Islamic Finance and Sustainable Development Goals (SDGs): Text Analytics using R

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This research aims to analyze literature studies and find out the development of research related to the relationship between the economy and the Islamic financial industry with the concept of Sustainable Development Goals (SDGs) by reviewing 80 documents for the 2010-2021 period consisting of journals, book chapters, conference papers, and reviews on the Scopus database. This research uses text analysis method using R-studio and biblioshiny software. The result of this research is to analyze the keywords that often appear in this topic, and provide an overview of the most relevant word analysis, word treeMap, co-occurrence network, thematic map, and conceptual structure. The purpose of this study is expected to be useful for future researchers to obtain an overview and scope of the literature, as well as help them know about the development of research and explore further research related to this topic. Islamic finance has the potential to bring in addition to resource mobilization efforts at the global, local, and national levels in order to realize the SDGs. They assure that Islamic finance encourages investment and trade to achieve progress in development and prosperity.

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INTRODUCTION

The implementation of the Sustainable Development Goals (SDGs) has entered its 6th year. (SDGs) has entered its 6th year. Since their establishment in September 2015, at the UN General Assembly attended by 159 Heads of State, the SDGs became the 2030 Global Agenda, which is implemented by all countries in the world. SDGs contain 17 goals and 169 targets for the implementation period 2015-2030. Indonesia has been actively involved in various international forums in formulating the SDGs.

Sustainable Development Goals (SDGs) is a development that maintains the improvement of people’s economic welfare economic welfare on an ongoing basis, development that maintains the sustainability of social life, development that maintains the quality of the environment, and development that maintains the quality of life. social life, development that maintains the quality of the environment and development that ensures justice and the implementation of governance. that ensures justice and the implementation of governance that is able to maintain the improvement of the quality of life from one generation to the next. quality of life from one generation to the next.

The goals of the SDGs can also be achieved by involving many institutions, including Islamic financial institutions, including Islamic financial institutions. This is because the achievement of the SDGs is in line with the goals achieved in the principles of Islamic teachings that prohibit doing damage on earth (ifsad fil-aridhi), both physical damage and non-physical damage. In addition, the principle of sustainability, in accordance with maqashid sharia with maintaining religion, maintaining the soul, maintaining the mind, or maintaining offspring, and maintaining property.

Islamic finance should be the main driving force in achieving the Sustainable Development Goals (SDGs). The Sustainable Development Goals (SDGs) of the United Nations have attracted the attention of Islamic finance practitioners and scholars because the goals are closely aligned with the philosophy of Islamic finance. Islamic finance has a potential role to support the implementation of SDGs because it has the prospect of untapped financing needs for the goals that have been set. Around the world, Islamic finance has become an effective instrument for financing development and an important contributor to realizing the SDGs. As Zarrouk argues, the role of Islamic finance is a new financial alternative in the context of SDGs. He also paid attention to the profit-loss sharing arrangements of Islamic finance, solidarity-based features for poverty alleviation, and the use of sukuk to mobilize resources to finance infrastructure development. Meanwhile, Ahmed et al. in the context of SDGs, explored the potential of Islamic financial institutions and capital markets to address the vulnerability of the poor, financial stability, and development.

Along with the development of research related to the influence of Islamic Finance on sustainable development goals (SDGs), and supported by the development of science which is often associated with scientific productivity, namely the ability to produce scientific publications (Franceschet and Costantini, 2011). One of these publications can be measured using text analysis to provide an overview of the most relevant word analysis, word tree maps, co-occurrence networks, thematic maps, and conceptual structures related to the research theme. The purpose of this study is to conduct a thorough literature review by identifying the existence of GAPs in research to help researchers know the development of research and help them to explore further research on the influence of Islamic Finance on sustainable development goals (SDGs).

LITERATURE REVIEW

Sustainable Development Goals

The World Commission on Environment and Development (1987) defines sustainable development goals (SDGs) as development that meets the needs of present generations without compromising the ability of future generations to meet their own needs. Thus, there is a need for integration in terms of decision-making that is able to balance the social and economic needs of society with the regenerative capacity of the natural environment. In addition, according to WCED, the definition of Sustainable Development Goals (SDGs) is broadly related to three dimensions, namely social, economic and environmental. These three dimensions are closely related and cannot be separated. The idea stems from the realization that economic growth alone is not enough because economic, social and environmental aspects are interrelated. Thus, sustainable development aims to create and maintain prosperity of economic, social and environmental systems (Folke et al., 2002).

There are 17 SDGs to be achieved by 2030 consisting of (1) No poverty in all its forms, (2) ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture, (3) ensuring healthy lives and promoting well-being for all at all ages,
(4) ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all, (5) achieving gender equality and empowering all women and girls, (6) ensure availability and sustainable management of clean water and sanitation for all, (7) ensure access to affordable, reliable, sustainable, modern and clean energy for all, (8) foster sustainable, inclusive and sustained economic growth, employment and productive and decent work for all, (9) build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation, (10) reduce inequalities within and among countries, (11) make cities and human settlements inclusive, safe, resilient and sustainable, (12) ensure sustainable consumption and production patterns, (13) take urgent action to combat climate change and its impacts, (14) conserve and sustainably use oceans, seas and marine resources for sustainable development, (15) protect, restore and promote sustainable use of terrestrial ecosystems, (16) promote peace and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels, and (17) strengthen the means of implementation and revitalize the global partnership for sustainable development.

Focusing on goal number two which is categorized as one of the ultimate development goals, many countries have been trying to achieve it for years using only conventional mechanisms and financial support. However, the results have been unsatisfactory because capitalism as the spirit and ideology of global business and the current financial system is incompatible with the spirit of helping people without capital or collateral (Develtere & Huybrechts, 2002).

Therefore, Islam comes with a financial system that plays a role in supporting the Sustainable Development Goals. Given the principles of Islamic finance that support socially inclusive activities and promote development, the Islamic financial sector has the potential to contribute to the achievement of the Sustainable Development Goals. The role of Islamic financial institutions, capital markets and the social sector in promoting strong growth, increasing financial inclusion and intermediation, reducing the risks and vulnerabilities of the poor and more broadly contributing to financial stability and development (Ahmed, Mohieddin, Verbeek, & Aboulimagd, 2015).

**Islamic Finance**

Islamic finance is defined as the type of financing recommended in Islam under the strict supervision of Sharia (Islamic law). That is how financial institutions in the world both Muslim and non-Muslim including other institutions lend and raise funds/capital through "Sharia" Islamic law (Ussif and Yussif 2020). Furthermore, Islamic finance is considered as "Shariah" responsible, ethical, social and inclusive finance as it links the financial sector/industry with the real economy and helps promote risk sharing, profit, partnership-style financing, losses, social responsibility, and it is an effective and efficient instrument for financing development worldwide.

Islamic finance has the potential to bridge the financial gap to achieve sustainable development goals. The Islamic finance industry consists of four main parts: Islamic funds, Islamic insurance (takaful), Islamic banking, and the bond market (sukuk). While all four sections can contribute to SDGs financing, the bond-Sukuk section has recently attracted more attention to the development of green finance and SRI Sukuk. Bonds (Sukuk) also allow for a wider global client/investor base reach that includes both conventional and Islamic investors.

Sukuk are defined as certificates of equal value that signify an undivided share in the ownership of tangible assets, products, and services or ownership of the assets of certain specialized investment activities or projects. The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). Sukuk are innovative instruments for green finance projects and are organized under various types of single or combined (hybrid) Islamic contracts such as partnership, leasing, and agency.

Waqf is an Islamic endowment fund that can take the form of property to be held in trust and used for religious or charitable purposes. The literal meaning of Waqf is 'retention'. Legally, waqf means the 'retention' of property or assets that generate income and can always be made available for religious/charitable purposes. Muslims donate their assets or properties wholeheartedly for charitable purposes for the sake of Allah and under religious beliefs for the upliftment and benefit of the poor, and society at large. This is what is called waqf. There are two types of waqf including public and private waqf.

Takaful, known as Islamic insurance, is a form of insurance based on the principles of mutual aid and cooperation, incorporating the essential features of shared responsibility, mutual indemnity, solidarity, and common interest. This is in line with the goal of SDG number one which is to end poverty of all kinds in all member states worldwide by 2030.
As the 2nd SDGs goal is to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture worldwide. Therefore, the adoption of Islamic finance is very important because it has the quality and potential to help achieve the SDGs goals. For example, with the help of Zakat, Sadaqah, Waqf distributed to poor households, the welfare and living standards of the poor will improve. There are also Qardh al-Hassan loans which are interest-free benevolent loans. These Islamic products will help and save poor households from disgrace and dishonor (Chudhury and Malike, 1992). In addition, it has a role to limit financial exclusion through helping the unbanked to have access to financial services which will help empower the vulnerable to some extent. The above instruments will play an important role in income redistribution and social protection which will help reduce poverty and hunger.

**METHOD**

The review process was conducted on August 13, 2021. Figure 1 illustrates the three steps in identifying research documents, namely eligibility, screening, and inclusion, involved in the systematic review process. The keywords that will be used in this study try to answer the above research questions. Some general statistics from the data set are presented to get an overview of the research related to the relationship of Islamic economy and finance industry with the concept of SDGs. All articles that met the search query were evaluated from the aspect of text analysis.

Then the research documents were analyzed using bibioshiny software, a free software powered by the R environment (CRAN, The Comprehensive R Archive Network, https://cran.r-project.org/) that provides a set of tools for quantitative research in bibliometrics and scientometrics (Aria & Cucurrolo, 2017). In the bibliometric literature, the greatest concern is with the construction of bibliometric maps. Research related to the effect of differences on similarity measures (Ahlgren et al., 2003), and they were tested with different mapping techniques (Boyack et al., 2005). Furthermore,
a text analysis of the bibliometrix mapping results related to "words" will be conducted.

Bibliometric analysis is widely applied in studies in various scientific fields. In economics, for example, bibliometric studies can be seen in Laila et al. (2021), As-Salafiyyah et al. (2021), Nasution et al. (2022), and Puspita (2023). Meanwhile, in the field of management, studies with a bibliometric approach can be found in Antonio et al. (2020), Al-Qital et al. (2022), Uula & Devi (2021), and As-Salafiyyah et al. (2023). As for the field of law, the application of bibliometric studies can be seen in studies conducted by Antonio et al. (2021), Fitria et al. (2022), and Maulida & Ali (2023).

Other examples of studies with bibliometric methods include studies in the fields of accounting (Taqi et al., 2021; Rusydiana et al., 2020; Taqi et al., 2022; Firmansyah & Rusydiana, 2021), finance (Srisusilawati et al., 2021; As-salafiyyah et al., 2022; Maulida, 2023), marketing (Rusydiana et al., 2023; Uula & Avedta, 2023; Putri & Irfany, 2023; Sari & Maysyaroh, 2022) Islamic economics (Marlina et al., 2021; Rusydiana, 2021; Sukmana et al, 2021; Nuraini, 2022), social finance (Nuraini, 2021; Niswah, 2022) to studies related to the halal industry (Izza, 2021; Nekha & Kartikawati, 2022; Rahardi, 2023; Al Qital, 2022). The most widely used tools in bibliometric studies are VosViewer (Uula & Ikhwan, 2022; Avedta, 2023; Sanrego & Taufiq, 2023; Riani, 2021) and the Biblioshiny-R application (Gunawan & Herman, 2022; Nuraini & Jazil, 2023; Puspita et al., 2023; Ikhwan, 2021).

RESULTS AND DISCUSSION

Text analysis was conducted using R-studio and biblioshiny software developed by Massimo Aria and Corrado Cuccurullo from the University of Naples and Luigi Vanvitelli from the University of Campania (Italy). Text analysis is carried out by analyzing more deeply on searches related to words that often appear with the keywords "SDGs and Islamic economics". This is intended to determine the development of research on "SDGs and Islamic economics" and provide recommendations to future researchers. To explore the results of the text analysis, this section will present a visual mapping chart of the documents. The analysis of keywords, abstracts, and document titles form the basis of the mapping, along with important or unique terms contained in a particular document. Mapping is a process that allows one to recognize knowledge elements and their configurations, dynamics, interdependencies, and interactions.

Most Relevant Words

![Most Relevant Words](image-url)
The most relevant word analysis was performed on the keywords of each document, there were several words with occurrences between 0 and 17 times. The figure above shows the 15 most relevant words related to the keyword "Islamic Finance & SDG".

The top word with the highest number of occurrences and most relevant to the keyword "Islamic Finance & SDG" is Islamic finance with 17 occurrences. The second word is sustainability with 8 occurrences. Furthermore, the third, fourth, fifth, and sixth words are corporate social responsibility, Islamic banking, Islamic social finance, and Malaysia with 5 occurrences. The results show that the keywords Islamic Finance & SDG are dominated by the Islamic finance sector. As for countries, Malaysia is the word that appears most often in research with the keyword "Islamic Finance & SDG". The next most relevant country is Bangladesh. The results show that Malaysia, and Bangladesh are often used as case studies or benchmarks for research related to the keyword "Islamic Finance & SDG".

Word Cloud

Furthermore, the relevant words from the title in the research will be displayed with the Green Economy keywords in the document abstract and title in the form of a word cloud. Word cloud is a description of the words that often appear in the collection of data papers studied with the keyword "Islamic Finance & SDG". World cloud displays description of words displayed with various sizes according to the quantity of words appearing. In terms of placement, word clouds tend to be random but the dominating words are placed in the center so that they are more visible with a relatively larger size. In this study, the results of the world cloud results are obtained based on analysis of the document title.

Based on the picture of the results of the analysis of the title of the document, it is found that the most dominant words. The most dominant words are related to Islamic Finance & SDG, namely Islamic, Finance, Sustainability, and Banking. Most of the research on "Islamic Finance & SDG" currently discuss about "Islamic Finance".

WordTree Map

Furthermore, the words that are relevant in the research with Green Economy in the document abstract in the form of a word tree map. Word Tree Map displays words that appear frequently in boxes similar to regions on a map, where the more the word appears, the
larger it is, or region in a map, where the more the word appears, the larger the square region. The square region.

Based on the picture of the results of the analysis of document abstracts, it is found that the most dominant words are related to the theme of Green Economy, namely Green. The most dominant words are related to the theme of Green Economy, namely Green, Economic, Development, Environmental and Economic. Most of the research on "Islamic Finance and Sustainable Development Goals (SDGs): Text Analytics using R" currently discusses "Islamic Finance". This is because in everyday life in the community the word "Islamic Finance" is relatively closely related to the problems that are currently rampant in Indonesia.

Word Dynamic
Based on the image of the results of the analysis of document keywords, in this study, the words that appear frequently are also described in the form of a development curve for each year with the annual occurrence value. Where these results show the average quantity of occurrence of the word in the data collection studied in the theme of Islamic Finance each year. Figure 5 shows that the majority of frequently occurring words began to develop since 2010, and continued to increase until 2021. From the figure above, it can be concluded that the research with the most significant increase in occurrence is related to Islamic finance.

**Trending Topics**

Based on the data description above in figure 6 (trend topics), the topics that have been used since 2014 in the Islamic Finance & SDG theme in Islamic economics and finance research is the word financial and microfinance. Furthermore, in 2016 the topic of Islamic finance appeared with a fairly high quantity. Topics that were widely used in 2020 included role, Islamic, finance, sustainability, institution, microfinance, banking, and the update topic about fintech.

**Co-occurrence Network**

Co-occurrence network displays words related to green economy keywords in the form of colored clusters by considering the relationship between one word and another. Based on the picture above there are 3 clusters with related keywords, with 3 different colors (red, blue, and green).
The red cluster is dominated by words related to sustainability. The words contained in this cluster are study, energy, green, model, investment, financing, digital, and microfinance. The green cluster is dominated by words related to Islamic finance, where in the green cluster there are responsibility, banking, social, sector, perspective, enterprises, role, fintech, achieve, circular, comparison, economy, conventional, evidence, knowledge, approach, and banking. The blue cluster is dominated by words related to those that tend to be common, where in the blue cluster there are the words capital, waqf, institution, Malaysia, performance, developing, governance, framework, financial, corporate, banks, industry, and global.

Thematic Map
This research will also analyze thematic maps that emerge based on density and centrality. Density and centrality are analyzed based on the title with the research theme *Islamic Finance & SDG* which is divided into 4 quadrants. This result is obtained from a semi-automatic algorithm by reviewing the titles of all references on the object of research, research object.

The upper left quadrant represents highly developed and isolated themes. Quadrant shows themes that are specific and under-researched, but highly developed, as indicated by high density but high centrality. High development, which is indicated by high density but low centrality. The themes in this quadrant are reporting and evidence. While the lower left quadrant is emerging or declining themes, this quadrant shows themes that have been used for a long time but are experiencing an increasing or decreasing trend with low density and centrality. The theme in this quadrant is *management*. While the upper right quadrant is a motor theme or driving theme characterized by high density and centrality, so it needs to be developed and is important to be studied in further research. The words that appear in this quadrant are *countries investment pale, conventional global economy, and sustainability role energy*. Finally, the bottom right quadrant is the basic and transversal themes characterized by high centrality but low density. These themes are important to include in the research because they are common topics that are commonly used. The themes that appear in this quadrant are *microfinance direction future, waqf sustainable building, corporate institution financial, and Islamic financial banking*.

**Thematic Evolution**

![Thematic Evolution](image)

The themes used in the papers that are the object of research continue to experience changes, especially from papers that have recently been published when compared with papers that have been published for a long time. The figure above shows the evolution analyzed based on keywords with research themes related to *Islamic Finance & SDG* which consist of themes that are depicted as rectangles with the larger size the larger the size, the more it is used. Although the theme of this research is about *Islamic Finance & SDG*, the data obtained shows that there are several sub-themes that are widely used.

Thematic Evolution is divided into 3 sections. Where the left side shows shows some of the themes that were widely used from 2010 to 2017, there are 4 themes themes listed with different sizes depending on the quantity of use of the of the theme. The theme "industry" ranks first, followed by the themes of "Islamic" and "microfinance". The second or middle section shows the most frequently used themes in the period between 2018-2020. There are 8 themes listed, which are evolutions of themes that appeared in the previous period, namely the themes "industry", "Islamic" and "microfinance" which are extensions of some of the themes shown by the colorful grooves. The
last or right section shows the most used themes from 2021. There are 4 themes, where there are 4 evolutionary themes from the previous period, namely 'sustainability' and "Islamic" which are extensions of several themes shown by the colorful grooves.

**FINDINGS**

Islamic finance has the potential to bring in addition to resource mobilization efforts at the global, local, and national levels in order to realize the SDGs. They assure that Islamic finance encourages investment and trade (more than debt) to achieve progress in development and prosperity. In addition, Islamic finance offers new ways to handle small and medium-sized projects as well as mega-infrastructure and PPP projects (Rami Ahmad, 2017). This is similar to research conducted by Ahmed et.al (2015) which states that Islamic finance plays a role in supporting Sustainable Development goals given the principles of Islamic finance that support socially inclusive activities and encourage development, the Islamic financial sector has the potential to contribute to the achievement of Sustainable Development Goals. The role of Islamic financial institutions, capital markets, and the social sector in promoting strong growth, increasing financial inclusion and intermediation, reducing the risk and vulnerability of the poor and more broadly contributing to financial stability and development (Ahmed, Mohieldin, Verbeek, & Aboulmagd, 2015).

In practice, Islamic finance also remains a halal sub-set of this system. The resulting social, environmental and governance imbalances have recently led to various UN-sponsored initiatives including the SDGs. Like maqāṣid Shariah, the SDGs also aim to achieve and preserve human development. In practice, for the first time there is a real paradigm shift from a linear economy to an ecological/circular economy, which is also driving the transformation of the financial architecture (Khan, 2019).

Islamic finance through its socially distributed instruments such as Zakat, Waqf, Sadaqah, will have a positive effect on the economy and will lead to the achievement of the SDGs. In addition, Islamic financial instruments such as Sukuk, Takaful, Mudharaba, Murabahah, and Musyararakah, will have a positive impact on economic sectors that can always help in leading to the achievement of the goals of the Sustainable Development Goals by 2030 (Ussif, 2020). Infaq, waqf and zakat are excellent alternative philanthropic funds to cover the SDG investment gap. Establishing and funding cutting-edge research laboratories, ending hunger, improving nutrition and achieving food security from short and medium-term targets (Abduh, 2019). Another opinion is also similar stating that the role of capital markets, Islamic financial institutions, and the social sector in enhancing strong growth, promoting financial intermediation and inclusion, reducing the risks and vulnerabilities of the poor and contributing to development and financial stability (Ahmed & et al. 2015), Thus it can be concluded that Islamic finance is a new financial alternative in achieving SDGs by 2030.

**CONCLUSION**

This research attempts to evaluate the topic of Islamic Finance and Sustainable Development Goals using text analysis from 2010-2021. The conceptual structure of R 'biblioshiny' provides key research networks and themes. We have identified two research networks in Islamic Finance and Sustainable Development Goals literature using co-occurrence network. These research networks are 'green economy' and 'sustainable development'. Combining these two research networks will address many environmental issues. Furthermore, in the conceptual structure, this research has deployed thematic maps to place themes and subthemes on the graph and divide them into four clusters (dropping or emerging themes, basic themes, highly developed and isolated themes, motor themes). Basic or transversal themes are represented by microfinance direction future, waqf sustainable building, corporate institution financial, and Islamic financial banking. Management. is a theme that appears in the cluster dropping or emerging themes. countries investment palces, conventional global economy, and sustainability role energy is a theme that appears in the cluster motor themes. The theme of green economy literature that is highly developed but isolated is the topic related to reporting and evidence.

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