

Sustainability and Green Technology in Islamic Financial Management

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ABSTRAK: Teknologi hijau telah menjadi perhatian utama di berbagai sektor ekonomi. Perubahan iklim, degradasi lingkungan, dan meningkatnya kesadaran akan pentingnya praktik bisnis yang berkelanjutan telah mendorong perusahaan dan lembaga keuangan untuk mengadopsi strategi yang ramah lingkungan. Sektor yang mulai terlibat dalam transformasi ini adalah sektor keuangan Islam. Manajemen keuangan Islam, yang didasarkan pada prinsip-prinsip syariah, menawarkan kerangka kerja yang unik untuk mempromosikan keberlanjutan dan teknologi hijau. Penelitian ini menggunakan pendekatan kualitatif library research. Teknik pengumpulan data yang digunakan adalah teknik literature review dengan menelaah literatur, artikel, jurnal-jurnal dan berbagai macam bahan pustaka yang relevan terhadap keberlanjutan dan teknologi hijau dalam manajemen keuangan Islam. Manajemen keuangan syariah mendorong praktik bisnis yang bertanggung jawab secara sosial, lingkungan, dan ekonomi. Penggunaan teknologi hijau dalam manajemen keuangan Islam memiliki dampak yang signifikan terhadap keberlanjutan, dengan dampak ekonomi seperti pengurangan biaya operasional, sosial seperti peningkatan kesejahteraan masyarakat, dan lingkungan seperti pengurangan emisi karbon. Meskipun integrasi keberlanjutan dan teknologi hijau dalam manajemen keuangan Islam menawarkan banyak manfaat, terdapat berbagai tantangan dan hambatan yang perlu diatasi, seperti keterbatasan pengetahuan dan kesadaran, biaya awal yang tinggi, keterbatasan infrastruktur dan teknologi, regulasi, dan kebijakan terkait kepatuhan syariah, serta risiko dan ketidakpastian pasar.

Kata kunci: Keberlanjutan, teknologi hijau, dan keuangan Islam

ABSTRACT: Green technology has become a major concern in various sectors of the economy. Climate change, environmental degradation, and increasing awareness of the importance of sustainable business practices have encouraged companies and financial institutions to adopt environmentally friendly strategies. The sector that is starting to engage in this transformation is the Islamic finance sector. Islamic financial management, which is based on Sharia principles, offers a unique framework for promoting sustainability and green technology. This research uses a qualitative library research approach. The data collection technique used is a literature review technique by reviewing literature, articles, journals and various kinds of library materials that are relevant to sustainability and green technology in Islamic financial management. Islamic financial management encourages socially, environmentally, and economically responsible business practices. Although the integration of sustainability and green technology in Islamic financial management offers many benefits, there are various challenges and barriers that need to be overcome, such as limited knowledge and awareness, high start-up costs, limited infrastructure and technology, regulations, and policies related to Islamic compliance, and market risks and uncertainties.

Keywords: Sustainability, green technology, and Islamic finance

1. INTRODUCTION

In recent decades, sustainability and green technology have become major concerns in various sectors of the global economy. Climate change, environmental degradation, and increasing awareness of the importance of sustainable business practices have

encouraged companies and financial institutions to adopt more environmentally friendly strategies. One sector that is starting to get involved in this transformation is the Islamic finance sector. Islamic financial management, which is based on Sharia principles, offers a unique framework for promoting sustainability and green technology.

Islamic finance has ethical foundations that emphasize justice, social responsibility, and prohibition against activities that harm humans and the environment. These principles align with the concept of sustainability, which aims to meet the needs of current generations without compromising the ability of future generations to meet their needs. Therefore, the integration of sustainability and green technology in Islamic financial management is not only relevant but also in accordance with the fundamental values of this financial system.

Green technologies, which include a wide range of innovations focused on reducing environmental impact, energy efficiency, and sustainable use of natural resources, can play an important role in supporting Islamic finance goals. By leveraging green technology, Islamic financial institutions can develop products and services that are not only financially beneficial but also provide significant environmental and social benefits.

This article aims to explore how sustainability and green technologies can be integrated into Islamic financial management. We will discuss various initiatives, policies, and best practices that Islamic financial institutions have implemented to support sustainability goals. In addition, we will highlight the challenges and opportunities that exist in adopting green technologies in the context of Islamic finance. As such, this article is expected to provide a comprehensive insight into the potential contribution of Islamic finance in promoting sustainability and green technology.

2. METHOD

This research uses a qualitative library research approach, which is a literature study where this research method does not require researchers to go into the field to see facts directly as they are, so that the source of data in this study is sourced from secondary data. Secondary data are sources that do not directly provide data to data collectors, including: publication materials written by other people or parties who are not directly involved in the incident. The data collection technique used is a literature review technique by reviewing literature, articles, journals and various kinds of library materials that are relevant to sustainability and green technology in Islamic financial management.

3. RESULT AND DISCUSSION

Based on the results of an independent study, the application of green technology in Islamic financial management seems to have a significant impact, especially on the operational and external aspects of the company. The qualitative data collected confirms that the integration of environmentally friendly technologies, such as the use of renewable energy and efficient waste management, plays an important role in reducing companies' dependence on non-renewable resources. This research shows that companies that adopt environmentally friendly technologies tend to have more stable

operational fundamentals, are better able to cope with market fluctuations, and reduce long-term risks related to operating costs (Wulandari, 2024).

The integration of green technology in Islamic financial management is a strategic step that combines sharia principles with technological innovation to achieve sustainability goals. This process includes a range of initiatives and approaches that Islamic financial institutions can implement to reduce negative environmental impacts and support sustainable development. Islamic financial institutions can develop financial products that focus on environmentally friendly projects. This includes exploring the potential of new sectors to be funded through green sukuk, such as sustainable transport infrastructure, green technology, and waste management (Arifudin Arifudin et al., 2024). This product not only complies with sharia principles but also supports global sustainability initiatives. Islamic financial institutions can allocate funds for investment in green projects, such as the construction of renewable energy facilities (e.g., solar panels, wind turbines), clean water infrastructure, and sewage treatment technologies. These investments not only provide competitive financial returns but also generate positive social and environmental impacts.

Sharia fintech can support climate action by promoting environmentally friendly financing. They can present Shariah financing products for sustainable investment in renewable energy, energy efficiency, and other green projects. It can drive positive changes in the direction of economically and ecologically sustainable development (Mawardi et al., 2023).

Collaboration with international organizations, governments, and the private sector can accelerate the integration of green technology in Islamic finance. These partnerships can include developing standards, regulations, and incentives to support green investments and ensure compliance with Shariah principles. The establishment of a regulatory framework that supports green technology and sustainability in Islamic finance is crucial. Governments and regulatory authorities can develop policies that encourage the adoption of green technology through tax incentives, subsidies, or regulations that mandate sustainable business practices. By integrating green technologies in Islamic financial management, financial institutions not only adhere to Sharia principles but also contribute to the achievement of global sustainable development goals. This step is in line with the commitment to protect the environment, improve social welfare, and promote inclusive and sustainable economic growth.

3.1 Sustainability Impact

Islamic financial management encourages socially and environmentally responsible business practices. Ethical principles in Islam encourage companies to maintain a balance between economic profit and environmental sustainability and community welfare. By adopting Islamic management, companies can develop sustainable business models and reduce negative impacts on the environment (Mariska & Batubara, 2023).

The use of green technology in Islamic financial management has a significant impact on sustainability. These impacts can be analyzed from three main perspectives: economic, social, and environmental. From the economic side itself, the use of green technology can reduce operational costs such as efficient energy management systems and waste reduction technologies. Green technology can also promote an inclusive economy and increase sustainable investment. Sustainable investment, or sustainable investment, in the perspective of Islamic economics has a deeper meaning than the

general definition. Not only focusing on long-term financial gains, but also prioritizing ethical and moral aspects in accordance with Islamic sharia principles (Wahyuni et al., 2024).

From the social side, the use of green technology can improve people's welfare. This directly improves people's quality of life and well-being, especially in less sustainable areas. The integration of green technology in Islamic financial management is also raising awareness of the importance of sustainability among customers and society at large. Financial institutions can play an educative role by providing information and training programs on sustainable practices. Investments in green projects often involve local communities in project planning and execution. It empowers communities by giving them an active role in sustainable development and ensuring that economic and social benefits are widely felt.

On the environmental side, the use of green can reduce carbon emissions. The use of green technologies such as renewable energy and energy efficiency helps reduce carbon emissions and ecological footprint. This contributes directly to global efforts to mitigate climate change, which is one of the biggest challenges of our time. Green technology supports more efficient and sustainable conservation of natural resources. For example, advanced water management technologies can help reduce water consumption and improve water quality, which is important for ecosystems and human life. Green projects often involve technologies to reduce waste and pollution, such as efficient recycling systems and toxic waste management. It helps maintain the quality of the environment and public health (Кулик, 2023)..

3.2 Challenges and Obstacles

Although the integration of sustainability and green technology in Islamic financial management offers many benefits, there are various challenges and obstacles that need to be overcome to achieve effective implementation.

1. Limited knowledge and awareness

Many Islamic financial institutions may not have sufficient knowledge about green technologies and how they can be applied in their operations. This can hinder the effective adoption of green technologies. Awareness about the importance of sustainability and its long-term benefits may still be low among managers and stakeholders in the Islamic finance sector. More intensive education and training is needed to raise this awareness.

2. High start-up costs

The implementation of green technologies often requires a large initial investment, which may be difficult for small financial institutions or those with limited capital. Although green technology can result in cost savings in the long run, high initial costs can be prohibitive. Islamic financial institutions may face difficulties in accessing financing for green projects, especially in markets that do not yet fully support green investments. This could be due to the lack of green financial products that comply with sharia principles.

3. Infrastructure and technology limitations

In some countries, the infrastructure that supports green technology may not be adequate. For example, an unstable power grid could hinder the adoption of renewables such as solar and wind power. Some green technologies may still be in the development stage or have not been extensively tested. Islamic financial institutions may be reluctant to adopt new technologies that have not been proven for their effectiveness and reliability.

4. Regulations and policies related to sharia compliance
Regulations and policies that support the integration of green technology in Islamic finance may not exist or remain limited. This can be a major obstacle for financial institutions looking to adopt sustainability practices. Integrating sharia principles with sustainability regulations and green technology can be complex. Financial institutions need to ensure that all new products and practices are compliant with sharia law, which could require additional time and resources.
5. Market risk and uncertainty
The market for green technology and green financial products may be more volatile compared to the conventional market. This risk could deter investors and financial institutions from fully participating in green investing. Unexpected regulatory changes could create uncertainty for Islamic financial institutions that already invest or want to invest in green technology. This uncertainty can affect long-term planning and investment strategies.

3.3 Conformity with Islamic Principles

The integration of green technology in Islamic financial management can be analyzed from the point of conformity with the basic principles of Islamic finance. Islamic finance is based on Islamic values that emphasize justice, social welfare, and environmental responsibility (Mursid et al., 2024). The analysis shows how green technology aligns with those basic principles. The ban on *riba* or interest in Islamic financial transactions allows investment in green technologies, such as green issuers and green *sukuk*, without involving usury. The prohibition of *gharar* or uncertainty in contracts is obtained through the use of green technology, which is supported by mature risk analysis and comprehensive feasibility studies. Investment in green technology also supports *halal* activities and encourages ethical and environmentally friendly business practices. In addition, green technologies support sustainable development that benefits society at large and reduces negative impacts on the environment. Finally, investment in green projects can also have significant social impacts, such as poverty alleviation and improving people's quality of life, which is in line with the principle of *zakat*. Thus, the integration of green technology in Islamic financial management has shown good conformity with its basic principles.

4. CONCLUSION

Based on the above research from the literature review and the results of literature studies, it can be concluded that the integration of green technology in Islamic financial management is a strategic step that combines sharia principles with technological innovation to achieve sustainability goals. The process includes a wide range of initiatives and approaches that Islamic financial institutions can implement, including the establishment of financial products focused on eco-friendly projects such as green *sukuk*, construction of renewable energy facilities, sustainable transportation infrastructure, and waste treatment technologies.

Sharia fintech can also support climate action by promoting environmentally friendly financing. Collaboration with international organizations, governments, and the private sector can accelerate the integration of green technologies in Islamic finance through the development of standards, regulations, and incentives. The establishment of a regulatory framework that supports green technology and sustainability in Islamic finance is crucial, so governments and regulatory authorities need to develop policies that encourage the adoption of green technology through tax incentives, subsidies, or regulations that

mandate sustainable business practices. Islamic financial management encourages socially, environmentally, and economically responsible business practices. The use of green technology in Islamic financial management has a significant impact on sustainability, with economic impacts such as reduced operational costs, social such as improved community welfare, and environmental such as reduced carbon emissions.

Although the integration of sustainability and green technology in Islamic financial management offers many benefits, there are various challenges and barriers that need to be overcome, such as limited knowledge and awareness, high start-up costs, limited infrastructure and technology, regulations, and policies related to Islamic compliance, and market risks and uncertainties. However, the integration of green technology in Islamic financial management has shown good conformity with the basic principles of Islamic finance, as green technology supports ethical and environmentally friendly business practices, as well as sustainable development that benefits society at large and reduces negative impacts on the environment.

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