

Zakat and Technology: A Bibliometric R Analysis

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ABSTRACT

This study aims to determine the development and trend map of the Zakat and Technology outbreak research that is published by reputable journals in the theme of Islamic economics and finance. The data analyzed covering more than 440 publications of indexed research publications. The export data is then processed and analyzed using the R Biblioshiny application program to find out the bibliometric map of the development of the role of Islamic economics and finance in zakat and technology research. The results showed that the number of publications on the development of the role of Islamic economics and finance research experienced a significant increase. The results show that the highest number of document types are journaled articles. The most popular authors are Kuran T, and the most popular keyword topics are zakat, Islam, and Indonesia.

Keywords: Zakat and Technology; IEF; Bibliometric; R

INTRODUCTION

Today, in the digital era that has been increasingly developed, the people's behavior in all aspects of life has changed. One of the most interesting topics relates to the use of the internet and financial technology, where the use of the internet shows an increasing trend (Friantoro & Zaki, 2018). Indonesia today's digital era is marked by the increasing use of the internet by the community. According to the Global Digital Report Data in 2018, the number of internet consumers in Indonesia has reached 132 million people, equivalent to 50% of Indonesia's population who can access the internet (Rachman & Nur Salam, 2018).

Of course, the daily activities of the Indonesian cannot be separated from the use of the internet, from buying food for consumption, ordering transportation online, sending goods, to ordering tickets and doing Islamic financial transactions.. It

is well known that zakat, infaq and, sadaqah (ZIS) are forms of social financial instruments. Where currently zakat institutions make the collection and distribution process easy with the presence of technology in financial transactions (Wulan et al., 2018).

In the *ayah* (verse) of the al-Qur'an and al-Hadith that discuss economics, it is explained the way zakat must be properly organized and managed for the benefit, through the government, non-governmental organizations (NGOs), Islamic organizations, and other stakeholders who can regulate and distribute zakat services and professionally performed (Rizki, 2019). This makes zakat has great potential to build prosperity with the majority of Muslims in Indonesia.

Based on the results of research by the National Zakat Agency (BAZNAS), the potential for zakat in Indonesia reached 217 trillion. However, in reality, the collection of zakat funds reaches 1.729 trillion

(Setiawan, 2019). It is thus significant effort is deemed necessary to actualize Indonesia's zakat potential.

Towards a disruptive era, there are many Financial Technology (Fintech) companies that are increasingly growing everywhere. Such as peer-to-peer lending, crowdfunding, mobile payment or online banking, marketplaces, and so on. Fintech companies provide efficient financial services by basing their activities on smartphone technology. This has a direct impact on the institutions that are still manually running their business activities, including BAZ and LAZ.

There are more than 440 published scientific research papers that cover the object of research both nationally and internationally within the time frame of this paper; August 2020. The paper that is the object of this research is a paper that discusses Zakat and Technology in Islamic economic and financial research. Research with this theme is interesting to do considering the theme of zakat and technology has been emerging in scientific research to produce ideas and innovations that can answer problems in Islamic economic and financial research.

LITERATURE REVIEW

Zakat is one of the most basic obligations in Islam which is a fundamental component in forming an economic community (Abdelaziz et al., 2017). Zakat means to purify or increase or grow. Meanwhile, the literal meaning of zakat is that a person's wealth can be cleaned with zakat. This makes one's wealth grow and increase not only physically but spiritually because paying zakat which leads to an increase in blessings from Allah SWT (Obaidullah & Manap, 2017; Muneza & Nadwi, 2019). Zakat can also help those who are unable to meet their needs independently, such as orphans, widows, people with disabilities,

poor people, and others (Fahlefi et al., 2019).

Today, zakat management payments has been no longer performed with manual system. Technology zakat online has been developed. According to Sakka and Qulub (2019), online zakat is a mechanism for paying zakat without having to come in person, so that it eases muzakki to distribute their zakat. One of them is through ATMs, the internet, websites, and zakat providers, and Financial Technology (Fintech).

Fintech is a term that comes from two words, namely financial and technology. In simple terms, the meaning of financial technology is an innovation that involves modern technology in the field of financial services (Ulya, 2018).

A few zakat institutions in Indonesia have the largest collection of zakat funds, namely Dompot Dhuafa, BAZNAS, and Rumah Zakat. The three institutions provide examples of strategies in increasing the collection which is quite good. As a result, the three institutions have collaborated with various digital financial platforms such as mobile banking services from various banking service providers, digital crowdfunding, and e-commerce services. The digitization of zakat payments is one of the important things in increasing the collection of zakat maal for individuals. This is because the convenience provided by digital services in paying zakat is one of the factors that affect one's intention in paying zakat (BAZNAS Strategic Studies Center, 2019; Hudaefi et al., 2020).

Several previous studies have conducted research related to zakat and technology. Where the role of technology at this time cannot be separated from the optimization of the potential of zakat owned in each country. The previous studies that discussed this theme include, Ulya (2018); Andiani et al. (2018); Muhammad (2019); Rizki (2019); Ghozali et al. (2019); Fahlefi et al. (2019); Ichwan

(2020), Hudaefi et al. (2020) and Kailani & Slama (2020).

METHODOLOGY

Bibliometric mapping is a research topic in the bibliometric field (Borner et al., 2003). Two bibliometric aspects that can be distinguished are the construction of the bibliometric map and the graphical representation of the map. In the bibliometric literature, the greatest concern has been with the construction of bibliometric maps. Research is related to the effect of differences in similarity in size (Ahlgren et al., 2003), and they were tested by different mapping techniques (Boyack et al., 2005).

The graphical representation of the bibliometric received less attention. Although some researchers seriously study problems related to graphic representation (Chen, 2003). Most of the articles published in the bibliometric literature rely on simple graphical representations provided by computer programs. This study uses publication data in the form of papers sourced from various scientific journals and other sources with the theme of research on the application of Zakat and Technology in Islamic economic and financial research. From the search results, 440 published articles were obtained.

RESULTS

Source

Table 1. Source by Document Types

No	Document Types	Number of Articles
1	Journal article	312
2	Book chapter	48
3	Monograph	14
4	Preprint	20
5	Proceeding	46
TOTAL		440

The table above shows the number of document collections studied on the theme

of zakat and technology, namely a total of 440 data consisting of 5 different types of documents, with the following explanation: (1) the types of published journal articles are 312 documents, (2) types of interest a book chapter of 48 documents, (3) monograph type of 14 documents, (4) type of preprint design (preprint) of 20 documents, and (5) proceedings of 46 documents.

Based on the table above, it can be concluded that the documents that are most widely used as objects of study in research that discuss zakat and technology in the first rank are journal articles with a percentage of 70.9% or 312 documents. Meanwhile, the least used documents were monographs with a percentage of 3.1% or 14 documents. This data shows that the references used are quite valid because they come from written documents that are scientific and are mostly dominated by published papers.

Average Citation per Year

Table 2. Average Citation per-year

Year	N	Mean TC per Article	Mean TC per Year	Citable Years
1986	2	22.00	0.65	34
1992	4	10.75	0.38	28
1993	2	0.00	0.00	27
1994	1	0.00	0.00	26
1995	1	45.00	1.80	25
1996	1	0.00	0.00	24
2000	2	113.00	5.65	20
2001	4	23.50	1.24	19
2002	2	4.00	0.22	18
2003	3	12.67	0.75	17
2004	2	46.00	2.88	16
2005	2	63.00	4.20	15
2006	6	5.83	0.42	14
2007	2	9.00	0.69	13
2008	5	7.80	0.65	12
2009	6	38.00	3.45	11
2010	12	9.50	0.95	10
2011	14	6.93	0.77	9
2012	8	5.25	0.66	8

2013	17	8.65	1.24	7
2014	23	4.83	0.80	6
2015	32	2.44	0.49	5
2016	31	3.03	0.76	4
2017	32	1.25	0.42	3
2018	73	1.16	0.58	2
2019	107	0.21	0.21	1
2020	46	0.28		0
Total	440			

The table above shows the number of citations or quotes from the average per article and year in papers on the theme of zakat and technology. This research examines documents on this theme which were published for 36 years or from 1986 to 2020. Based on the table, it can be seen that most paper publications on the theme of zakat and technology were published in 2019 with a total of 107 documents. However, the data is still temporary because 2020 has not been completed and it is still possible to add more. The collection of papers studied in this study is limited to August 2020.

Then, the highest average total citation for each article was 2000 with an average of 113 citations. Interestingly, the highest mean total citation per year was in 2000 as well, with an average value of 5.65. These results indicate that the paper published in 2000 was the paper most cited

or cited on the theme of zakat and economics when compared to the previous and subsequent years which experienced fluctuation but generally tended to be lower.

Three Fields Plot

The Three Fields Plot in Figure 1 is an illustration of 3 elements consisting of a list of journal names, a list of authors' names, and a list of topics used. These three elements are plotted with a gray plot that shows their relationship to each other, starting from the name of the journal, then each journal shows the author, and each author is shown on the topic they use in their paper on the theme of zakat and technology. The size of each rectangle in the list of names shows the quantity of paper associated with that element.

The first element, namely the journal. There are 8 journals indexed in the Three Fields Plot that publish papers on the theme of zakat and technology, but the top journal that publishes the most papers on this theme is the SSRN Electronic Journal which is depicted in a blue rectangle and connected by several authors, namely Mamouni, Marka, and Hasan S.

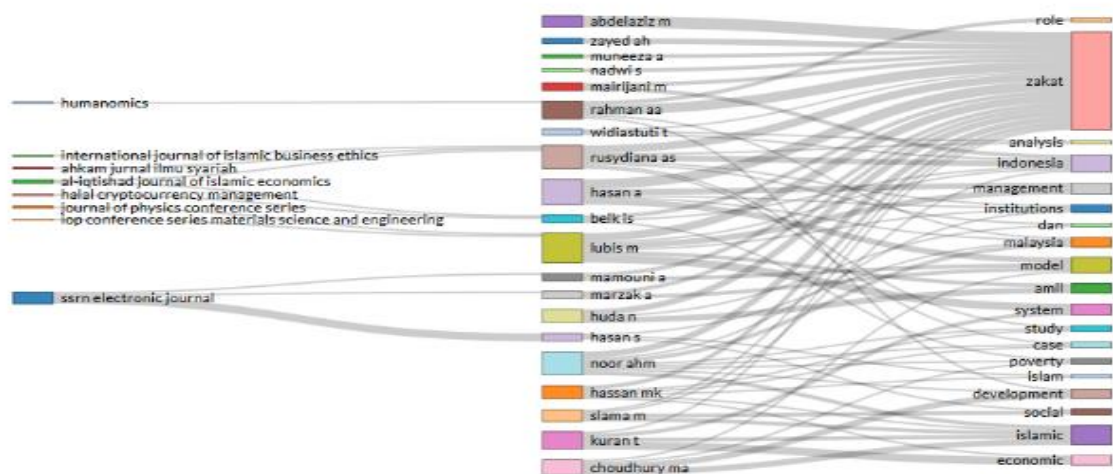


Figure 1. Three Fields Report Zakat and Technology

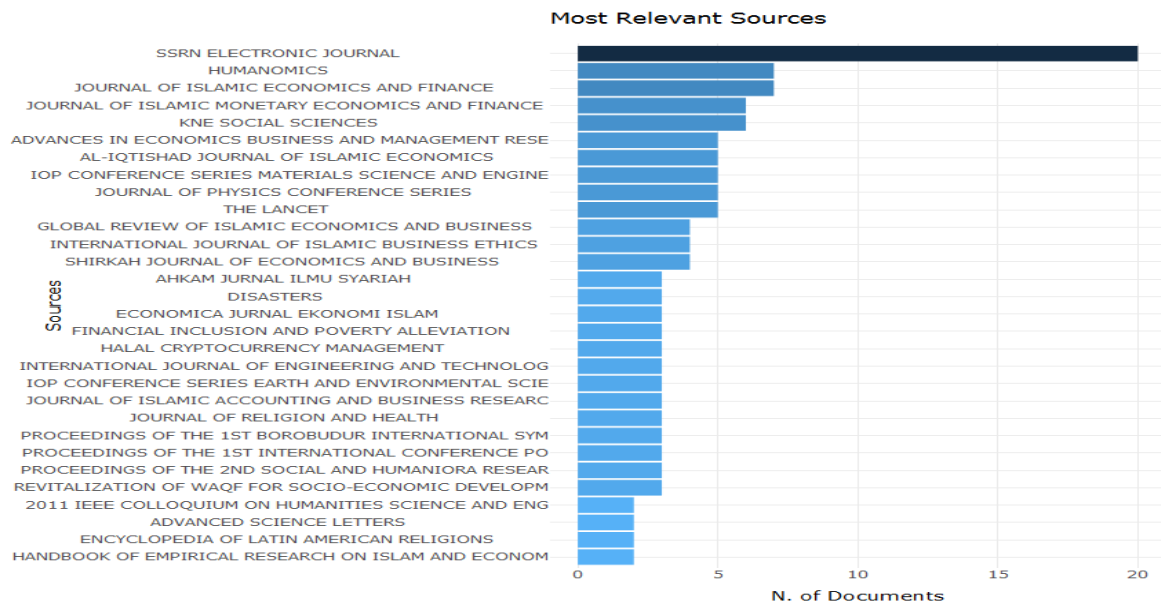


Figure 2. Most Relevant Sources Zakat and Technology

The second element in the middle is the author's name. Some writers whose published journals are recognized will be associated with previous elements, such as the writer Rahman A who is linked to the Humanomics journal on the journal element. However, some others are not indexed so that they do not have any connection with any of the journals listed. Also, each of these authors will be associated with frequently used keyword topics on the right. There are the top 20 authors listed in this plot. The size of the rectangle shows the quantity of the number of papers written by each author. In this plot, Lubis M occupies the widest rectangle which shows that he writes mostly on the theme of zakat and technology.

The third element is the keyword topic that appears the most in the paper which is the object of research. Each topic is associated with an author who uses the topic a lot. There are 19 keyword topics listed and the most frequent keyword is Zakat, as indicated by the size of the pink rectangle that dominates the rest of the rectangle. It also appears that the topic of zakat is used by almost all registered authors, this data is following the theme of this study, namely discussing scientific papers related to zakat and technology.

Apart from zakat, this plot also shows several other widely used keywords, such as Indonesia, Islamic, and Model.

Most Relevant Sources

Figure 2 shows the number of paper documents published by each journal based on the level of relevance to the theme of this research, namely zakat, and technology. The data shows the list of names of the top journals published and the interval for the number of documents published with a blue bar chart. The darker the blue color indicates the more quantity and relevance of the research theme, the number of documents published by all journals ranges from 0 to 20 documents.

SSRN Electronic Journal is in the top position with the number of documents 20 as shown by the bar chart which is dark blue, darker than the bars of other journals because it is more relevant to the theme

discussed. The bottom journal is the Handbook of Empirical Research on Islam and Economics with a bright blue bar chart showing a number less than 5, which is exactly 2, which means that there are not many published papers in quantity and less

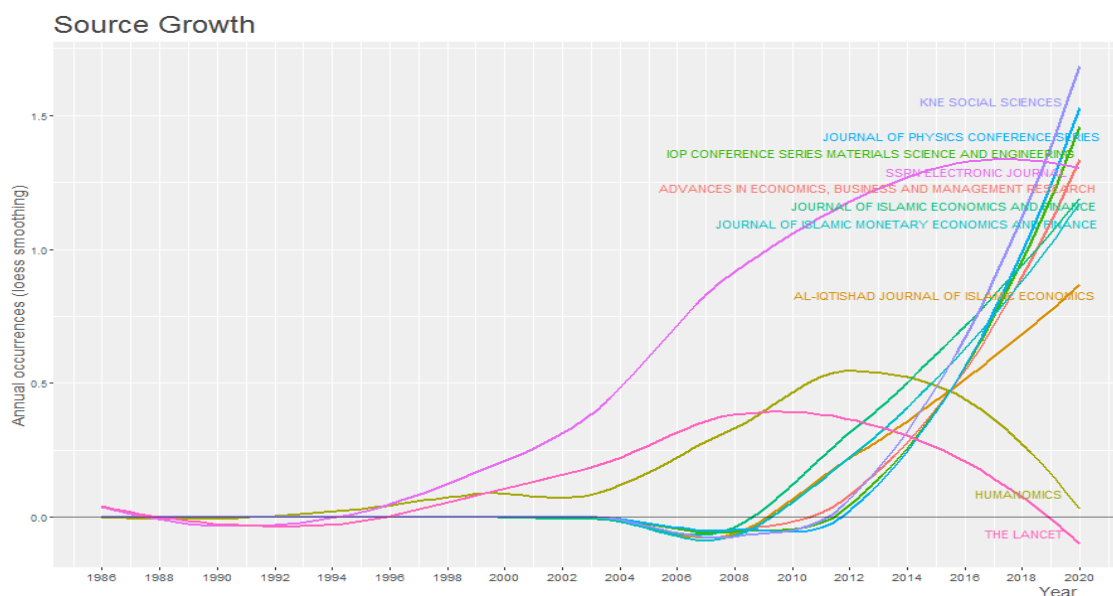


Figure 5. Source Growth Zakat and Technology

research theme, then in the second place there is the Humanomics journal, then the Journal of Islamic Economics Finance in the third place, the quantity of publication of the two journals is above 5 documents but below 10 paper documents. Followed by other journals that are categorized as core journals on the theme of zakat and technology.

Source Impact

Journal calculations are not only seen in terms of quantity or relevance, but this study also discusses the impact of each journal that publishes papers on the theme of zakat and technology by calculating the journal's h-index which is then depicted in a blue bar chart. Apart from showing the h-index value of each journal, this diagram also shows the impact of each journal through the blue color shown, the darker the blue in the diagram, the bigger the journal's impact.

The data found that the journals Humanomics and The Lancet were in the top position with an h-index value of 5 and a dark blue bar chart (Figure 4), indicating that these two journals had the greatest impact compared to other journals. The journals with the lowest h-index with a value of 1 are occupied by 7 journals that

are colored light blue on the diagram, indicating a low level of impact.

Source Growth

This study also discusses the development of journals which are the source of research documents for this paper on the theme of zakat and technology. The data above shows the development of the annual occurrence of each journal from 1986 to 2020 so that you can get a picture of whether the journal has increased or decreased with a curved line during the research period, especially in the publication of papers on zakat and technology.

Figure 5 shows several journals that began to develop since the late 2000s and continue to increase, including the purple line, namely Ssrn Electronic journal, which has continued to increase in the last few years since 2010, but in 2020 it has stagnated and decreased slightly. Another paper that has experienced a drastic increase and until 2020 continues to outperform the annual occurrence value even exceeding 1.5 is shown by the journal Kne Social Science line.

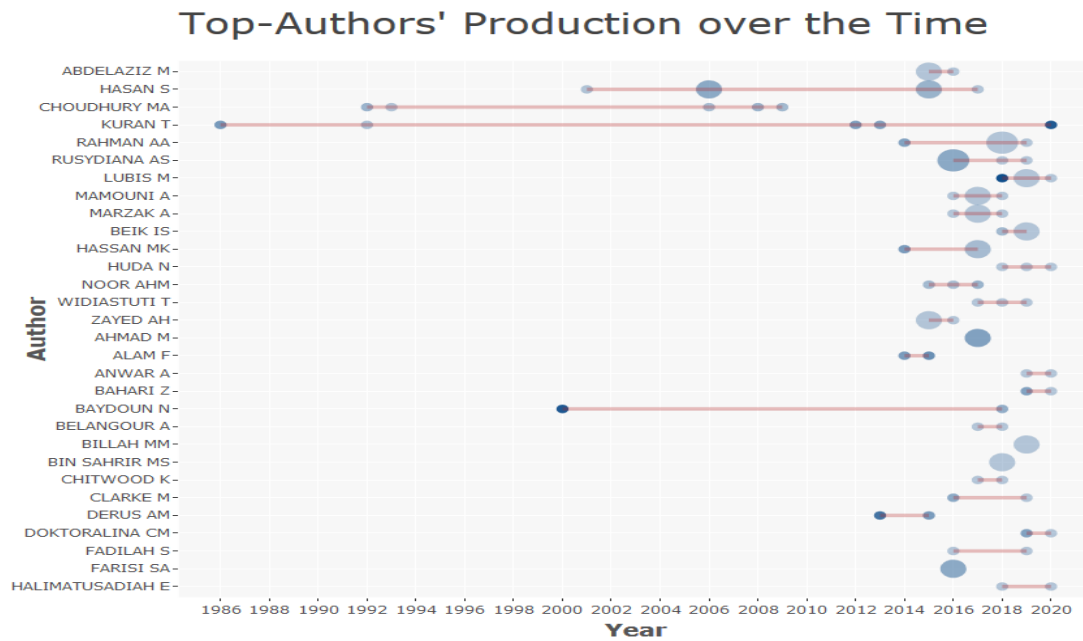


Figure 6. Top Authors Production over the Time Zakat and Technology

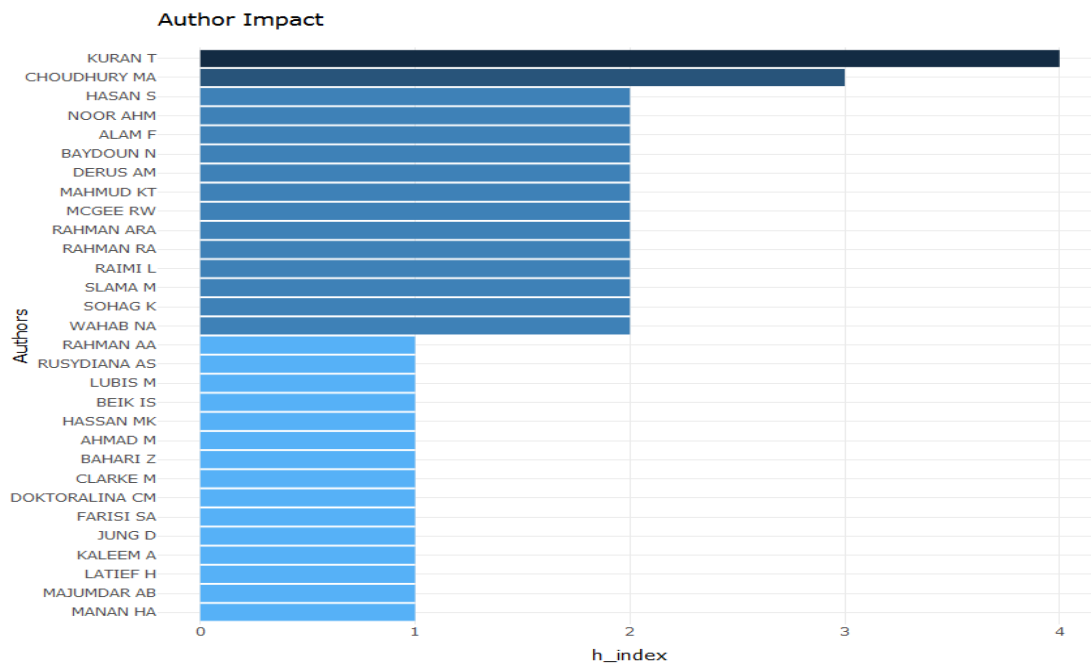


Figure 7. Author Impact Zakat and Technology

Several other journals also experienced an increase, although not as significant as the two journals above, 2 journals had experienced an increase in early 2000 but began to decline since 2012, namely the journal Humanomics and The Lancet which in 2020 reached the lowest position with an annual occurrence value 0.0.

Top Authors Production over the Time

Productivity can not only be measured in journals, but also on the author in particular. Figure 6 shows the production of some of the top authors during the period of the study, namely from 1986 to 2020 which is shown by a red line from the beginning of the author of the publication until the last

year the author published his paper, besides that the circle in the red line shows the number of papers published according to the year. applicable.

The research produces data as shown in the picture, where it appears that there are writers who have started writing papers on the theme of zakat and technology for a long time and some have recently written. The author who has long written based on data, namely Kuran T, has been recorded writing since 1986 and is still productive writing until 2020 even though the quantity is not much. Also, writers who have long tracked colleagues are occupied by Choudury MA who wrote from 1992 to 2009, Baydoun N who wrote from 2000 to 2018, and Hasan S who wrote from 2001 to 2017 where he published the most paper in 2006 and 2015.

Author Impact

Authors who have published their papers can also be sorted based on their impact rating with the h-index rating. My h-index values range from 0 to 4 and the impact

level is shown in blue in the bar chart, where the darker the color indicates the bigger the impact.

Figure 7 shows the results that the author who achieved the highest h-index value, namely 4 with the maximum impact with the dark blue bar chart color was achieved by Kuran T, then followed in second place by Choudury MA who achieved the h-index value 3 and had a very good impact. but not as high as the impact generated by Kuran. Also, several other authors achieved h-index values of 2 and 1 as well as lower levels of impact as shown in the diagram above.

Corresponding Authors Country

Figure 8 shows the correspondence countries of the authors contained in each article with the calculation of the total form of collaboration of SCP (single country collaboration) or collaboration of one country, not MCP (multiple country collaboration) or collaboration between several countries. There are 5 top countries

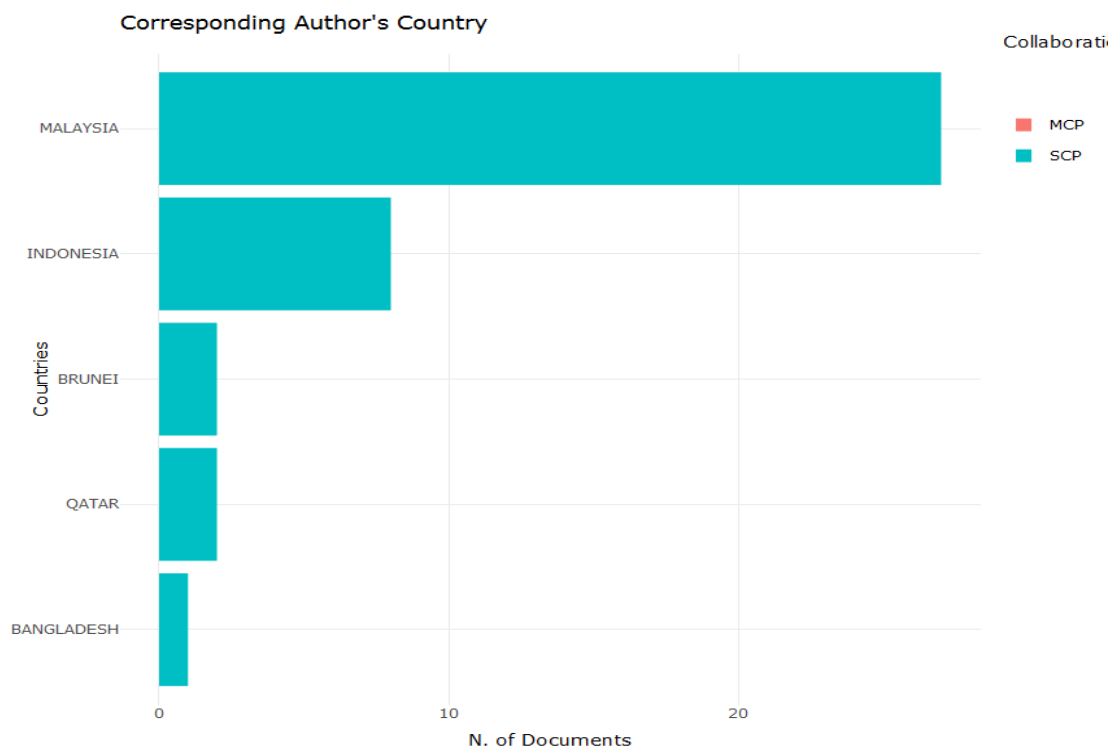


Figure 8. Corresponding Authors Country Zakat and Technology

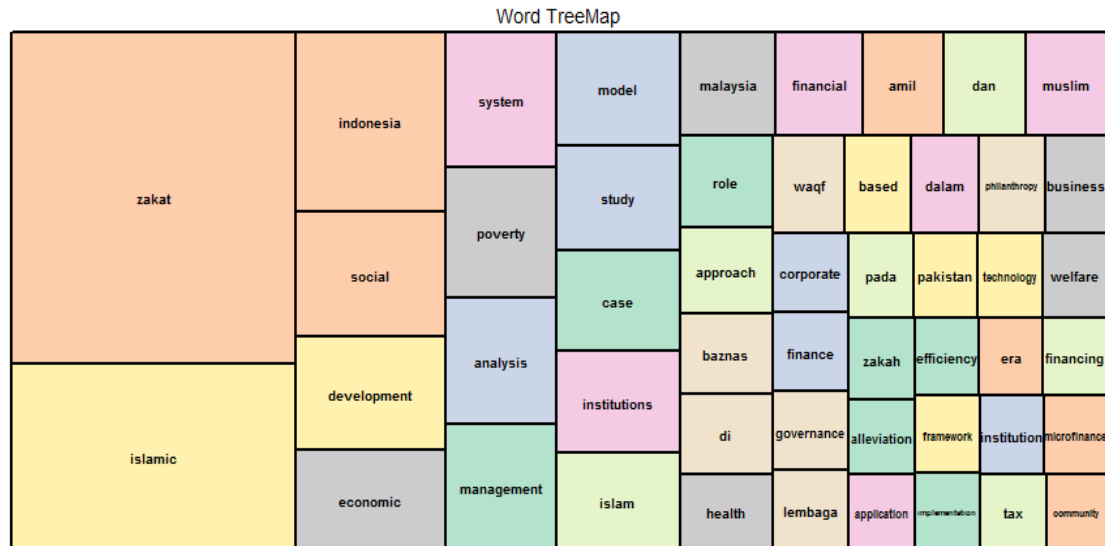


Figure 11. Word TreeMap Zakat and Technology

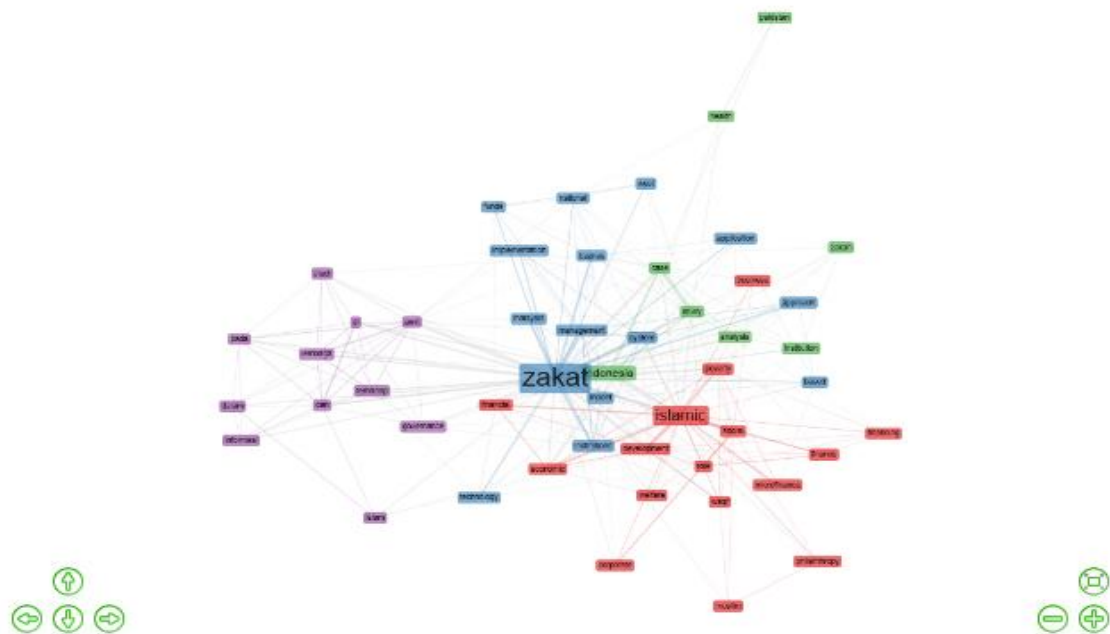


Figure 12. Clustering Zakat and Technology

Most Relevant Words

This study also calculates the relevant words used in the collection of documents that are the object of the study, there are several words with the number of occurrences between 0 and more than 150 times and the top 30 words are listed and the blue table diagram shows the comparison of the number of occurrences of each. the use of the word and its relevance to the theme of zakat and technology (Figure 9).

The top word with the highest number of occurrences and the most relevant to the theme of this research is 'zakat' with total usage of more than 150 times and is most relevant as shown by a dark blue line diagram, the word zakat also corresponds to the theme of zakat and technology research, hence the dominant word. what appears in the data collection under study is the word zakat.

Furthermore, in second place is the word 'Islamic' with several occurrences of

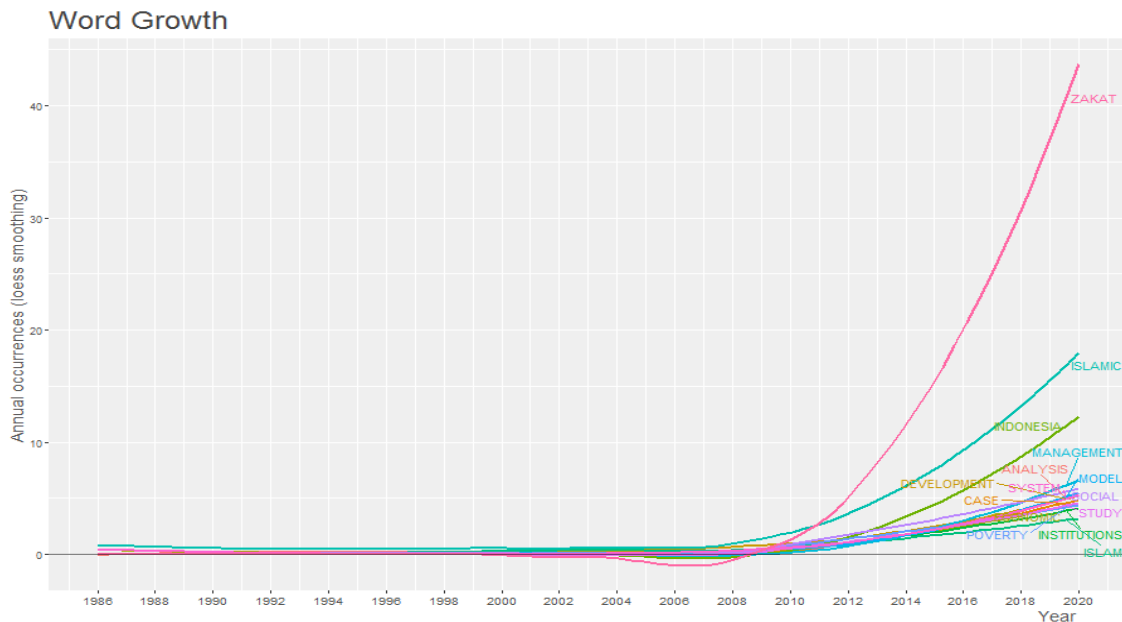


Figure 13. Word Growth Zakat and Technology

more than 100 times, but less than 150. This word is of course widely used, especially in describing zakat as a form of Islamic social finance, and especially in the scope of discussion of Islamic economics. Then in third place the word "Indonesia" with a quantity of more than 50 but less than 100 times. The appearance of country names in the list of word relevance that most often appears indicates that zakat is closely related to Indonesia, or that Indonesia is quite often used as the object country of study in the paper under study.

Word Cloud, Clustering and Word TreeMap

Word cloud, word treemap, and clustering in Figures 10, 11, and 12 reveal a description of the words that often appear in the data collection of papers studied in the theme of zakat and technology in different forms, but the results are the same, namely the most common words. often appears in the first order, namely zakat, in second place namely Islamic, and the third place, namely Indonesia.

The Word cloud displays a picture of words in various sizes according to the quantity of the number of words appearing. In terms of placement, the word cloud tends

to be random, but the dominating words are placed in the middle so that they are more visible with their large size. Meanwhile, the Word TreeMap displays words that often appear in boxes similar to regions on the map, where the more words appear, the larger the square area. The clustering displays the words in the form of colored clusters by considering the relationship between one word and another.

Word Growth

In this study, the words that often appear are also translated into a development curve each year with an annual occurrence value that shows the average value of the number of occurrences of these words in the data collection studied in the theme of zakat and technology per year. Figure 13 shows that the majority of words that often appear have started to develop and are used since 2010 and continue to increase every year.

The highest increase was achieved by the word 'zakat' with the value of annual occurrence which increased every year with a large enough number resulting in a steep curve and 2020 the value exceeded 40.

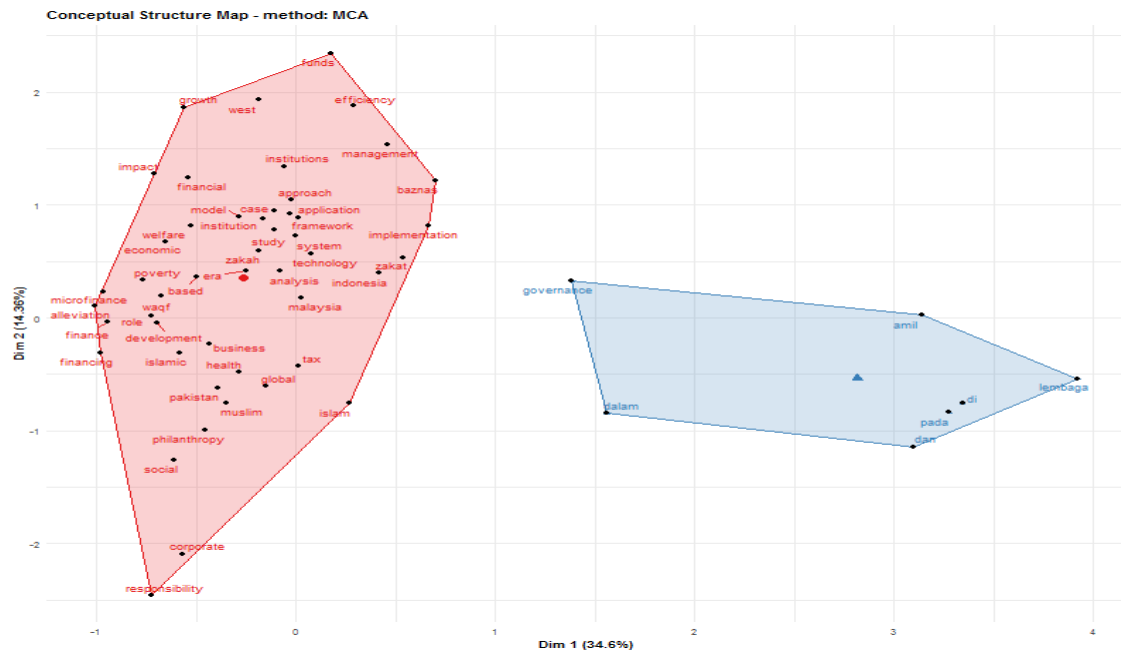


Figure 16. Conceptual Structure Map- method: MCA

words are used, and then to the right, the more recent the word is used. The development of the topic began to experience a significant increase since 2010.

Based on the data in Figure 14, the topic that has been used since 1992 is 'thought', especially related to zakat and technology, then in 1996, the topic 'Saudi' began to emerge. Although it has been quite a while, the quantity of the two topics that have emerged under 2000 is still small. The topics that are widely used in 2020 include 'kidney, cases, management, economy' with different quantities, the topic of 'kidney' at least being at the bottom and the topic of 'economy' being the highest with being higher.

Thematic Evolution

The themes used in papers that are the object of research continue to change, especially from papers that have recently been published when compared to papers that have been published for a long time. The evolution of the theme is shown in the image above. Although the theme of this research is zakat and technology, this data

shows several sub-themes that are widely used. The left side in Figure 15 shows some of the themes that are widely used from 1986 to 2005, there are 8 themes listed with different sizes depending on the quantity of use of these themes. The theme "Islamic" took first place, followed by the theme "culturally" and "health".

The second or middle part shows several themes that are widely used from 2006 to 2015. Some of the themes that emerged during this period are evolutionary from previously used themes and have a connection in their content, for example, the theme 'Indonesia' emerged as a form of revolution from the theme. 'health' and 'welfare', this shows that research using the Indonesian theme is an extension of the research on the theme of health and welfare in previous research. In this section, the most used themes are development, islamic and poverty.

The third or right section shows the most recently used themes in the period between 2016 and 2020. There are 5 listed themes, of which 3 themes are an evolution of the themes that appeared in the previous period, namely the theme 'amil, zakat, Islamic' which is an extension of several

themes as indicated by the colorful grooves. Two other themes that are not evolutionary or emerging are the theme “program, quality” which also has a period between 2016 and 2020.

Conceptual Structure Map- method: MCA

This study also describes a conceptual structure map or map of the contextual structure of each word that often appears in research papers on the theme of zakat and technology by dividing it based on mapping the relationship between one word and nother through area mapping. Each word is placed according to the values of Dim 1 and Dim 2, resulting in mapping between words whose values are not much different (Figure 16).

In this data, there are 2 parts of the area which are divided, namely the red area and the blue area, each area contains words that are related to each other. Based on the picture above, the red area shows more and more various words included in it, this shows that many research papers link between the words listed in this area.

Next is a dendrogram tree diagram showing the most widely used topics and their relation to other topics as well as the classification of these topics depicted in different colors. The representation of the dendrogram diagram is often used in a variety of contexts, for example in a hierarchy of grouping, this diagram describes the distribution of links between elements in groups resulting from software analysis. This grouping is also arranged in such a way as to take into account the height of the coordination line between topics and between clusters.

This diagram (Figure 17) shows there are 2 classifications of topics, namely topics in red and topics in blue, this shows that the relationship between topics in the deep blue classification and topics in red classification. Each of them is further divided into several clusters, each cluster is further divided into several sub-clusters, and so on until the topic used, several topics are part of one cluster, indicating there is a relationship between the two in research papers on the theme of zakat and technology in recent years.

Topic Dendrogram

Collaboration Network

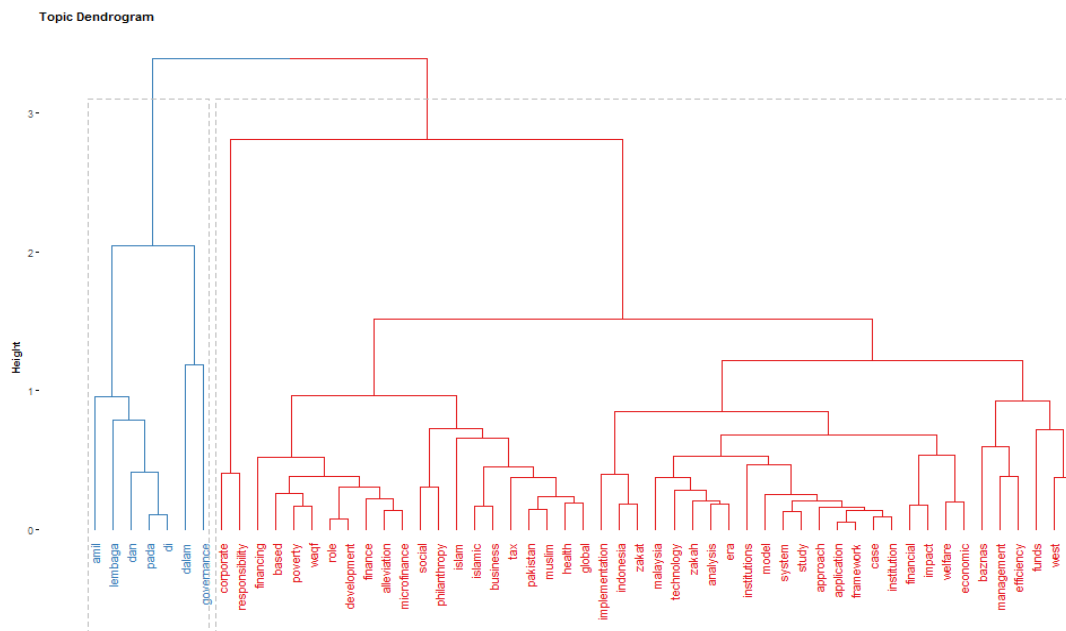


Figure 17. Topic Dendrogram Zakat and Technology

Furthermore, namely the collaboration network, or a collaboration network between the authors of the paper on the theme of zakat and technology. In the picture above, you can see several authors' names that are displayed and some have a connection and some are not. The relationship between the authors is shown by clusters of color equations and lines between one name and another. The size of each square also indicates the number of papers published on this theme.

From the results of the above analysis, it is known that the word 'zakat' is used more frequently or dominantly in research themes which are the subject of current research. Where the domination of the word zakat illustrates that the relationship between researchers or authors to do problems related to zakat is interesting to do. This is also influenced by issues related to technology in particular which are closely related to financial technology as a means of paying zakat.

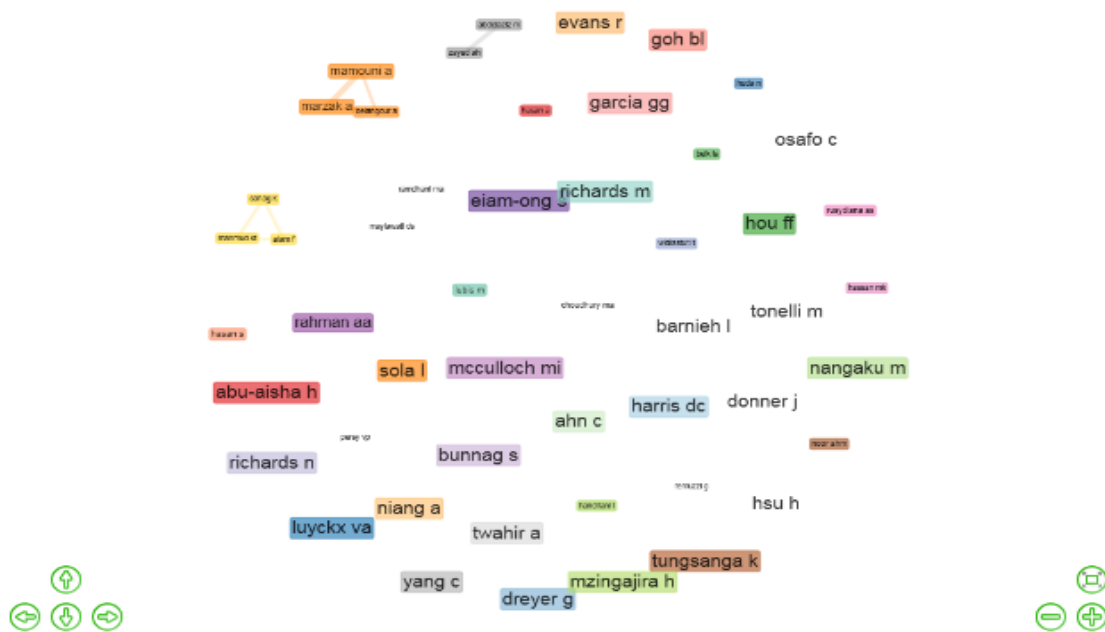


Figure 18. Collaboration Network Zakat and Technology

Figure 18 shows the collaboration between the 3 writer clusters. The first cluster in gray shows the collaboration between Abdelaziz M and Zayed Ah. Then the second cluster in orange shows the collaboration between Mamouni A, Marzak A, and Belangour A. Finally, the third cluster in yellow shows the collaboration between Sohag K, Mahmud Kt, and Alam F. There is a collaboration between the author and other writers in making papers related to the theme of zakat and technology.

The existence of fintech is a form of innovation made to make it easier for people to give Zakat. Like the National Zakat Agency (BAZNAS) in 2018 collaborating with one of the fintech companies, Gopay, by forming the GoZakat application to provide convenience for zakat digitally for the people of the capital city of DKI Jakarta (Ichwan, 2020). In line with these conditions, the topic of zakat on the Trend Topic chart above from 2018 to 2020 is at the top position compared to other topics that often appear.

DISCUSSION

Also, what is interesting about this research is that Indonesian topics or words include topics or words that are often used

in these studies. Where in Indonesia, the management of zakat is not only managed by the government and the private sector, but some are managed individually. Also, zakat management institutions in Indonesia are not only one institution, so this is one of the factors that Indonesia's topic is high in this study. Like the research conducted by Hayati and Putri (2019) which measures the efficiency of OPZs in Indonesia such as BAZNAS, Rumah Zakat, PKPU, and Yatim Mandiri in their research and many more OPZs both registered and not.

In the collection of zakat in Indonesia, namely related to corporate zakat or business undertaken. Three bodies play an important role in the implementation of zakat on businesses/companies in Indonesia including the government, the Indonesian Accountants Association (IAI), BAPEPAM, and the Indonesia Stock Exchange (BEI). The role of the Indonesian government is to form laws related to business zakat, while IAI establishes accounting standards related to business zakat. Meanwhile, the Indonesian capital market sector through BAPEPAM and IDX through the establishment of regulations in the stock market regarding business zakat (Andriani & Mairijani, 2017).

Another finding in this study is that Malaysia is the country with the highest correspondence for authors in the study. This condition cannot be separated from the high level of research related to zakat in Malaysia. Malaysia itself is one of the countries that regulate the issue of zakat, even though this is determined by the power of each country (Wira, 2019). Administratively, all aspects of zakat in Malaysia are managed by each state Islamic Religious Council (MAIN). Where MAIN's task is to centralize the implementation of all religious activities at the state level, including the collection and distribution of zakat (Yusuf & Derus, 2013).

Also, based on the correspondence country of the highest authors, there are

Brunei Darussalam and Qatar in the 3rd and 4th positions after Indonesia. This is because of the zakat potential of the two countries, which are OIC member countries with the highest income according to the World Bank. Brunei Darussalam itself manages zakat by the Islamic Religious Council of Brunei (IRCB) under the Brunei Ministry of Religion. In 2017 the IRCB reported that the total zakat collected was BN \$ 18,434,856 which came from zakat fitrah and zakat maal. Meanwhile, Qatar's management of zakat is under the Ministry of Awqaf and Islamic Affairs with total zakat funds distributed of QR 13,699,623 in October 2018 (Muhammad, 2019).

CONCLUSIONS

The research was conducted to determine the development of research on Zakat and Technology in Islamic economic and financial research during the period 1986 to 2020. The 440 documents used in this study indicate that research with the theme of zakat and technology has increased every year. As for the author who often researches with zakat and technology, namely Kuran T during the research period, he consistently researches this theme. While the keywords that are often used in research on zakat and technology are the words zakat, Islamic, and Indonesia.

So that the development of research on the method of zakat and technology is increasingly developing and inseparable in Islamic economic and financial research. Therefore, research with the theme of zakat and technology needs to be developed extensively in Islamic economic and financial research.

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