



Hajj Economy: A Bibliometric Analysis

Muhammad Syafii Antonio¹

¹Tazkia University, Indonesia

This study aims to map the development and direction of global research related to Hajj Economic through a bibliometric approach and meta-analysis of Scopus indexed scientific publications. The research data consisted of 137 journal articles relevant to the topic of Hajj economics, analyzed using VOSviewer software to identify collaboration patterns, dominant keywords, and thematic clusters of research. A descriptive qualitative approach is used to interpret the intellectual structure and dynamics of research based on keyword mapping and co-citation. The results of the analysis revealed five main clusters, namely: (1) Sustainable Hajj Economics and Geopolitics, (2) The Economic Impact on the Health of Hajj Pilgrims, (3) Hajj Risk Economic Management, (4) Indonesian Hajj Economy, and (5) Hajj Economic Decision Making. The findings show that the hajj economy functions not only as a worship activity, but also as a complex economic system involving public health issues, risk management, geopolitics, Islamic financial governance, and Islamic value-based decision-making. This research contributes by providing a comprehensive map of the Hajj Economic literature and identifying relevant future research opportunities for policymakers and academics.

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*Correspondence:

Muhammad Syafii Antonio
antonioislam@gmail.com

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INTRODUCTION

The Hajj is one of the largest religious mass gatherings in the world involving millions of Muslims from more than 180 countries every year. In addition to having spiritual and ritual dimensions, the implementation of the hajj also has very significant economic implications, both for the host country, the country sending pilgrims, and for the pilgrims themselves. In this context, Hajj Economic has developed as a multidisciplinary field of study that includes aspects of religious tourism, public health, Islamic finance, risk management, and public policy.

The Hajj economy refers to the entire ecosystem of economic activities generated by the organization, performance, and supporting services of the Hajj pilgrimage to Makkah. It encompasses religious, commercial, public, and private-sector interactions that arise before, during, and after Hajj. The Hajj economy is a faith-based economic system driven by the annual movement of millions of pilgrims, creating demand for a wide range of goods and services while operating under Islamic principles such as fairness, prohibition of riba, and ethical consumption. In economic terms, the Hajj economy functions as a temporary but massive service-based economy with strong multiplier effects on regional and national development (Islam, 2019).

The Hajj economy refers to the complex system of economic activities generated by the organization and performance of the Hajj pilgrimage, encompassing public administration, private-sector services, and faith-based consumption. Each year, the arrival of millions of pilgrims in Makkah and surrounding holy sites creates a unique, large-scale, and time-bound economic ecosystem characterized by intensive demand for transportation, accommodation, food services, healthcare, financial services, and infrastructure. Unlike conventional tourism, the Hajj economy is fundamentally shaped by religious obligations, strict scheduling, and Islamic ethical principles, which distinguish it from leisure-based tourism markets.

From a macroeconomic perspective, the Hajj economy generates significant direct, indirect, and induced economic effects. Direct effects arise from pilgrims' expenditures on travel, lodging, catering, and ritual-related goods. Indirect effects occur through supply-chain linkages, as Hajj-related service providers source inputs from domestic industries such as food production, construction, logistics, and utilities. Induced effects emerge when income earned by workers and firms involved in Hajj-related activities is re-spent within the broader economy. These multiplier effects position

the Hajj economy as an important contributor to national income, employment creation, and regional development, particularly in the Makkah and Madinah regions.

Saudi Arabia's policy transformation through Vision 2030 has further strengthened the role of the Hajj economy as a motor for economic diversification, especially through infrastructure development, digitization of services, and integration of sustainability principles. On the other hand, the COVID-19 pandemic has been an important turning point that highlights the vulnerability of the Hajj economy to global health risks, while driving innovation in the management of mass gatherings and risk-based restriction policies.

As this complexity increases, the literature on Hajj Economics is growing rapidly and spreading across a variety of disciplines, from health, economics, to Islamic studies and international relations. However, there are still limited studies that systematically map the intellectual structure, dominant themes, and direction of research development in this field globally. Therefore, this study aims to fill this gap by conducting a bibliometric analysis of Hajj Economic publications using VOSviewer, in order to identify key thematic clusters as well as relevant follow-up research opportunities.

METHOD

In this study, various scientific journal publications related to the theme "*Economic Hajj*" around the world were used as data sources. Data was collected by searching for journal publications indexed by the Scopus database using the keyword "*Hajj Economic*". After that, scientific articles or journals relevant to the research theme will be selected based on the publication data that has been collected. There are 137 journal articles published under the research theme "*Economic Hajj*". The development of publication trends related to the research topic is analyzed using the VOSviewer software, which can generate bibliometric maps and allow for more detailed analysis.

In order to build a map, VOSviewer uses the abbreviation VOS which refers to Visualizing Similarity. In previous studies, VOS mapping techniques have been used to obtain bibliometric visualizations which are then analyzed. Furthermore, VOSviewer is able to create and display an author's journal map based on co-citation data or a keyword map based on shared incident data. Therefore, in this study, an analysis of journal maps related to "*Hajj Economic*" will be carried out, including author maps, and keywords which will then be analyzed

visa regulations and crowd control during Hajj underscore geopolitical tensions, such as the management of pilgrim quotas and security to prevent the entry of unauthorized persons, which protect national sovereignty and the integrity of the hajj (Khan & Rugayah, 2025; Arifin, 2026). These measures also position Saudi Arabia as a leader in the field of health for mass gatherings, fostering international health collaboration that strengthens its diplomatic influence, and this is relevant to sustainable goals (Memish et al., 2014; Almutairi et al., 2018).

Further, the COVID-19 pandemic severely disrupted the hajj, leading to unprecedented cancellations and restrictions that highlighted its role as a potential super-spread event (Memish et al., 2020; Jokhdar et al., 2021; Ahmed & Memish, 2022). In 2020, Saudi Arabia banned international pilgrims for the first time in modern history, limiting participation to 1,000 domestic pilgrims to prioritize global health security amid a high risk of respiratory infections among elderly participants and those with comorbidities (Memish et al., 2020). In 2022, the scaled-down Hajj pilgrimage with vaccination mandates and health protocols enabled nearly one million pilgrims, marking post-pandemic success in risk mitigation without major outbreaks (Ahmed & Memish, 2022).

On the other hand, Abalkhail & Al Amri (2022) explain that Hajj is integrated with sustainable development in Saudi Arabia through the Vision 2030 initiative that leverages AI for crowd management, reducing environmental pressures and improving the safety of pilgrims during high-density rituals. These efforts encourage economic diversification beyond oil, stimulating the halal industry through pilgrims' spending on tourism, finance, and services while addressing sustainability challenges such as overuse of resources. The geopolitical stability of the controlled Hajj supports long-term goals, such as expanding capacity to 6 million pilgrims by the end of the decade, aligning religious obligations with environmentally friendly infrastructure (Manuhutu & Pricilia, 2025; Arifin, 2026).

Cluster 2 : The Economic Impact on the Health of Hajj Pilgrims

This cluster has 10 keyword items, namely adult, economics, female, iran, male, middle aged, morbidity, mortality, prevalence, risk factor. This cluster emphasizes demographic, epidemiological, and health risk factors for pilgrims, which directly impact economic costs. The direction of the research can be focused on the economic burden of morbidity and mortality among

pilgrims, the efficiency of financing Hajj health care, its application to the state budget, and the costs borne by pilgrims. It is very important to establish prevention policies that not only focus on health but also on the economic efficiency of the implementation of the hajj.

Hajj pilgrims are mostly middle-aged adults, with an average age of about 47–64 years, more than 50% are over 50 years old, and a sizable group of elderly people (25% over 65 years old) who are susceptible to physical stress due to rituals involving long walks and exposure to heat. Common comorbidities, including hypertension, diabetes, hypercholesterolemia, and cardiovascular problems, vary by origin of regions with higher rates of chronic disease among those from low/middle-income countries. The gender ratio is slightly more favorable to men, and pilgrims often come from different regions, with first-time pilgrims coming (Mushi et al., 2021; Mahdi et al., 2023; Kolivand et al., 2024; Samarkandi et al., 2025; Alsaleh et al., 2025).

In the study of Mahdi et al (2023), it was explained that, epidemiologically, respiratory infections predominate (70–82% of cases), triggered by the density of pilgrims, in addition to heat-related diseases, digestive problems, and the risk of meningitis, which causes a post-hajj disease rate of 40–65%. Morbidity manifests in high clinical visits, with 65% reporting symptoms during Hajj and hospitalization due to stroke or worsening condition, while mortality peaks among the elderly, often due to complications of chronic illness. Hajj pilgrims from high-income countries show lower rates of airborne infections than those from low/middle-income countries due to better pre-travel preparation.

These risks impose a significant economic burden, with morbidity driving hospitalizations, emergency services, and loss of productivity for pilgrims and countries that fund Hajj operations. High mortality and morbidity rates are increasing demand for health services, straining Saudi Arabia's mass gathering infrastructure and pilgrims' personal spending on treatment, vaccines and longer stays. Efficient financing requires targeted prevention policies such as mandatory vaccinations and fitness programs to reduce morbidity costs and optimize state budgets allocated for Hajj health services (Rustika et al., 2020; Mushi et al., 2021; Kolivand et al., 2025; Muttalif et al., 2025).

Cluster 3 : Hajj Risk Economic Management

This cluster has 7 keyword items, namely epidemiology, human, public relations, mass gathering, review, travel, vaccination. This cluster discusses economic risk management issues in the Hajj pilgrimage,

especially those related to pilgrim density, global mobility, vaccination, and international travel. Further research can examine how health and safety risk mitigation policies affect the structure of hajj costs, the economic stability of hajj services, and the sustainability of post-pandemic operations. The main focus is to balance risk control by optimizing the economic benefits of the hajj.

Sheta (2025) and Memish et al (2020) explained that economic risk management in the Hajj involves handling vulnerabilities due to high pilgrim density, global mobility patterns, vaccination compliance, and disruption to international travel, which can lead to health crises, event cancellations, and large financial losses for pilgrims, governments, and organizers.

High crowding during the hajj ritual creates excessive overcrowding, increasing the likelihood of invasions, injuries, and disease outbreaks, with the economic implications of emergency response and potential compensation for pilgrims. Kadi et al's (2024) research on crowd management in Mecca analyzed pedestrian movements from 2019-2024, identifying obstacles during periods of high density such as Nafra day that increase safety risks and require costly infrastructure upgrades that align with the Saudi Vision 2030. Machine learning models for density classification in hajj videos highlight real-time disaster risks such as raids, underscoring the need for prediction tools to mitigate financial losses due to uncontrolled crowds (Shah, 2024).

On the other hand, global mobility for Hajj attracts millions of people from 180 countries, magnifying economic risks through travel disruptions and disease transmission that could halt the Hajj pilgrimage. Simulated social contact at Hajj sites showed that risk interactions increased nonlinearly with the number of pilgrims, making it difficult to maintain physical distancing and increasing the probability of outbreaks beyond certain thresholds. Cancellation decisions during COVID-19, such as in 2020, revealed geopolitical and economic stakes, with lifelong financial planning for pilgrims disrupted and host country economies losing billions of dollars (Memish et al., 2020; Tofighi et al., 2022).

In addition, vaccination gaps among pilgrims contribute to the burden of disease with direct economic costs, such as hospital costs for complications in vulnerable groups. Kolivand et al (2025) retrospectively analyzed 469,581 Iranian Hajj pilgrims (2012-2022) found a higher prevalence of end-stage kidney disease in elderly men with diabetes or hypertension, averaging

\$4,178 per hospital case, which strained public health budgets. A review of Hajj in the midst of COVID-19 emphasizes the selection of low-risk pilgrims and mandatory vaccinations to prevent super-spread events, reduce morbidity costs, and allow for safer mass gatherings.

Furthermore, international travel risks intersect with Hajj fund management, where delays or cancellations magnify compliance issues in sharia-compliant financing. Septiarini et al (2024) explain that the initial financing of Hajj in Indonesia noted the challenges in pilgrim repayment and moral risks under economic uncertainty, proposing a maqasid al-shariah framework for resilient fund allocation. The optimal portfolio strategy for Hajj funds balances returns and low to moderate risk to subsidize pilgrim costs, reducing the broader economic volatility of travel disruptions (Ghifari et al., 2025).

Cluster 4 : Indonesian Hajj Economy

This cluster contains 4 keyword items, namely Hajj, Indonesia, Islamic Law, and Umrah. This cluster specifically reflects Indonesia's context in the economic governance of Hajj and Umrah based on Islamic law. The direction of the research can highlight the efficiency of the management of hajj funds, the provision of provisions in accordance with sharia, and the role of Islamic regulations in increasing economic benefits for pilgrims and the state. Furthermore, the research can also highlight how Indonesia's hajj policy contributes to the financial stability of Islam and the economic development of Muslim communities.

Indonesia regulates Hajj and Umrah economically through the Hajj Financial Management Agency (BPKH), which was established under Law No. 34/2014, which invests savings transparently while adhering to Sharia principles such as maqasid al-shariah for the protection of pilgrims and the public interest. This framework integrates Islamic law through DSN-MUI fatwas and Sharia governance guidelines, emphasizing ethical investment amid economic fluctuations (Adri et al., 2025; Changir & Febriani, 2025; Sheta, 2025; Azzam, 2026).

BPKH manages trillions of pilgrims' savings, achieving 89% compliance with the Sharia governance principles of the National Finance Committee (KNKG), including accuracy, transparency, and accountability (Changir & Febriani, 2025; Azzam, 2026). BPKH applies socio-economic analysis of laws, annual reports, and fatwas to oversee investments in sukuk, deposits, and infrastructure, balancing returns with risk mitigation.

Challenges such as compliance with the principles remain, which are addressed through increased regulation and supervision of Sharia councils (Alzahrani & Algethami, 2025; Changir & Febriani, 2025; Azzam, 2026).

Fatwas from the National Sharia Council-Indonesian Ulema Council (DSN-MUI) guides operations, ensuring that there is no *riba* or *gharar* in the distribution of funds while prioritizing *hifz al-mal* (wealth preservation). The principles of Good Corporate Governance (GCG)—transparency, fairness, and independence—align national law with Sharia, increasing efficiency and trust. The *maqasid*-oriented model prevents abuse, as seen in the criticism of private savings companies that have no collateral (Mawardi & Rahmatika, 2024; Sheta, 2025; Adri et al., 2025).

In addition, the diversified portfolio emphasizes caution and Sharia compliance, with a layer of risk that protects funds during crises. The policy is in line with ethical investment, supporting quotas and subsidies for pilgrims while encouraging the welfare of the people. Regional resilience depends on Sharia-regulatory synergy, enabling sustainable Hajj/Umrah amid volatility (Adri et al., 2025; Azzam, 2025).

Cluster 5 : Hajj Economic Decision Making

This cluster has 3 key items, namely decision making, economic and social effects, Islam. This cluster focuses on the decision-making process in the economic and social context of the hajj, both at the level of individual pilgrims and at the level of management institutions. The direction of the research can explore economic factors, Islamic values, and social considerations that influence cost decisions, service choices, and Hajj participation. This study is essential to understand the economic behavior of pilgrims and their impact on the design of Hajj service policies and business models.

Decision-making in the hajj balancing religious obligations with economic realities and social responsibilities differs between individual pilgrims—who consider personal finances and health—and institutional managers such as BPKH Indonesia, who prioritize sharia-compliant fund allocation and risk mitigation (Changir & Febriani, 2025; Azzam, 2026).

The pilgrims assessed the ability to pay through mandatory savings in accounts managed by BPKH, guided by the DSN-MUI fatwa which ensures that there is no usury, often saving for 20-30 years in the midst of inflationary pressure. Health checks and quotas influence choices, as seen in studies in which older

Indonesians evaluated chronic risks to spiritual rewards, sometimes delaying through waiting lists. Social factors such as family expectations and community status drive enrollment with travel agents who offer training, improving the perceived quality of service for safer travel (El Medinah & Maulidizen, 2025; Ahiboh et al., 2025).

On the other hand, for example, BPKH implements a sharia governance framework, analyzes investment returns (e.g., sukuk yields) against the pilgrim quota set by Saudi Arabia, using *maqasid al-shariah* to protect *hifz al-mal* during volatility. The multi-stakeholder committee integrates economic data, fatwa compliance, and risk models for the distribution of funds, such as in the COVID-era quota reductions that protect savings from losses due to cancellations. Indonesian Hajj organizers coordinate through the Sisban system for logistics, balancing transportation costs and health protocols with equality for low-income pilgrims (Zumla et al., 2020; Adri et al., 2025; Alzahrani & Algethami, 2025; Personal, 2025).

CONCLUSION

This research shows that Hajj Economic is a rapidly growing and multidimensional field of study, covering geopolitical issues, health, risk management, Islamic finance, and Islamic value-based decision-making. Through bibliometric analysis of 137 Scopus indexed publications, this study succeeded in identifying five main clusters that form the intellectual structure of hajj economic research globally.

The main findings confirm that the economic sustainability of Hajj is highly dependent on the integration of health policies, technology, Islamic financial governance, and geopolitical stability. For a country like Indonesia, the management of hajj funds through strong sharia institutions has proven to be a key factor in maintaining the efficiency, justice, and sustainability of the hajj economy.

This research provides a theoretical contribution by providing a comprehensive map of the Hajj Economic literature, as well as practical contributions for policymakers in designing more adaptive and sustainable Hajj management strategies. In the future, further research can be focused on quantitative analysis of the economic impact of hajj, cross-country comparisons, and the integration of *maqasid al-shariah* indicators in the evaluation of hajj economic policies.

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