The Impact of Artificial Intelligence on Indonesia's Sustainable Economic Development from an Islamic Economic Perspective

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ABSTRACT

Artificial Intelligence (AI) has become one of the significant technological innovations in influencing economic development around the world, including Indonesia. This article aims to analyze the impact of AI on sustainable economic development in Indonesia from an Islamic economic perspective. The research examines how AI implicates socio-economic growth, environment, governance, innovation and creativity. The purpose of this study is to capture an overview of the phenomenon of AI and its impact on sustainable economic development. Using a descriptive-analytical approach, this study concludes that AI has great potential in supporting sustainable economic development in accordance with sharia values, but it must be balanced with proper supervision and regulation so that the benefits can be felt by all levels of society.

Keywords: Artificial Intelligence, Sustainable Economic Development, Islamic Economics, Indonesia

INTRODUCTION

Artificial intelligence is increasingly present in everyday life. This of course raises pros and cons. Artificial intelligence itself has been around since 1957. Until the 2000 era, experts utilized it for computer technology until the era of algorithm development. AI has the ability to mimic human

intelligence, therefore AI is one of the tools needed by humans. AI is very helpful in completing human work if it requires fast time. Through various methods and techniques, computers can make decisions through the data sent. As a result, AI is predicted to replace human work. With its intelligence that is able to compete with human performance, this is what raises massive concerns for developed and developing countries. With the existence of AI that can replace human jobs, of course this will have an impact on reducing employment, causing an increase in unemployment to the impact of poverty and social inequality. If this happens, it is not in line with the goal of sustainable economic development, namely equal distribution of community welfare to remote villages.

AI is seen by many as an engine of productivity and economic growth. It can increase efficiency in doing things and greatly improve the decision-making process by analyzing large amounts of data. It can also spawn the creation of new products and services, markets and industries, thereby increasing consumer demand and generating new revenue streams. However, AI can also have very disruptive effects on the economy and society. Some warn that it could lead to the creation of supercompanies that could have a detrimental effect on the wider economy. It could also widen the gap between developed and developing countries. On the other hand, there is much debate about the dangers associated with the development and application of AI, especially ChatGPT.

Sustainable economic development is development that is able to meet the needs of the current generation without compromising the ability of future generations to meet their needs. Sustainable economic development is one of the goals of the Sustainable Development Goals (SDGs), a global development agenda agreed by 193 member states of the United Nations (UN) in 2015. The SDGs consist of 17 goals and 169 targets to be achieved by 2030. The goals cover social, economic, environmental and governance areas.

In this study, we provide a systematic review of the implications of AI for socioeconomic growth, environment, governance, innovation and creativity. The purpose of this study is to capture an overview of the phenomenon of AI and how it impacts sustainable economic development. The study is organized as follows: Section 2 reviews the literature on the socioeconomic impact of AI; Section 3 develops the implementation of AI in various goal areas of sustainable economic development. The last section concludes this research.

LITERATURE REVIEW

AI socio-economic impact, environment, governance, innovation and creativity

Artificial intelligence (AI) is growing rapidly and its use has already had an impact in various business fields. The use of AI has provided various benefits, such as streamlining the implementation of processes in organizations. In addition, the use of AI also provides convenience for

analysis/information needed in decision making. AI can be classified into two categories: strong AI and weak AI. The concept of strong AI is controversial and has raised concerns about its potential to pose a threat to humanity. On the other hand, weak AI has been used in a wide range of applications, giving rise to policy, governance, and legal challenges (meena 2024).

Quoted from (Adella 2024) from Several studies (Taeihagh, 2021; Ariansyah et al., 2024; Margetts, 2022) have shown the positive impact of governance on government AI readiness, leading to the idea that effective governance structures can facilitate the adoption and integration of AI technologies. Governance that emphasizes transparency, accountability, and inclusiveness allows governments to align technological advancements with social values and legal standards. In addition, strategic governance encourages collaboration between the public and private sectors, promoting innovation and enhancing the overall AI ecosystem in the country. This comprehensive approach not only accelerates AI adoption but also ensures its sustainable and responsible use.

Meanwhile, according to (Eva Hariyanti 2024) The application of AI in IT governance has great potential to improve management performance and reduce costs. Sometimes to solve problems related to IT governance, organizations require a lot of money, time and resources. Often, the solutions produced do not match the facts on the ground and the needs of the organization. AI can solve these problems because of its ability to analyze large-scale data, so that the information produced is more comprehensive and accurate for decision making.

Technology, especially AI, has played an important role in economic development, but it also brings new challenges in the socioeconomic context. Beane and Brynjolfsson (2021) point out that AI can increase productivity and efficiency, but it also has the potential to increase inequality if not properly regulated. To address these challenges, the literature emphasizes the importance of policies that support the upskilling of the workforce and ensure wider access to technology.

According to Eva Hariyanti (2024), the implementation of AI enables faster and more accurate decision-making in business based on in-depth data analysis. However, from an Islamic economic perspective, AI-driven innovation should support the common good (*maslahah*) and not solely pursue economic efficiency.

Here are some examples of AI applications that support faster and more accurate decision-making while focusing on collective well-being, aligning with the principle of *maslahah* in Islamic economics:

1. Precision Agriculture: In agriculture, AI is used to monitor soil conditions, weather forecasts, and crop needs in real-time. For instance, AI-powered drones and soil sensors guide farmers on the best times and amounts of water or fertilizer needed. This not only increases crop yields but also

reduces resource waste and environmental impact, aligning with the principles of sustainability and balance in Islamic economics.

2. Sharia-Compliant Financial Systems: Some AI-based fintech applications have been developed to provide financial services that comply with Islamic law. For example, AI-driven investment platforms like Wahed Invest use algorithms to ensure investments align with Sharia principles, selecting only assets free from *riba* and unrelated to industries that conflict with Islamic ethics. This broadens access for Muslims to invest in line with their religious values.

3. Public Health: AI can help with early diagnosis and management of infectious diseases in developing countries, where healthcare facilities are often limited. For example, applications like BlueDot and HealthMap analyze data from various sources to predict disease outbreaks, enabling governments and health organizations to respond more quickly and protect communities, especially in remote areas.

4. Transportation and Traffic: In major cities, AI systems are used to monitor traffic and reduce congestion. For example, AI can optimize traffic light timings based on real-time data from cameras and sensors. In Dubai, this technology has been implemented to reduce travel time and carbon emissions, supporting the concept of *maslahah* by reducing pollution and improving the quality of life for society.

5. Renewable Energy: AI assists in managing and predicting energy production from renewable sources like wind and solar. For example, AI algorithms can predict wind farm energy output based on weather patterns, helping energy companies optimize electricity distribution and reduce reliance on fossil fuels. This aligns with Islamic economic principles that emphasize responsible and sustainable management of natural resources.

These examples show how AI can be applied wisely and in a balanced manner, not just for economic gain but also for broader social benefits, in line with the *maslahah* principle in Islamic economics.

METHOD, DATA, AND ANALYSIS

This research uses a descriptive method by collecting and analyzing various relevant literature from various journals and articles regarding the application of AI, its impact on sustainable economic development in Indonesia and the AI phenomenon. According to Nazir (2013), the descriptive method allows researchers to observe and describe phenomena objectively and factually. Cooper and Schindler (2014) stated that the flexibility of this method allows researchers to use various types of data to get a more comprehensive picture of the phenomenon under study. The descriptive method was chosen because of its ability to provide a detailed, objective, and factual understanding of a phenomenon without manipulation. Journal literature supporting the use of this method emphasizes

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the importance of this method in research that aims to describe and understand the real conditions of the phenomenon being studied.

RESULT AND DISCUSSION

Artificial Intelligence's Impact on Economic Growth

The results show that artificial intelligence (AI) has had a significant impact on various economic sectors in Indonesia. AI has increased efficiency and productivity in areas such as manufacturing, agriculture, and the financial services sector. In the context of Islamic economics, this positive impact is in accordance with the principles of efficiency and resource optimization advocated in Islam.

However, while AI is capable of increasing productivity and economic growth, there are concerns regarding its possible impact on income inequality and employment opportunities. As stated by Beane and Brynjolfsson (2021), without proper regulations and policies, AI could widen the socio-economic gap. Therefore, there is a need to ensure that the implementation of AI is in line with the principles of justice and equity in wealth distribution, as advocated in Islamic economics.

AI's Impact on Financial Inclusion and Governance

AI has played an important role in improving financial inclusion, particularly through the development of sharia-based fintech services that enable wider access to banking and financial services for previously hard-to-reach communities. This supports the goal of sustainable economic development by providing opportunities to a wider group of people to engage in economic activities.

However, governance challenges are an important factor that needs to be considered in AI implementation. As argued by Adella (2024), effective governance can facilitate responsible and sustainable adoption of AI technologies. Governance approaches that emphasize transparency, accountability, and inclusiveness are highly relevant to Islamic economic principles that emphasize fairness and balance in resource management.

Innovation and Creativity in the Use of AI

The use of AI has driven innovation and creativity in various sectors, including the business and industrial sectors. The implementation of AI in business processes enables faster and more accurate decision-making based on comprehensive data analysis. However, there are concerns that AI could replace human roles in jobs, posing a risk of unemployment.

From an Islamic economic perspective, AI-driven innovation and creativity should not only focus on efficiency and economic gain, but should also support the principle of maslahah (shared prosperity). Therefore, policies that support training and skill development of the workforce to adapt to

technological developments are important to ensure that the impact of AI remains positive and inclusive.

Environmental Impact and Sustainability

One important aspect of sustainable economic development is the environmental impact of AI implementation. AI has the potential to improve the efficient use of natural resources and energy. For example, the use of AI in the agricultural sector can help optimize the use of water and fertilizers, thereby supporting more sustainable agricultural practices.

However, AI technology also requires infrastructure that can generate a carbon footprint, especially in terms of energy consumption for data processing and computing. From an Islamic economic perspective, maintaining a balance with the environment is an integral part of sustainable development. Therefore, the development of AI technology in Indonesia needs to consider sustainability factors and its impact on the environment.

Regulation and Policy in AI Implementation

The results show the importance of the government's role in regulating and supervising the implementation of AI in various economic sectors. Effective regulation will ensure that the use of AI not only increases productivity, but also supports the welfare of society and reduces the risk of inequality. From an Islamic economic perspective, government intervention is needed to ensure that AI implementation does not violate sharia principles and that the benefits can be felt by the whole society.

The results and discussion provide an overview of the impact of artificial intelligence on sustainable economic development in Indonesia, taking into account the principles of Islamic economics. This research shows that while AI has great potential in supporting development, there needs to be appropriate regulations and policies in place to ensure the impact is positive and inclusive for all levels of society.

CONCLUSION

Artificial Intelligence (AI) has great potential to support sustainable economic development in Indonesia, especially in improving productivity, efficiency, and innovation in various economic sectors. From an Islamic economic perspective, effective implementation of AI can help realize shared prosperity and equitable distribution of wealth, in accordance with the principles of justice and equality advocated in Islam.

However, while AI offers various benefits, there are a number of challenges that need to be addressed, such as the potential for increased social inequality, the risk of unemployment, and

negative environmental impacts. Therefore, the government's role in regulating and supervising the implementation of AI is crucial to ensure that this technology is used responsibly and provides equitable benefits to all levels of society.

In conclusion, AI can be a key driver of sustainable economic development in Indonesia if used appropriately and in accordance with Islamic economic values. Appropriate policies and regulations are needed to optimize the potential of AI, protect the welfare of society, and ensure that its impact supports equitable, inclusive, and sustainable development goals.

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