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The Role of Technological Advancement and Innovation In The Economies of Muslim Countries

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ABSTRACT

Using Indonesia as the primary case study, this research attempts to examine how technological advancement and innovation affect the economies of Muslim nations. With one of the world's largest Muslim populations, Indonesia has both potential and challenges when it comes to leveraging technical advancements to promote long-term economic success. The research method used is library research which uses library material such as books, articles, journals, and media. The study's findings suggest that innovation and technology utilization play a crucial strategic role in boosting the competitiveness of Indonesia's sharia-based economy. Given Indonesia's enormous potential in terms of the number of Muslims, the growth of the halal sector, and government backing, it presents a fantastic chance to promote the sharia economy's transition to a more developed and internationally competitive path. Blockchain, halal e-commerce platform, and sharia fintech are examples of digital technologies that can increase the effectiveness and reach of sharia-based services.

Keywords: *Technology, Innovation, Economy, Muslim countries in Indonesia*

INTRODUCTION

In the digital era, many aspects of life have undergone significant changes, especially in the economic sector. This digital revolution has not only

transformed the way people interact with each other but also transformed the global financial structure. Technologies such as the internet, smartphones, blockchain, and artificial intelligence have opened up new opportunities and challenges. With advances in digital technology, people now have easier access to Islamic economic goods and services. Islamic businesses such as banking, insurance, and investments can be easily accessed through online platforms like websites and mobile applications. Furthermore, Islamic financial transactions can now be conducted online, making it easier for individuals and companies to conduct Sharia-compliant transactions. (Muhammad Rizky Dwi Kurniawan & Fauzatul Laily Nisa, 2024)

The Islamic economy itself continues to experience rapid development, in line with increasingly complex market dynamics and rapid technological advances. Initially, the Islamic economy focused on the banking industry and financial institutions that conventionally applied Sharia principles and relied on physical systems to conduct economic transactions. However, with the advent of the digital revolution, technology has played a crucial role in accelerating the transformation of this sector, significantly changing the way transactions, communications, and access to financial services are conducted. (Nazar et al., 2025) In the Islamic economy, digital technology is crucial because it increases the efficiency and ease of transactions, as well as improving accessibility and security across various aspects of the economy, both micro and macro. The digitalization of the Islamic economy encompasses the use of information and communication technology to facilitate transactions, improve information management, and enhance the ability to address challenges. With the appropriate use of technology, the Islamic economy can offer fair, transparent, and beneficial financial solutions for all levels of society, making it more resilient to global changes. (Takwim et al., 2024) According to Maharani & Ulum (2019),

Economic digitalization is an economic outcome that combines internet technology with economic activities, including various types of digital goods or services (Maharani & Ulum, 2019). A country's economy can be improved by this economic digitalization. As one of the most populous countries in the world and with a Muslim majority, Indonesia has many opportunities to develop an Islamic economy. E-commerce must be encouraged and maximized by Islamic economics.

Digitalization is expected to increase the growth of the Islamic economic sector in Indonesian society, such as: (a) Strengthening collaboration between Islamic financial service providers through the digital economy (b) Encouraging the development of MSMEs and the halal industry (c) Providing a platform for

regulators in developing the Islamic economy. One of the benefits of economic digitalization is shopping for products through e-commerce marketplaces.

Online shopping becomes more efficient and practical. Despite this, the market share of the Islamic economy in Indonesia remains low, at around 10.16%. Considering Indonesia's potential, as the country with the largest Muslim population, the market share of the Islamic economy in Indonesia should be even greater. (Ilmiah & Pendidikan, 2024) However, the integration of technological developments and innovation with the economic systems in Muslim countries, particularly Indonesia, still faces various challenges and opportunities that require in-depth analysis.

Fundamental questions arise regarding the extent to which the adoption of digital technology and the promotion of innovation have had a positive impact on the Islamic economic sectors in Indonesia. Has Islamic financial technology (fintech) succeeded in increasing the financial inclusion of the Muslim community? How can innovation in the production and marketing of halal products increase the competitiveness of this industry in both domestic and international markets? Furthermore, it is necessary to examine the potential and challenges faced in ensuring that the use of technology and innovation remains in line with Sharia principles. Based on the above description, research on "The Influence of Technology and Innovation on the Economies of Muslim Countries in Indonesia" is relevant and urgent to provide a deeper understanding of the dynamics of the interaction between technology, innovation, and the development of the Islamic economy in Indonesia.

METHOD

The methodology used in this article is library research. According to Mestika (2001), library research is research that uses library materials in the form of books, articles, journals, and media. According to Faturrahman (2011), library research is a series of actions related to the process of collecting library data, reading, recording, and processing research materials. This study uses a library research approach, namely collecting data from library sources such as books, encyclopedias, journals, and other materials that discuss the topic being studied (Astuti et al., 2022).

RESULTS AND DISCUSSION

A. Technological Advances and Innovation Drive Overall Economic Growth In Indonesia, a Muslim-Majority Country

Technological developments in Indonesia are driving the country's economic growth. There is confidence that technology will have the ability to overcome challenges arising from unstable economic development. The Indonesian government is committed to community-centered economic development that encourages entrepreneurship. The number of entrepreneurs will increase due to economic growth and the creation of new jobs. Thus, Indonesia's economic competitiveness is expected to be enhanced through the use of digital technology. (Abdillah, 2024)

The increasing number of internet users, the use of digital devices, and digital transactions indicate the growth of the digital economy in Indonesia. How the digital economy affects Indonesia's economic growth can be viewed from various perspectives, such as

- a. Digital technology can help businesses increase efficiency in running their businesses, such as by automating production, distribution, and marketing processes. Innovation can increase economic productivity by creating new, more efficient and effective products and services.
- b. Job Creation, The digital economy can create new jobs in various sectors, such as information technology, e-commerce, online transportation, and logistics.
- c. With more competition, digital technology can help businesses become more competitive in the global market. This is because technology can enable businesses to access global markets more easily and affordably.
- d. Improving economic equality in Indonesia can be helped by increasing equality in the digital economy. This is due to the fact that digital technology is accessible to everyone, regardless of location or background.

In general, technological development and innovation are the main drivers of a country's economic growth. In Indonesia, its impact is felt in various aspects, such as:

1. Fintech Innovation. Digital technology has achieved significant breakthroughs and innovations in all economic sectors. Its influence is felt in various fields, including trade, agriculture, and especially in the financial sector. One of the latest developments in this field is Financial Technology, or better known as fintech. Fintech is an initiative focused on providing financial services through modern applications and technology. The Sharia-compliant fintech sector, blockchain, AI, and big data are examples of digital technologies that have ushered in a new chapter in Islamic financial management. Technology's ability to increase financial inclusion, especially in developing countries like Indonesia, is one of its greatest advantages. Data

collected by the Global Findex (2017) shows that approximately 51% of adults in Indonesia have never accessed formal financial services. Sharia-compliant financial institutions can now reach previously underserved populations, such as rural communities and micro and small enterprises (MSEs). Sharia-compliant fintech has become a significant advancement in this sector. Small businesses that have difficulty obtaining loans from conventional banks can obtain financing through platforms such as Sharia-compliant peer-to-peer lending. In Indonesia, platforms such as Alami and Investree Syariah have demonstrated how technology can be applied to support financial inclusion while adhering to Sharia principles. These fintech companies offer fair and transparent solutions to the funding needs of MSMEs through financing models such as mudharabah (profit-sharing) and musyarakah (partnership). (Shifah, 2025)

2. **Blockchain in Islamic Finance.** Blockchain, another technology with significant potential to support the Islamic financial system, enables secure, transparent, and irreversible transaction recording, in line with Sharia values that prioritize fairness and transparency. The issuance of sukuk, or Islamic bonds, can utilize blockchain in Indonesia. Blockchain-based sukuk improves fund management efficiency, reduces management costs, and enhances investor confidence. Bank Indonesia, for example, has experimented with using blockchain to digitize bonds, including sukuk. Case studies from neighboring countries like Malaysia show that implementing blockchain in sukuk increases efficiency and enables younger generations who are more familiar with digital technology to invest. Indonesia can take similar steps to encourage more inclusive and transparent blockchain-based sukuk issuance with proper adoption. The values of Islamic finance align with blockchain technology, which offers high levels of transparency and accountability. The use of blockchain can increase trust and efficiency in the management of zakat, waqf, and sukuk. The National Zakat Agency (BAZNAS), for example, has begun using blockchain for zakat reporting. (Shifah, 2025)
3. **Digital Waqf:** As technology advances, transactions become easier. Cash waqf is considered an excellent way to increase productivity. Digital cash waqf makes it easier for people. This makes it easier for Muslims to contribute without having to accumulate large sums of money. The distribution of waqf assets for productive activities in a modern economic system will certainly impact economic activity throughout society. If waqf management is implemented, waqf empowerment will be assessed by professionals. Cash waqf, also known as cash waqf, is a waqf made by an

individual, group of people, organization, or institution in the form of cash, including securities such as stocks, checks, and others. The Fatwa Commission of the Indonesian Ulema Council has also issued a fatwa on cash waqf as follows: Cash waqf (cash waqf or wakaf al nuqud) is a waqf made by an individual, group of individuals, institution, or legal entity in the form of cash. Cash waqf is considered a security and is permissible (javaz). Cash waqf may only be given and used for purposes permitted by Sharia law. Digital-based cash waqf collection is carried out through digital platforms, which are places, platforms, or means that enable parties to meet to exchange data or provide services. Among the digital platforms used are the websites and applications of relevant waqf institutions, crowdfunding platforms such as kitabisa.com, online stores such as Tokopedia and Shopee, digital payment system applications such as OVO, Go-Pay, and Link Aja, and mobile banking applications that enable waqf. The waqf crowdfunding model, also known as the waqf crowdfunding model, indirectly connects the nazir (non-believer), waqif (donor), and waqf fundraising institutions. This model enables digital-based cash waqf collection. One type of donation-based crowdfunding and Islamic crowdfunding is the waqf model. Donation-based crowdfunding aims to raise funds for social, artistic, philanthropic, or other purposes, without returning any material. A number of waqf institutions in Indonesia currently use the waqf crowdfunding model. The Indonesian Waqf Board (BWI) encourages waqf institutions to use digital technology for waqf collection and management due to advances in technological systems. To implement this cash waqf collection, the participation of various parties is required, including the Indonesian Waqf Board, waqf collecting and managing institutions, the community as waqifs, and a robust crowdfunding system. (Fitriani & Taufiq, 2023)

4. Artificial Intelligence (AI). One of the greatest technological advancements, artificial intelligence (AI), has transformed many things, including the Islamic financial system. AI is a technology that can solve problems and improve the efficiency of the Sharia-compliant financial system by processing large amounts of data, recognizing patterns, and making accurate predictions. AI has the potential to transform the way Islamic financial institutions operate and create a more inclusive, effective, and equitable ecosystem, from risk analysis to portfolio management based on Sharia values. Several Islamic banks have begun using AI-based chatbots to improve customer service, such as assessing Sharia financing risks, analyzing consumer behavior, and developing products that are more market-friendly.

5. Ziswaf: In their daily lives, the younger generation uses electronic devices or smartphones more frequently. Technology is crucial for managing ZISWAF. Regarding fundraising, we can see how various platforms, such as online stores, have collaborated to incorporate social campaign elements into their customer service. One example is GO-JEK, which transformed its Go-Give menu into a social menu featuring individuals in need of assistance in various areas, such as education, health, and livelihoods. Even if the problem hasn't been resolved, the beneficiary's profile will be displayed and their struggles will be highlighted, allowing customers to donate directly to the designated beneficiary according to their personal preferences. Purchasing and disbursement of funds will also be very clear, and can be viewed directly in the relevant menu. To collect and distribute ZISWAF funds to the community, LAZ currently utilizes information technology. ZISWAF information technology applications include ERP (Enterprise Resource Planning), SiMBA (BAZNAS Information Management System), Public, and Support. In terms of zakat funds, zakat maal (zakat maal) is more dominant than zakat funds, because current technology inaccurately calculates the amount of zakat due. LAZ collaborates extensively with banking institutions for alms and charity by utilizing application technology for transactions, and waqf, which can be implemented within the application, is cash waqf only. This proves that information technology has a very positive impact on the collection and distribution of ZISWAF funds. LAZ has greatly benefited from the increase in fund collection, as has the distribution of ZISWAF funds, which are transferred directly to mustahik (recipients). One philanthropic institution that implements this information technology is BAZNAS. Distance, which was previously a barrier to transactions, is no longer a barrier to long-distance transactions. With the information technology implemented by BAZNAS and other LAZs, they can collect and distribute funds more widely, from local to national and even international levels. To support zakat management at LAZs throughout Indonesia, BAZNAS Indonesia has implemented the SIMBA application system in its financial system. This system must also be developed with additional application systems. BAZNAS West Java conducts zakat payments through ATMs and collaborates with websites such as GoPay, Wecare.id, Kitabisa.com, and LinkAja. BAZNAS West Java also collaborates with national Islamic banks such as BRI, BCA, BNI Syariah, Bank Mandiri, BJB Syariah, and others. The public information system, with ERP and website, is used solely by BAZNAS Indonesia to integrate its information system with BAZNAS West Java itself. (Maulana et al., 2021) The realization of ZIS collection, which is still far from

its potential, presents a challenge for zakat management institutions in achieving their goals of collecting zakat funds. With technology, institutions can use it to promote and disseminate their programs and policies, as well as interact with a wider audience, thereby increasing the opportunity to obtain optimal funding.

6. The digitalization of MSMEs, the backbone of the Indonesian economy, has received a significant boost from e-commerce and digital platforms such as Tokopedia and Shopee, which are widely used by Muslim entrepreneurs. Several digital sales methods have emerged that do not require sellers to meet face-to-face with their buyers. Digital marketplaces (marketplaces) include stores like Shopee, Tokopedia, Lazada, etc. Another digital sales method is e-commerce, which is a website created directly by sellers and marketed directly to customers through online media (websites). There are digital promotional and sales media. Many entrepreneurs are changing the way they market their products in today's digital age, and many are using social media as a promotional tool. In addition to digital sales and promotion methods, digital payment methods are also growing rapidly.

This development demonstrates the impact of economic digitalization on the financial sector. This development then spread to the micro, small, and medium enterprises (MSMEs) sector. Digitalization has transformed important economic elements, such as sales, promotions, and payments, for MSMEs, from manual processes to fully digital, according to numerous studies. Based on findings from interviews conducted by Layyinatus Shifah, the three informants in the study – Bika Ambon Zulaikha, Bolu Menara, and Donat Donita – each stated that they see the benefits of digital sales as an easier sales process, easier access to consumers remotely, cost savings, and other benefits. (Shifah, 2025) This section may be supported with tables or figures to provide further explanation.

B. The Role of Technology and Innovation in the Economies of Muslim Countries

In the era of globalization and the Industrial Revolution 4.0, technology and innovation have become the main drivers of global economic growth. Muslim countries, which span a vast region from the Middle East to Southeast Asia, have great potential to leverage technological advances to increase economic competitiveness. However, challenges such as educational inequality, dependence on natural resources, and limited digital infrastructure remain major obstacles. Therefore, technological mastery and the ability to innovate are key to strengthening the economies of Muslim countries in the 21st century. The

following are some of the roles of technology and innovation in the economies of Muslim countries:

1. Technology as a Driver of Economic Growth

Technological advances can increase productivity and efficiency in various sectors, from agriculture and industry to financial services. For example, the application of the Internet of Things (IoT) and Artificial Intelligence (AI) can help countries like Saudi Arabia and the United Arab Emirates (UAE) optimize their energy and logistics sectors. Meanwhile, in countries like Indonesia and Malaysia, digital transformation is accelerating the growth of the MSME sector through e-commerce and digital payments.

2. Innovation as the Key to Global Competitiveness

Innovation not only means creating new products, but also improving economic systems and processes to make them more efficient. Muslim countries that invest in research and development (R&D) are able to create high-quality jobs and reduce dependence on raw material exports. For example, Turkey and Malaysia have encouraged the development of high-tech industries, such as electronics manufacturing and halal biotechnology, which contribute directly to national GDP growth.

3. Digital Economy and Islamic Finance

Digital technology also opens up significant opportunities for the development of the Islamic economy, particularly in the financial sector. Sharia-compliant fintech, halal blockchain, and Sharia-compliant investment platforms provide more inclusive financial access for Muslim communities. This broadens the economic base and supports the principle of social justice in Islam. Countries like Indonesia are now leaders in developing technology-based Islamic financial ecosystems worldwide.

4. Challenges and Solutions

Despite the significant opportunities, Muslim countries still face many challenges, such as the digital divide, low R&D investment, and a lack of skilled technology workers. The solution is to strengthen STEM (Science, Technology, Engineering, and Mathematics)-based education systems, encourage collaboration between universities and industry, and develop national policies that support innovation. Cooperation between Muslim countries through organizations such as the Organization of Islamic Cooperation (OIC) can also accelerate technology transfer and human capacity development.

Based on the above, it can be concluded that technology and innovation are the main foundations for the economic progress of Muslim countries in the modern era. By harnessing the potential of human resources

and strengthening innovation ecosystems, these countries can transform from resource-based economies to knowledge-based economies. This success will not only improve people's welfare but also strengthen the position of the Islamic world in the global economy.

CONCLUSION

The use of technology and innovation plays a very strategic role in increasing the competitiveness of Indonesia's Sharia-based economy. Indonesia's enormous potential, both in terms of its Muslim population, the development of the halal industry, and government support, presents a golden opportunity to drive the transformation of the Sharia economy toward a more advanced and globally competitive one. Digital technologies such as Sharia fintech, blockchain, and halal e-commerce platforms can expand the reach and efficiency of Sharia-based services. However, the use of technology in the Sharia economy also faces various challenges, such as low digital and Sharia literacy, a lack of talent in the Sharia technology sector, and the uneven distribution of digital infrastructure across Indonesia. Furthermore, regulations and standardization that are not yet fully integrated also pose obstacles to creating an innovative ecosystem that complies with Sharia principles. Therefore, synergy between the government, industry players, academics, and the public is needed to address these challenges. Steps such as improving education, strengthening regulations, and developing an inclusive and sustainable Sharia innovation ecosystem are key to establishing Indonesia as a global technology-based center for the Islamic economy and finance.

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