

Application of Artificial Intelligence (AI) as Innovation in the Era of Disruption in Reducing the Risk of Islamic Banking in Indonesia

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Abstract— This research aims to describe the role of Artificial Intelligence (AI) in risk management and its impact on Islamic banking. This type of research is qualitative with a library study approach or data obtained from various literary sources such as books, journal articles, and previous research. Descriptive data analysis related to the application of artificial intelligence for risk management in sharia banking. The results of this research explain that the Islamic banking sector really needs the application of AI as a competitive strategy in the industrial market. The role of artificial intelligence as a form of risk management can provide solutions to the problems faced by Islamic banking institutions. So that it can increase banking industry income by minimizing losses.

Keywords— Artificial Intelligence (AI), Sharia Banking, Risk Management

I. INTRODUCTION

The rapid growth of technology has caused many areas of life to change in the era of society which has an impact on transformations that can be changed using machines. And in the end technology can provide services in a digital way. Many new breakthroughs are emerging at the moment, for example artificial intelligence, internet of thought, big data and others which can be used simply, uncomplicatedly, accurately and in accordance with changes in economic progress and development (Butaru et al, 2016). Updates to the technology currently available along with service competitions can be created to attract people's interest in using this technology so that this technology has become a people's lifestyle. Thus, the presence of a digital platform greatly contributes to effective and efficient services for humans, especially in terms of sharia banking services

based on empirical data (Bank Indonesia, 2023), the total population of Indonesia is currently 270.2 million people with an internet user population of 197.71 million people. so that

many companies, including sharia banking services, which previously carried out their business processes have switched to digital by creating new applications to support business. The emergence of these applications has started to make companies think about increasing their efficiency, especially in terms of data storage. Seeing this, the majority of application makers are starting to move towards cloud-based. Currently, the use of the cloud itself in the corporate environment is becoming deeper and digital transformation is accelerating with big data analysis. Thus, the banking sector as one of the national strategic sectors needs to improve its services by providing increasingly efficient network infrastructure to meet the needs of its customers in order to maintain the stability of the Indonesian financial system.

Artificial Intelligence (AI) refers to computer programs designed to imitate human intelligence, including decision-making abilities, logic, and other characteristics of intelligence. So it can be used as a reference to solve everyday problems. This technology describes a computational method that creates artificial intelligence. Another interpretation states that Artificial Intelligence (AI) is a computer method that can operationalize things done by humans that are related to the intelligence of automated actions (Adani, 2021). AI can also be interpreted as a module for preparing human intellectuals based on the scientific method of information accompanied by tools that take the form of making certainties with an attitude that is almost the same as humans through machines or computers. Artificial Intelligence (AI) is a technology that imitates human behavior with identical thinking procedures. So the presence of AI technology which is able to carry out activities like humans see things can cause anxiety and confusion for humans. AI requires real material that can be used as a basis for study in presenting recognition as a person has. In this Artificial Intelligence (AI), the important roles are learning procedures, arguments and improving human



work.(Anita et al, 2016).

Artificial Intelligence (AI), which has grown rapidly, can serve as a medium for relief in various sectors, including the banking sector. According to Banking Law Number 10 of 1998, it is explained that banking is something related to banks, including institutions, business activities as well as methods and procedures in carrying out operational activities. The first plan of activities in banking was carried out offline face to face. However, this is considered ineffective and inefficient and takes a long time. During an era of disruption, artificial intelligence contributes to efficiency for public activities such as banking and other financial institutions. various financial transactions of customers and prospective customers can be served effectively and efficiently. The banking sector in Indonesia can benefit from the rapid growth of Artificial Intelligence (AI) technology in its operational. According to Bussmann et al (2021) The resulting positive impacts are, 1) increasing transaction speed because the banking services offered are maximized by using artificial intelligence technology. 2) Emphasis on operational costs and other expenses. 3) Artificial intelligence to make it easier to carry out banking transactions without having to go to a branch office and just use the network. For example, handling online savings or deposit openings and also online loan or financing application services.

The application of Artificial Intelligence (AI) in the banking sector can contribute to obtaining maximum profits, for example a more efficient bank budget with data access that is not difficult and complicated. Artificial Intelligence (AI) can also be used as a basis for banks in determining strategic policies (Dicunzo et al, 2019). Through this application, digital chat can be realized with problems faced by customers, both via messenger and Telegram. AI in the banking sector certainly creates effective and efficient transaction services for customers. Technological growth in the era of disruption cannot be avoided so you must be ready and able to face it. (Chang et al, 2020).

In recent years, the growth of sharia banking has accelerated rapidly, as can be seen from the market share, total asset wealth and number of customers. Based on data, people who make loans to sharia banking are unable to repay these loans, resulting in an increase in non-performing financing and an impact on sharia banking operations. there is no collateral in providing loans, there is no incentive to protect oneself from financial risks, because in sharia microfinance institutions there are no assets that can be used as collateral, so they are vulnerable to financing problems. So the role of AI technology can be used for the governance of a financial institution.

Sharia banking management places technology as a platform for determining substantial principles for social responsibility in its business activities. In the sharia banking industry there is also management such as financing risk, liquidity risk, market risk, operational risk and so on. the existence of risk management to regulate and minimize various types of existing risks. Apart from that, it can also predict failure to repay loans or financing as well as monitor various risks of loss. Based on the explanation above, this research will describe the implementation of Artificial Intelligence (AI) for risk management in the Islamic banking sector with the aim of explaining the function of Artificial Intelligence (AI) in minimizing risk. As well as explaining the benefits of this research, it contributes to sharing extensive information about the application of Artificial Intelligence

(AI) as risk management in the banking sector (kriesberg, 2007). This research is formulated; 1) how can sharia banking increase network capacity, reliability and security in line with the growth of Artificial Intelligence (AI) based digital transactions? What is an overview of the use of AI and data analytics by intelligent banking? 3) how the adoption of Artificial Intelligence (AI) in Indonesia is developing digital talent?

III. METHODOLOGY

This research uses a type of library research (Sugiyono, 2015), which is a data collection technique by conducting a review study of books, literature, notes and reports that are related to the problem being solved. Literature study is an important step where after a researcher determines the research topic, the next step is to conduct studies related to the theory and research topic. In searching for theories, researchers will collect as much information as possible from related literature. Bibliographic sources can be obtained from books, journals, magazines, research results (theses and dissertations), and other appropriate sources (internet, newspapers, etc.). If the researcher has obtained relevant literature, it is immediately compiled regularly for use in research. Therefore, literature study includes general processes such as systematically identifying theories, finding literature, and analyzing documents that contain information related to the research topic.

IV. RESULT AND DISCUSSION

Sharia Banking According to Law Number 21 of 2008, sharia banking is a financial institution that utilizes customer needs through savings or sharia-based financing. so that sharia banking can be used as an alternative for people who have low incomes to obtain financing to improve welfare. Sharia banking institutions are growing fastly, this can be seen from their spread in almost all corners of Indonesia. The existence of sharia banking plays a strategy in finding solutions to solving problems of poverty and also empowering the economy with productive financing infrastructure. The benefits of financing are distributed to alleviate poverty by reducing the factors that cause it. Sharia banking functions to reduce poverty rates through easy public access to banking services. Furthermore, sharia banking also functions as an economic equalizer and is expected to be able to realize justice and prosperity. Through sharia banking operational activities, it is able to empower the community. So sharia banking really needs support from the government. With regulations that have been established with special attention to banking, this institution can be established firmly and contribute optimally to the financing of small and medium.

In line with the high level of public interest in banking services, sharia banking should have a basis for minimizing the risk of fraud, analyzing customer needs, determining stock potential, implementing biometrics, providing digital banking services that are integrated with AI so that customer data is stored properly. Even though artificial intelligence is not able to completely replace the role of humans, artificial intelligence can support human performance. Artificial intelligence has now been widely applied to assist all human activities, including the sharia banking sector by using robots in an automated manner. The Era of Disruption Society 5.0 is an answer to the challenges of technological advances which must be harmonized with the conditions of developed countries which are more focused on technological

development and quality social life. Artificial intelligence in the 5.0 era is advancing rapidly with the existence of the internet (Sri, 2013). This can also optimize people's capacity and opportunities for the growth of human life in a more advanced, effective and efficient manner.

Artificial Intelligence (AI) has provided easy, effective and efficient services in the sharia banking industry sector. Banking is required to be able to implement AI optimally, given the rapid competition between institutions. Through the application of AI, it is a form of technological development that can present positive opportunities for the banking world to improve institutional performance Dicoding (2015). AI model applications can be programmed according to institutional needs. AI can also be used for financing risk management, in terms of estimating risks that could arise due to financing or credit. The use of AI in the Islamic banking sector uses one method of technological infrastructure, for example computing which functions to fulfill customer needs. Through the development of halal companies and Islamic lifestyle trends, the sharia financial technology market can increasingly expand to remote areas. the application of artificial intelligence applications by banks in providing fast, easy and efficient services. AI technology can provide convenience in financing procedures. The use of AI in the financial industry can minimize loan losses, increase customer targets and ensure safe payment procedures. The sharia financial institution technology industry needs financial inclusion in advancing sharia banking, one of which is through the use of AI which has a positive impact (Elwandayudistira, 2015).

The Role of AI in Risk Management in Sharia Banking Artificial Intelligence (AI) is a form of progress in digitalization with the capacity and expertise that the industry has in carrying out its business activities and also helps achieve maximum efficiency. In the field of sharia banking, AI exists to maximize digital security procedures and minimize manipulation or fraud crimes, maximize profit levels through human changes with systems to minimize costs and also improve products according to customer needs, overcome customer obstacles, for example customer and service provider interactions, answering or serving problems. customers, and minimize long queues caused by manual system performance. (Ian, 2011).

Regarding decision making in AI, previous research has implemented a support system for determining customer financing. Minimize the risk of fraud. example of a credit card company after making several transactions. With the help of the presence of artificial intelligence, fraud detection systems analyze a person's purchasing behavior and trigger alerts if there is something something is suspicious. AI can be used to detect suspicious financial activity, such as money laundering and fraud. This technology can examine unusual transaction patterns and behavior to identify potential fraud. Artificial intelligence can be used to analyze the needs of banking customers by collecting and processing data from various sources. Data in the form of customer transactions, behavior and preferences is then used to create customer profiles, identify needs and develop appropriate products and services. Additionally, AI can be used to improve customer experience. For example, it is used to provide product and service recommendations tailored to customer needs or to answer customer questions. analyzing data and identifying trends that may not be visible to humans over a short period of time. This

is different from humans who cannot analyze all available data manually to make the right investment decisions. then, artificial intelligence has played an increasingly important role in the application of biometrics. AI has helped a lot in developing biometric recognition systems that can be used to improve the security of banking systems. For example, AI can be used to develop systems that can identify ATM users based on their fingerprints. It is important to note that AI cannot guarantee success in investing. However, customers can use it to help make better decisions. and Artificial intelligence has become an important part of digital banking services. AI can be used to increase efficiency, improve security, and provide a better customer experience. AI can be used for innovation in digital banking services by developing new products and services that are more sophisticated and efficient. For example, AI can be used to develop banking services supported by chatbots or utilize augmented reality (AR) technology.

So, the application of AI in sharia banking can provide fast, precise and accurate information. In this way, Artificial Intelligence can function in Risk Management. This is because AI can minimize losses when disbursing loans to bank customers, further increase security during payments, as well as optimize compliance with regulations and maximize customer targets for sharia financial agency products. Through this, the sharia banking industry can compete with sharia banking to meet the demands of the modern era.

V. CONCLUSIONS

According to research the implementation of Artificial Intelligence in the sharia banking industry is used as a competition strategy among other financial industries. Artificial Intelligence is an important part of improving the sustainability of the sharia banking industry. The application of AI in sharia banking involves the use of digital innovations that are structured according to the needs of the relevant industry. Another function of artificial intelligence is risk management which is capable of sharia banking to minimize problems and optimize income.

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