Analysis of E-Business Implementation in Realizing *Green Banking* in Sustainable Islamic Banking
(Case Study of Bank Syariah Indonesia)

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ABSTRACT

E-business supports business development by improving both internal and external processes. In banking, "Green Banking" focuses on the bank's commitment to sustainability in operations and lending. This study, using a qualitative descriptive analysis method, presents findings on how e-business is applied in the digital banking of Islamic banks in Indonesia. The results show that e-business in Islamic banking promotes sustainable Green Banking by fostering environmental awareness. By adopting e-business, Islamic banks can reduce resource use, such as paper, and cut carbon emissions through digital services. The implementation of E-Business in Islamic banks in Indonesia has a significant positive impact in realizing sustainable green banking. not only focusing on Islamic banking operations, but also contributing to environmental sustainability as a whole.

Keywords: *Digital Banking, E-Business, Green Banking.*

A. INTRODUCTION

Currently, almost all activities are inseparable from the use of internet technology and online systems. The internet has changed people's behavior in meeting their economic needs. Businesses are also starting to use the internet to facilitate operations, known as *E-Business*. *E-Business* encompasses a wide range of activities, from product sales to service provision, which are now carried out online.

As a business strategy, *E-Business* allows business actors to introduce, promote, and distribute products and services to consumers in a more effective and cost-effective way. The use of digital technology in business is no longer just an additional option, but has become an essential necessity to adapt in an increasingly dynamic business world. Thus, the transformation towards *E-Business* not only offers solutions to the challenges faced during the pandemic, but also prepares business actors to operate in an increasingly connected and digital business ecosystem in the future. (Nasution & Putri, 2021)**.**

E-Business is a technology that helps develop various aspects of business, both internally such as human resource management, administration, and finance, as well as externally such as sales, provision of goods and services, and relationships with consumers. In its development, *E-Business* goes through four main stages of evolution: (1) *Channel Enhancement*, which is the improvement of communication channels; (2) *Value-Chain Integration*, which is the integration of value chains; (3) *Industry Transformation*, namely industrial transformation; and (4) *Convergence,* which is the unification of various industrial sectors. (Zulfita et al., 2022).

The term *E-Business* was first used by IBM in 1996 as part of its marketing strategy. IBM defines it as the transformation of major business processes through the use of the internet. Today, companies are adopting *E-Business* because it provides higher efficiency and allows for faster responses to customers. In general, a good *E-Business* strategy helps companies avoid wasting resources, support system integration, and expand business opportunities. *E-Business* adoption is seen as a form of innovation that relies heavily on the way companies view technology. (Manuel do Espírito Santo et al., 2022).

E-Business aims to increase the competitiveness of an organization or company by disseminating innovative information and communication technology to all parts of the organization. It not only involves using technology to automate business processes, but it also includes transforming existing business processes by effectively implementing technology. Thus, *E-Business* plays an important role in building better relationships with partners and customers. (Damanik & Putra, 2022).

Sustainable development and environmental preservation are now globally recognized as important steps to protect the planet from damage caused by human activities. Various international initiatives were launched to deal with the negative impacts of development, such as global warming and climate change. One of the main focuses of all these initiatives is to reduce dependence on fossil fuels through the application of the 3R principles: Reduce, Reuse, and Recycl.

On the other hand, today the impact of pollution and environmental pollution is increasingly dangerous. The global health crisis is increasing, with around 7 million people losing their lives per year based on World Health Organization (WHO) data. Awareness of improved environmental improvement and management seems to have become a shared awareness. The slogan of returning to nature is starting to be echoed everywhere, including in the banking industry in Indonesia. The term green banking has often been heard in recent years. (Region, 2020).

Banks and financial institutions have a critical role to play in global efforts to make our planet a better place. As a financing provider, banks can encourage businesses to adopt environmentally friendly practices. Offering funds with lower interest rates for green technologies can provide long-term benefits to the environment. In addition, banks as key users of technology can also implement sustainable practices, thus leading this initiative. Product innovation and technology utilization also allow banks and customers to reduce the use of resources, such as paper, which in turn helps protect the environment. (*Green Banking for Environmental Sustainability Dr. Sunita Gupta Assistant Professor – Commerce, Dev Samaj College for Women, Sector 45, Chandigarh.*, 2021).

The environmental damage that often occurs is mostly caused by human activities aimed at making profits. This activity has an impact on environmental resources such as air, water, land, and biota, which provide goods and services with economic benefits both directly and indirectly. Islamic banks play a role in paying attention to environmental sustainability, in line with the principles of sustainable development regulated in the 1945 Constitution. The application of this principle in the banking sector is known as Green Banking, which is implicitly regulated in Bank Indonesia Regulation No. 8/21/PBI/2006 and Bank Indonesia Circular Letter No. 8/22/DPbS. (Hanif et al., 2018).

Application *Green Banking* is an effort to change the paradigm of national development from a greedy economy *(Greedy Economy)* become Sustainable economy *(Green Economy)*. In greedy economies, economic growth is measured through the value of gross domestic product (GDP), which often results in the exploitation of natural resources. On the contrary, a sustainable economy prioritizes growth that Still pay attention to three important aspects, namely people, profit, and planet. This concept is known as the 3P and is part of sustainable development efforts. (Region, 2020). *Green banking* is defined as a banking effort to emphasize sustainability deep Distribution credit and operational activities.

Although the bank does not by directly contributes greatly to environmental pollution, the use of energy, water, and other natural resources in banking is not comparable to other sectors such as mining and the processing industry. However, banks still cannot escape the problem of environmental degradation. By providing loans or financing to customers, banks can trigger activities that have a negative impact on the environment. (Hanif et al., 2018).

In the face of rapid and competitive national economic development, as well as increasingly complex challenges and an advanced financial system, banks have an important role as a financial service provider for the public. As a development agent, banks function as one of the supporting factors in the development of the business world. (Marlina, 2018).

Green banking focuses on transforming bank operations to be more environmentally friendly. This requires all banks to adopt the use of renewable energy, automation, and other measures to reduce the carbon footprint of banking activities. In addition, banks need to make environmentally responsible financing decisions by considering the environmental risks of the projects being financed. The bank is also expected to support and encourage the growth of 'green' initiatives and projects. This approach reflects a smart and proactive way of thinking to achieve sustainability in the future. (Uddin & Ahmmed, 2018).

The progress of the times accompanied by the rapid development of technology has made human needs increasingly prioritize speed and convenience. Modern lifestyles are now inseparable from electronic devices. Today, almost all companies, both large and startup, have taken advantage of technology, including in the world of banking. Banks are trying to offer E-Business services through digital banking technology, which provides convenience and speed in transactions.

With the advancement of digital banking, customers can now make transactions anytime and anywhere quickly and easily, as long as there is access to a data network that allows 24-hour service in real-time. This increases the volume of transactions at the bank. This rapid development supports the speed and ease of banking services, which in turn can attract customer interest and build public trust. Currently, technology is not only a supporting factor, but also a decisive aspect for the progress of the banking world. Banks that do not utilize technology in their services tend to have difficulty developing. Given that many banks offer similar products, improving the quality of service is important to differentiate one bank from another. (Marlina, 2018).

Banks that implement green banking in their activities will take better advantage of technological advances and the rapidly growing internet. Thus, banking activities that were previously *paper-based* can switch to *paperless*. This change is expected to reduce the *carbon footprint and carbon emissions*. (Indonesia et al., 2019).

B. LITERATURE REVIEW

Green banking : according to Lalon and Raad (2015), is an activity that aims to achieve sustainability through environmental protection and the promotion of sustainability and social responsibility in investment. Sudhalakshmi and Chinnadorai (2014) stated that green banking includes the promotion of environmentally friendly practices and the reduction of the carbon footprint of bank activities. Ramila and Gurusamy (2015) added that green banking has two dimensions: first, how banks operate their activities by utilizing technology and the internet to become paperless; and second, how banks channel their funds to fund business activities that do not have a negative impact on the environment.

Green banking policy : In Indonesia, it is regulated in Law number 32 of 2009 concerning environmental protection and management. This bill emphasizes the importance of balancing economic activities with efforts to protect the environment from the impact caused by these activities. In addition, Bank Indonesia also issued Bank Indonesia Regulation (PBI) No. 14/15/PBI/2012 concerning Asset Quality Assessment of Commercial Banks. In this regulation, Bank Indonesia encourages banks in Indonesia to consider environmental feasibility factors when assessing a business.

C. RESEARCH METHODS

The method used in this study is a qualitative descriptive analysis, which aims to describe the application of E-Business in digital banking in Islamic banks in Indonesia. The data obtained is presented in the form of a description describing the results of the research. The data collection techniques used include literature studies from journals, online articles, and books relevant to this research topic.

D. RESULTS AND DISCUSSION

Application of *E-Business* in the Form of *Digital Banking* in Sharia Banking

Since Stanford Federal Credit Union launched online banking services in 1994, digital banking has spread rapidly around the world. In Indonesia, internet banking began to be implemented in 1998 by Bank Indonesia, followed by the launch of mobile banking by BCA in 2001 and sharia mobile banking by BCA Syariah in 2014, where it was followed by other banks. Transactions through digital banking have been increasing since the emergence of business startups in

2010 and continue to grow to this day. Factors such as technological developments, changes in consumer behavior, and business competition are the drivers for banks to continue to innovate. This is especially true for Islamic banks, which must comply with two regulations in carrying out their operations, namely Islamic law and government regulations. (Riza, 2019).

In the 2010s and beyond, digital banking emerged as a critical factor for banks to navigate the challenges of the second economic crisis. This period encouraged banks to invest significantly in digital projects, leading to the second wave of digitalization in Indonesia. Some banks have started to use various social media platforms to communicate, introduce, and promote product features that are beneficial to their customers, such as building customer complaint channels and facilitating interactive two-way communication. This strategy fosters a sense of connection and respect between banks and their clients. In addition, it shifts the perception that banking services can only be accessed through traditional physical branches. The demand for digitalization in banking is further strengthened by a demographic shift in business ownership, especially among millennials who prefer the convenience of online and mobile transactions. (Winasis et al., 2020).

With the development of technology, digital banking is increasingly affecting customers' financial activities. The convenience offered makes customers feel benefited. However, only some Indonesians can enjoy this service. According to data from world financial institutions, only 54% of Indonesians have been reached by banking services. For the millennial generation, services such as ATMs, mobile banking, internet banking, and SMS banking are considered commonplace or mainstream. Currently, people want the convenience of opening an account, saving, applying for credit, and accessing other banking services without having to be physically present at the bank. This is an opportunity for banks to attract the interest of potential customers by providing services that suit their needs, so as to increase customer loyalty to the bank. (Mawarni, 2021).

Indonesia is one of the countries with the largest population in the world and has a very large number of internet users. This makes digital banking, as part of E-business, a potential and inevitable business opportunity in the banking sector in the digital era. Digital banking not only improves the operational efficiency of banks, but also improves the quality of bank services, both conventional and sharia, in serving customers. According to Budi Agus Riswandi, digital banking helps banks expand market reach, improve service quality, and become the key to compete in business in the digital era.

The development of information and communication technology in the banking sector has not only changed people's social lives, but also given rise to new forms of legal acts that have not been regulated in the law. Currently, there is no specific law governing digital banking. The legal basis related to banking still refers to Law of the Republic of Indonesia Number 7 of 1992 concerning Banking, which has been amended by Law Number 10 of 1998, as well as Law Number 21 of 2008 concerning Sharia Banking. Given that the law is dynamic and must adapt to technological developments, the three laws need to be revised to accommodate the concept of digital banking.

At first, customers had to come directly to conventional or Islamic banks to make financial transactions such as saving or withdrawing money. However, with the advancement of information technology in the banking sector, customers no longer need to go to the bank for transactions. They can simply use the card at ATM machines available in various public places. With digital banking, customers don't even need to leave the house.

Various financial transactions can now be done from home using only mobile phones through mobile banking services. The legal basis that regulates electronic transactions in Indonesia is Law Number 11 of 2008 concerning Information and Electronic Transactions. Electronic transactions are legal actions carried out using computers, computer networks, or other electronic media. From this definition, there are two important things: the existence of legal acts and the use of electronic media. Therefore, digital banking transactions carried out by customers are a form of legal act. The use of electronic media in these transactions means that conventional documents, such as paper and pen, are being replaced by electronic documents. (Utama, 2021). Digital banking is increasingly in demand by consumers around the world.

In general, digital banking offers similar services to traditional banking, but all services are handled through a smartphone app. Customers can access financial services independently, without having to go to the bank. In order to survive in this era of technology, banks must master digital technology. If banks fail to respond and adapt to these changes, they risk huge losses and failures. (Siska et al., 2022).

In Indonesia, the number of internet users increased rapidly from 42 million in 2010 to 143.26 million in 2018, with an increase of more than three times in seven years. The economic activities of the Indonesian people through the internet include knowing prices (45.14%), assistance at work (41.04%), product and service information (37.82%), online purchases (32.19%), finding a job (26.19%), banking transactions (17.04%), and online commerce (16.83%). This shows the importance of the internet in various economic activities of society.

Mobile banking is a form of digital banking, namely *E-Business services* provided by banks to allow customers to access banking services without space and time limitations. This service is based on mobile and internet technology, making it easier for customers to make various banking transactions at any time without having to come directly to the bank.

Implementation of *Green Banking* in Sharia Banking

Sustainable banking is the financial institution's efforts to support sustainability, which has a direct or indirect impact on the bank's performance. Several studies have shown that the application of sustainability principles in the banking business can affect the performance of banks, both financially and non-financially. (Handajani et al., 2021)

As a key stakeholder in the industrial sector, banks face challenges in managing credit risk, asset quality, and long-term rate of return. To overcome this, banks need to be proactive and play a role in supporting the concept of going green. Banks should incorporate ecological and environmental aspects into their lending principles, thereby encouraging the industry to implement good environmental management, appropriate technology, and sustainable management systems. (Muhammad Hussain Qureshi & Talat Hussain, 2020).

Green Banking encompasses more than just environmental development, but also the empowerment of communities towards a better social life. *Green Banking* is a banking practice that is carried out based on the principles of sustainable development, especially in terms of credit and financing, with a focus on ecological and environmental balance. (Rachman & Saudi, 2021).

In managerial practice, the adoption of *green banking* in the banking business must be supported by the optimal use of information technology. This includes the execution of banking transactions electronically, as well as the safeguarding and storage of confidential bank documents and other transaction documents. This step supports the paperless policy as part of the implementation of green banking in banking operations. (Handajani, 2019).

The concept *of green banking* has two dimensions, namely lending and operating *activities*. In distributing credit, banks take into account the environmental impact that may be caused by the business activities that are financed. (Karyani & Obrien, 2020).

The concept of green banking was developed from the Triple Bottom Line principle which includes three main aspects: Profit, People, and Planet. However, this concept is considered incomplete because it does not include accountability to God. Therefore, to complete the Triple Bottom Line, two elements based on the Hadith of the Prophet Muhammad PBUH and Allah SWT were added, so that it becomes a Pentuple Bottom Line which includes five aspects: Profit, People, Planet, Prophet, and God.). (Iryani & Laela, 2021).

Green Finance has shown its success in the trade and finance sectors, with a faster-than-expected deployment. The goal of sustainable economic growth is now increasingly visible. By the end of the decade, this concept had become an advantage for the financial system. These innovative instruments have bright prospects, especially if policymakers can overcome existing barriers. Over time and increasing awareness, the public and private sectors need to contribute to protecting the planet through monetary tools such as Green Finance. Appropriate policies must be implemented, and risk and opportunity analysis must be carried out in a timely manner. (Sheetal Vijayvargiya, 2021).

The legal basis for the practice *of Green Banking* in Indonesia includes Bank Indonesia Regulation No. 14/15/PBI/2012, which regulates the assessment of environmental management by debtors as a condition for credit disbursement. In addition, the Financial Services Authority (OJK) also issued Regulation Number 51/POJK.03/2017 on sustainable finance, which encourages banks to provide funding for sustainable development and to address climate change in an adequate amount. (Wahid Wachyu Adi Winarto, Tri Nurhidayah, 2021).

Initially, Bank Indonesia (BI) required all national banks to pay attention to environmental sustainability in their business development, in accordance with Law No. 32 of 2009 concerning Environmental Protection and Management. Then, the Government through the Financial Services Authority (OJK) appointed seven banks, including BRI Syariah, as pilot projects in the development of sustainable banking in Indonesia. This is the first step in supporting sustainable development. One of the concrete steps is the issuance of OJK Regulation No. 51/POJK.03/2017 concerning Sustainable Finance for Financial Services Institutions, Issuers, and Public Companies. (Fitrianna & Widyaningrum, 2020).

Based on the Financial Services Authority Regulation (POJK) No. 51/POJK.03/2017 concerning sustainable finance, all financial service institutions, including banks, are required to implement sustainable finance principles. In an effort to address issues related *to green banking,* banks seek to gain legitimacy from regulators and the public. Some banks have *leveraged green banking* as an effective management tool, as *green banking* reports can provide performance ratings that will improve a company's reputation. (Maryanti et al., 2021).

Green banking includes a bank's attention to the environment as well as positive efforts to preserve the environment and prevent pollution. This principle focuses on the protection and improvement of the environment, as well as the preservation of natural resources, biodiversity, wetlands, and wildlife. Thus, sustainable development is a constitutional obligation in Indonesia, and sustainable banking is at the forefront of supporting sustainable development through responsible business practices. (Maryanti et al., 2021).

The implementation of *the green banking* pattern is part of the company's legal responsibility to deal with global environmental issues. Therefore, this approach should be mandatory, not just as a philanthropic activity that is seen as a charity for the environment. (Safitri et al., 2019).

The Role *of E-Business* in the Implementation of *Green Banking* in Sharia Banks in Indonesia

With the development of the times and rapid modernization, the government needs to establish regulations related to electronic media. For this reason, the government issued Law Number 11 of 2008 concerning Information and Electronic Transactions. This regulation is the legal basis for the implementation and enforcement of laws related to electronic transactions and other activities carried out through electronic media. (Pradjonggo, 2008). Millennials are early adopters of new technology and are expected to be more likely to use digital banking services than other generations. Therefore, banks must understand the needs and desires of this generation if they want to attract them to use banking services. This is important because the expectations and perceptions of the millennial generation are different from other generations. (Riza, 2019).

In a book entitled "*e-Banking*", the Financial Services Authority of the Republic of Indonesia explains the various forms of *e-Banking* services available in conventional and Islamic banks, including: ATM *(Automated Teller Machine),* EDC *(Electronic Data Capture),* internet banking, SMS banking, mobile banking, e-commerce, phone banking, and video banking.

The scale of current banking operations has significantly increased the carbon footprint, mainly due to the large use of energy (such as lighting, air conditioning, electronic equipment, and IT), high paper waste, and lack of environmentally friendly buildings. Therefore, banks need to adopt technologies, processes, and products that can significantly reduce their carbon footprint and support sustainable businesses. (Uddin & Ahmmed, 2018).

To improve the bank's capabilities, the optimal use of information technology is an important requirement in supporting banking service innovation and increasing concern for the environment. Therefore, on August 6, 2018, the Financial Services Authority of the Republic of Indonesia passed Financial Services Authority Regulation Number 12/POJK.03/2018 concerning the Implementation of Digital Banking Services by Commercial Banks.

The development of information and communication technology in the banking sector makes it easier for customers with various operational services, including *e-Banking*. *e-Banking* services have been used by all commercial banks, both conventional and sharia. This is in line with the development of social media and policies to encourage less *cash transactions,* so that many economic actors and people take advantage of modern banking services through *e-Banking*. (Utama, 2021).

Green Banking is an effort to promote environmentally friendly practices and reduce the carbon footprint in banking activities. Some forms of Green *Banking* include: using online banking instead of in-branch banking, paying bills online rather than through physical delivery, opening an account at an online bank instead of a bank with multiple branches, and supporting local green initiatives. (Chitra & Gokilavani, 2020).

Islamic banking in Indonesia is showing a positive growth trend, making it an important part of the financial market competition. In addition, the Islamic banking industry can utilize information and communication technology (ICT) and support environmental quality in financial transactions. (Cahyadin et al., 2020).

The use of social media supports marketing and business promotion, provides real-time customer service, and continuously shares information. Social media also helps strengthen relationships with customers, improve an organization's reputation, create product innovations, and build loyalty and trust. However, in Islamic banking, the use of social media must be managed properly so that it remains in accordance with sharia principles and does not contradict the values upheld. (Rafiki, 2020).

The progress of the digital era must be used to develop the potential of the sharia economy so that it is better known and accessible to all Indonesian people, as well as provide real benefits for sharia-based business actors. Stakeholders need to prepare the right strategy to compete in the global market in order to overcome the declining trend and make the sharia economy the main choice, especially in Indonesia. (Febriyani & Mursidah, 2020).

The Indonesian Financial Services Authority has issued guidelines for the implementation of digital banking through OJK Regulation No. 12/POJK.03/2018 concerning the Implementation of Digital Banking Services by Commercial Banks. This regulation was made to improve the effectiveness, efficiency, and sustainability of services to customers. This is necessary because Law Number 7 of 1992 and Law Number 10 of 1998 concerning Banking have not regulated digital banking. (Amrillah, 2020).

The Islamic banking sector will undergo rapid changes due to changes in customer behavior, increasing expectations, adoption of new technologies, and business digitalization. The success of the adoption of digital banking services in Islamic banks is influenced by several factors. Based on a systematic literature review, there are three main factors influencing the adoption of digital banking in Islamic banks. First, demographic factors such as religion, gender, age, and income. Second, psychological and trust factors. Third, technological factors that include relative advantage, compatibility, and complexity. The next research is suggested to focus on the development of digital banking models in Islamic banks. (Siska et al., 2022)

Sharia banks have a great opportunity to develop e-banking services as a payment method. Based on data, there are at least 3.5 million Sharia Bank customers who have used e-banking services. (Mansyur, 2021).

E. CONCLUSION

With the development of technology, digital banking is increasingly used in customer financial activities, providing convenience and profits. However, only some Indonesians enjoy this service. Based on data from world financial institutions, only 54% of Indonesians have access to banking services. The millennial generation considers services such as ATMs, mobile banking, and internet banking to be commonplace. Now, people want banking services, such as opening an account, saving money, or applying for credit, without the need to be present at the bank in person. This is an opportunity for banks to attract potential customers and increase their loyalty by providing the desired services.

Green banking is the bank's effort to care about the environment and carry out positive activities to preserve nature and prevent pollution. This principle aims to protect and improve the environment, as well as to preserve natural resources, biodiversity, wetlands, and wildlife for the future. Therefore, sustainable development is a constitutional obligation in Indonesia, and sustainable banking plays an important role in realizing this goal through environmentally friendly business practices.

The Financial Services Authority of the Republic of Indonesia mentions several forms of e-Banking services that can be used by conventional banks and Islamic banks. These services include: ATM *(Automated Teller Machine),* EDC *(Electronic Data Capture),* internet banking, SMS banking, mobile banking, e-commerce, phone banking, and video banking.

The optimal use of information technology is an important step to improve the bank's capabilities, support service innovation, and increase environmental awareness. Thus, it can be concluded that the implementation of *E-Business* in Islamic banks in Indonesia has a significant positive impact in realizing sustainable green banking.

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