number of articles continues to grow year by year.

Based on the above results, it appears that research on Islamic insurance has been widely published in various journals. The results of the three-field graph show the three data points, namely journals, authors and subjects, make it possible to identify the relationship between the three, the subjects covered by the authors and the journals in which the authors publish their research. These data also describe the most frequently published journals, the most productive authors, and the most discussed topics. The "Journal of Islamic Accounting and Business Research" is the most productive journal on Islamic insurance, with 45 papers published. However, the "International Journal of Islamic Eastern Finance and Management" and the "Journal of Islamic Marketing", have a high impact with an h-index of 10. In terms of the development of each journal, the "Journal of Islamic Accounting and Business Research" is in the lead. This journal can be a reference for researchers looking for sources of research on this topic.

According to the study, the authors who have published articles on Islamic insurance and have had a significant influence in this field, it was found that author Hassan Mk has the highest h-index of 7, indicating the maximum impact of his publications. Similarly, the corresponding countries of the authors in each article show that Malaysia occupies the top position in terms of the number of authors matches, with over 90 published

articles.

The most relevant terms used in the articles analyzed on the topic of Islamic insurance, and the most appropriate to use, are mainly "Takaful," followed by "Islamic Insurance," "Insurance," and "Islamic Finance," among others. This indicates that the topic of Takaful research is strongly associated with Islamic terms and Islamic finance, which are frequently used in studies on this subject.

It is interesting to note that several countries and regions of the world, also appeared in the tree map, word cloud and word cluster, such as, Malaysia, Pakistan, Saudi Arabia and Iran. This demonstrates that these countries are attracting strong interest as subjects of study in Islamic insurance research, while the thematic evolution offers an overview of the position of each subject, as well as a trajectory of the terms used in the various articles published on Islamic Takaful insurance.

5. Conclusions

This study describes the evolution of articles on Islamic insurance in the Scopus database, covering the period from 1985 to 2023. The bibliometric analysis, carried out using R Biblioshiny software, is presented through tables and graphs. A total of 393 articles were collected and analyzed. The results showed that research on the subject of Islamic insurance is constantly expanding. The most prolific author on this theme was Hassan Mk during the research period. In addition, the keywords used in this search include, Takaful", "Islamic Insurance", "Insurance" "Islamic Finance". Trend analysis reveals new challenges faced by Takaful companies, particularly with regard to their governance and risk management.

In line with the introduction to this study, our analysis is based on data provided by Scopus, reputed to be the most authentic source of data. In addition, our study has generated theoretical implications suggesting that Islamic insurance has a considerable history and offers vast opportunities for development in terms of its products and the aspects that distinguish them from conventional insurance. Similarly, this study offers guidance for future Takaful research. For stakeholders in the sector, this study can provide an overview and roadmap for the development of Takaful research worldwide.

In addition, it is important to pay greater attention to and conduct systematic studies on the themes of Takaful adoption, risk management and Takaful company governance. At the same time, it should be noted that there is a lack of in-depth studies examining the importance of using digital technology to improve Islamic insurance institutions, so there is still plenty of opportunity for researchers to continue developing Islamic insurance research to foster the development of Islamic insurance companies.

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