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Artificial Intelligence in Islamic Financial Institutions in Indonesia: A Systematic Literature Review

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ABSTRACT

Artificial intelligence is an innovation and development of computers and machines that create human-like capabilities, namely, cognitive abilities, learning, adaptation, and decision making. The implementation of artificial intelligence in Islamic financial institutions increases not only for service innovation but also for analyses data, fraud detection systems, and analyses risk management. The key to dealing with technological change is the collaboration of various parties, namely, practitioners, academics, industry players, regulators, and experts in Islamic finance and economics. This study aims to determine the trend of publication, application, development, challenges and opportunities of artificial intelligence in Islamic financial institutions in Indonesia from 2014 to 2023. The results obtained in this study show that there are 15 journal articles that show 5 types of artificial intelligence in Islamic financial institutions, namely, financial technology, digital security, blockchain, robo-advisors, and digital banks. Islamic financial institutions in Indonesia have used artificial intelligence as needed. The development of artificial intelligence has changed people's life style, increased human resources, and developed regulations to increase security and trust. The challenge is to increase innovation, supervision and protection, create maximum literacy and inclusion, and collaboration. The opportunities that occur are the creation of a sustainable economy, increasing the development of Islamic economics and finance, creating superior human resources, and easy to analyse risk management

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INTRODUCTION

The development of the digital era requires all activities, including Islamic financial institutions, to adapt quickly. Easy and systematic exchange of work methods is the key to keeping up with the times and achieving goals effectively. Planning linkages around artificial intelligence can be a concern in every policy and decision making. Artificial intelligence is part of the study, innovation and development resulting from computers, machines, and other tools with human-like intelligence characterised by cognitive, learning, adapting and decision-making abilities (Chen et al., 2020). Artificial intelligence systems can simply do the work of humans, such as providing solutions, performing classification and forecasting. Starting from the 4.0 industrial revolution era, the automation of cyber and technology systems occurred in early 2015. The changes that occur are closely related to digital technology applied in aspects of social life.

The field of technology that is one of the main factors in accelerating digital transformation is artificial intelligence with the development of science in the fields of electronics, computer science, and mathematics (Devianto & Dwiasnati, 2020). Digital transformation in Islamic financial institutions includes the use of artificial intelligence, strategic orientation, data analytics, cultural change and organisational security, as well as sharia compliance (Qothrunnada, 2023). The results obtained from the utilisation of artificial intelligence are ease, accuracy and systematic in the management of an institution. The effectiveness of artificial intelligence has been proven to increase the speed and accuracy in running business processes that have been implemented in Islamic banking financial institutions (Latifah, 2023). Penerapan *artificial intelligence* teknologi pada lembaga keuangan digunakan untuk menganalisis data, *chatbot*, dan sistem deteksi kecurangan dalam meningkatkan efisiensi operasional lembaga dan pelayanan nasabah (Syakarna, 2023). Artificial intelligence is also used by Islamic financial institutions for the underwriting process to analyse, manage customer data and the unbanked community (B. Ramadhan, 2023).

Artificial intelligence in Islamic financial institutions has been used to the fullest through robo-advisors in analysing risk portfolios and Islamic investment preferences, blockchain to display transparency of Islamic financial transactions through big data in real time and accurately, Islamic fintech provides digital transaction and financing innovations through peer-to-peer financing (P2P) and electronic wallets, and biometric technology efforts to increase the security of transaction data through direct authorisation by the person himself (Qothrunnada, 2023). Achieving common goals for the advancement of Islamic financial institutions in Indonesia in this case through artificial intelligence in Islamic financial institutions in Indonesia is the obligation of all parties. This research seeks to examine artificial intelligence in Islamic financial institutions in Indonesia with a systematic literature review method. The research journal articles included are directly related to artificial intelligence, Islamic financial institutions and artificial intelligence in Islamic financial institutions in Indonesia from 2014 to 2023 on the basis of the last 10 years of research. The research results are expected to provide valuable input recommendations for policy makers,

Islamic financial institutions, researchers and related parties as an important reference for future research and decision making.

LITERATURE REVIEW

- ***Artificial Intelligence***

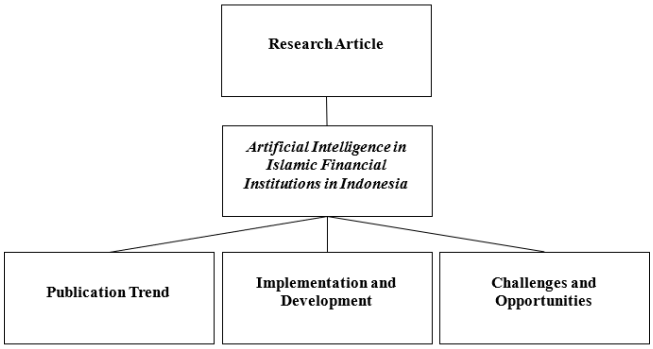
Artificial intelligence was first introduced and created by John Mc Carthy in 1956 in a Dartmouth conference discussion that aimed to create a machine that could exhibit human intelligence. The 1980s saw a decline in research and interest in artificial intelligence, until a resurgence in the early 1990s and early 21st century. Development and processing became more massive when entering the industrial 4.0 era with the use of system automation. The industrial 4.0 revolution is here to accelerate the introduction of technology that has human-like capabilities to the entire society (Ayunda & Rusdianto, 2021). Artificial intelligence is a computer science that focuses on creating programs or machines that can imitate or reflect human thought processes, such as language processing, facial recognition, decision making, problem solving and learning from experience (Permana et al., 2023). Its use today artificial intelligence has made many changes in various work processes. Artificial intelligence is a computerised system created to simplify and complete various human work professions (Amelia et al., 2024). Indonesia has utilised artificial intelligence in several healthcare, manufacturing, service, education, digital and product industries. The use of artificial intelligence technology for accountants has a significant impact on the management of financial reports and decision making (Amelia et al., 2024). Government agencies have also utilised this artificial intelligence to carry out and assist the function as a regulator. The implementation of artificial intelligence has advantages and disadvantages.

- ***Islamic Financial Institutions***

Islamic financial institutions are financial institutions that implement and conduct their operations and business activities in accordance with sharia principles (Sirait et al., 2023a). Indonesia has two types of Islamic financial institutions, namely banking Islamic financial institutions and the Islamic non-bank financial industry (IKNB Syariah). The Financial Services Authority (OJK) as an institution that regulates, supervises, and protects Islamic financial institutions and the National Sharia Council of the Indonesian Ulema Council (DSN-MUI) as an institution that makes fatwas about the business processes and operations of Islamic financial institutions in Indonesia. According to OJK, the following is an explanation of each Islamic financial institution in Indonesia, namely:

1. Islamic Commercial Bank (BUS) is an Islamic Commercial Bank as referred to in Law Number 21 of 2008 concerning Islamic Banking, namely banks that carry out their business activities based on sharia principles.
2. Sharia Rural Bank (BPRS) is a sharia bank that does not provide services in payment traffic in its activities.

3. Sharia Business Unit (UUS) is a working business unit of the head office of a conventional commercial bank which becomes the main office or business unit implementing business activities based on sharia principles.
4. Pegadaian Syariah is a business concerning the provision of loans secured by movable goods, deposit services, and appraisal services organised based on sharia principles.
5. Sharia Pension Fund is a legal entity that manages and runs a programme that promises retirement benefits by implementing sharia principles in the implementation of its operational processes.
6. Information Technology-Based Joint Funding Service, hereinafter abbreviated as LPBBTI, is the provision of financial services to bring together fund providers and fund recipients in conducting funding based on sharia principles directly through an electronic system using the internet.
7. Sharia Financing Company shall be a Financing Company whose entire business activity is sharia financing.
8. Sharia Capital Market means activities related to the Public Offering of Sharia Securities, trading of Sharia Securities, management of sharia investments in the Capital Market, and Issuers or Public Companies.
9. Sharia Venture Capital Company, hereinafter abbreviated as PMVS, is a business entity that conducts Sharia Venture Capital Business activities, venture fund management, and other business activities with the approval of the Financial Services Authority which are entirely implemented based on sharia principles.



Picture 1. Conceptual Framework

METHODOLOGY

The type of research used in this study is a systematic literature review, which is research that reviews or examines in detail the knowledge, ideas or findings obtained in the content of academic-oriented literature, and formulates the results of its theoretical and methodological contributions to a particular topic. systematic literature review is an objective, overall summary and critical analysis of existing research and relevant non-research literature on the topic being studied (Ramdhani et al., 2014). This research discuss and prove what kind of artificial intelligence in Islamic financial institutions in Indonesia from 2014 to 2023, How is the development of the artificial intelligence in Islamic financial institutions in Indonesia, and what are the challenges and oppurtunities of the artificial intelligence in Islamic financial institutions in Indonesia. The use of this method can show that previous research is closely related to the future utilisation of artificial intelligence. Systematic literature review is a research system that summarises many previous studies on a predetermined topic covering a certain period (Winarno et al., 2023).

According to (Winarno et al., 2023) the steps in writing Systematic Literature Review-based research are determining research topics, searching and collecting articles, selecting articles, retrieving data and analysing and synthesising. This research will also use methods that are tailored to the aim of knowing how the use of artificial intelligence in Islamic financial institutions in Indonesia through previous journal articles that are explored using the SLR method. The following are the stages of data collection carried out using the SLR method.

1. *Determining the Topic*

The topic is determined to find out what keywords will be used to search for journal articles from previous studies and the search tools used. This research takes the topic of artificial intelligence utilisation in Islamic financial institutions with the keywords 'Artificial Intelligence' and 'Islamic Financial Institutions' which have been determined to achieve the research objectives. The search tool used in searching for journal articles is the electronic database Publish or Perish with Google Scholar search options.

2. *Searching and Collecting Papers*

This stage is the practice of searching for journal articles with keywords that have been determined in the search system, selecting the appropriate SLR protocol in the next process and the period that has been determined (Winarno et al., 2023). Searches conducted on the Publish or Perish database with Google Scholar search options using predetermined keywords are then included in data analysis. The protocol chosen in this research to analyse the data is SALSA (search, evaluation, synthesis and analysis).

3. *Selecting Papers*

Searching and collecting articles in the previous stage of the activity, articles were selected by adjusting other criteria. Suitable articles are then analysed using the selected research protocol. This process also describes the process of selecting papers that have been adjusted to the protocol, entering journal article data into the reference manager to facilitate analysis and

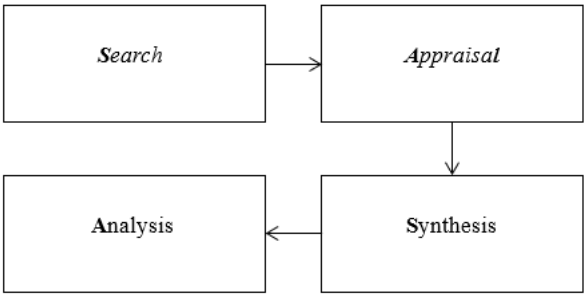
determination of criteria for further process diagrams (Winarno et al., 2023). The reference manager chosen in this study is zotero.

4. *Retrieving Data*

Performing a detailed specification of each article at this stage is done to find out the purpose of the research (Winarno et al., 2023). The description per journal article is entered into a table to facilitate analysis in the next stage. The provisions of the data table contain no, author name and year, title, research method, research results, conclusions and suggestions.

5. *Analysing and Synthesising*

Analysing the data involves the process of sorting and simplifying the data so that it can be directly related to the research problem being studied (Winarno et al., 2023).



Picture 2. SALSA Protocol

RESULT

This process is carried out to see a summary of the contents of the journal as a whole to facilitate answering questions in the discussion. This process also includes retrieving data on each journal article to view and identify each of its contents (Winarno et al., 2023).

This study compiles 15 publications that address different facets of Islamic finance, especially in light of the Industrial Revolution 4.0 and technological developments. These studies examine how regulatory frameworks, digital transformation, artificial intelligence, and Islamic financial technology (fintech) might improve the effectiveness, accessibility, and sustainability of Islamic financial institutions. Key findings show how AI and digital tools improve risk management, product innovation, and staff performance in Islamic financial institutions. To maximize the advantages of digital transformation, a number of studies stress the necessity of enhanced public literacy, regulatory requirements, and human resource competences.

Furthermore, it is believed that combining cutting-edge technology like blockchain with Islamic values can promote innovation while guaranteeing ethical compliance. Stronger laws, cybersecurity, and human resources' ability to adjust to new technologies are among the issues noted. Through Islamic accounting and financial practices, there are opportunities for improved customer experiences, increased financial inclusion, and the development of sustainable economic growth. All things considered, the studies highlight how important it is for stakeholders—including regulators, practitioners, and scholars—to work together in order to navigate the difficulties and seize the

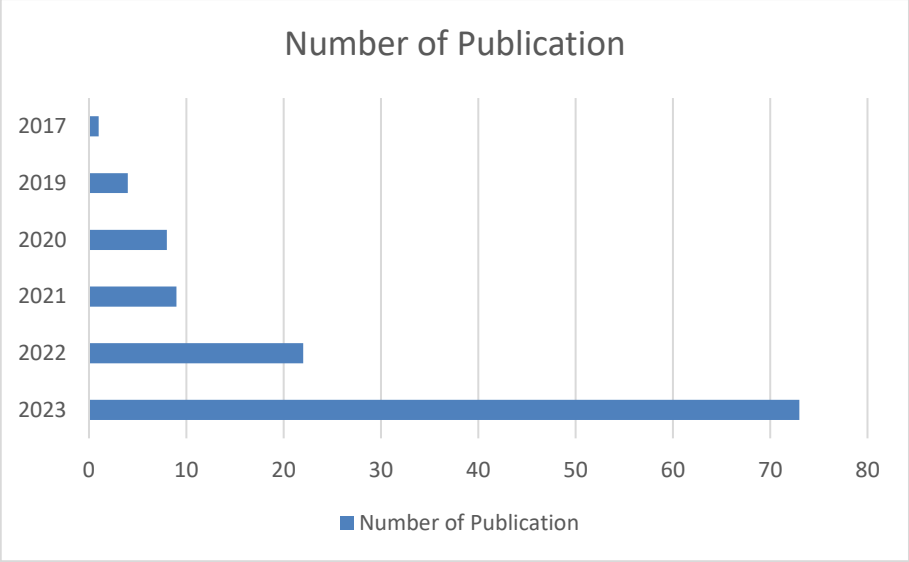
opportunities brought about by technology improvements in the Islamic banking sector.

DISCUSSION

Trend of Artificial Intelligence Publications in Islamic Financial Institutions in Indonesia From 2014 To 2023

A. Number of Publications

Based on data sources obtained from Publish or Perish with the help of Zotero, the results obtained 118 journal articles with the keywords 'artificial intelligence' and 'Islamic financial institutions' with a time limit of 2014 to 2023. At this stage, there is still research that focuses on artificial intelligence, Islamic financial institutions, and artificial intelligence and Islamic financial institutions. This happens because in the search for journal articles in Publish or Perish, the keywords artificial intelligence and Islamic financial institutions are limited by commas without quotation marks. This journal article has also been selected again on zotero and obtained 15 selected journals that match the predetermined criteria. Details of the number of related publications can be seen in the table below as follows.



Picture 3. Chart of Number of Publications

Based on the data sources obtained above after selection using the SALSA protocol, the results obtained 15 journal articles with the keywords artificial intelligence and Islamic financial institutions with a time limit of 2014 to 2023. These journal articles are included in the research results and discussed trends again based on the number of citations, origin of affiliation, and number of places of publication.

B. Number of Citations

Based on the data sources obtained after selection using the SALSA protocol from Publish or Perish with the help of Zotero, 15 journal articles were obtained with the keywords artificial intelligence and Islamic financial institutions with a time limit of 2014 to 2023. These journal articles are included in the research results. Details of the number of citations with data taken on 2 July 2024 can be seen in the table below.

Table 1. Table of Number of Citations

No	*Title*	*Number of Citations*
1.	*Pengaruh Kompetensi Sumber Daya Manusia, Sistem Informasi Akuntansi Berbasis Artificiall Intelligence terhadap Kinerja Karyawan*	*1*
2.	*Kemampuan Perbankan Syariah dalam Mengoptimalkan Eksistensi Pada Era Digital 4.0*	*7*
3.	*Penerapan Artificial intelligence Sebagai Inovasi Di Era Disrupsi Dalam Mengurangi Resiko Lembaga Keuangan Mikro Syariah*	*8*
4.	*Islamic Financial Technology dalam Penerapan di Lembaga Keuangan Syariah*	-
5.	*The Transformation of Sharia Accounting in Promoting Sustainability Economic Growth*	*1*
6.	*Transformasi Digital Lembaga Keuangan Syariah: Peluang dan Implementasinya di Era Industri 4.0*	*19*
7.	*Bank Digital sebagai Peradaban Lembaga Keuangan Syariah di Indonesia*	*1*
8.	*Persepsi Masyarakat terhadap Penggunaan Fintech Dana Syariah dalam Perspektif Hukum Islam*	*2*
9.	*Inovasi dan Pengembangan Produk Keuangan Syariah: Tantangan dan Prospek di Era Revolusi Industri 4.0*	*4*
10.	*Keuangan Terdesentralisasi (DeFi) dan Fintech Syariah dalam Sistem Keuangan Abad 21*	*5*
11.	*Peran Pemerintah Indonesia Dan Malaysia Dalam Mendukung Implementasi Teknologi Keuangan Islam pada Aspek Regulasi*	*4*
12.	*Fintech Syariah: Kolaborasi Teknologi dan Moral sebagai Instrumen Pembiayaan di Masa Depan*	*6*
13.	*Peluang dan Tantangan Bank Syariah di Era Industri 4.0*	*21*
14.	*Konsep Fintech Lending Dalam Perspektif Maqāṣid Syarī'ah*	*8*
15.	*Does Technology Matter?: Literature Review Adopsi Teknologi Dalam Riset Ekonomi Keuangan Syariah*	*3*

C. Affiliation

Based on the data sources obtained after selection using the SALSA protocol from Publish or Perish with the help of Zotero, the results obtained 15 journal articles with the keywords artificial intelligence and Islamic financial institutions with a time limit of 2014 to 2023. These journal articles are included in the research results. The following details of the researcher's university in the selected journal articles can be seen in the table below:

Table 2. Table of Affiliation

No	Judul	Affiliation
1.	Pengaruh Kompetensi Sumber Daya Manusia, Sistem Informasi Akuntansi Berbasis *Artificiall Intelligence* terhadap Kinerja Karyawan	Universitas Samudra
2.	Kemampuan Perbankan Syariah dalam Mengoptimalkan Eksistensi Pada Era Digital 4.0	Universitas Islam Negeri Sumatera Utara
3.	Penerapan *Artificial intelligence* Sebagai Inovasi Di Era Disrupsi Dalam Mengurangi Resiko Lembaga Keuangan Mikro Syariah	Universitas Islam Negeri Malang
4.	Islamic Financial Technology dalam Penerapan di Lembaga Keuangan Syariah	Universitas Islam Negeri Sumatera Utara
5.	*The Transformation of Sharia Accounting in Promoting Sustainability Economic Growth*	Sekolah Tinggi Dirasat Islamiyah Imam Syafi'i Jember
6.	Transformasi Digital Lembaga Keuangan Syariah: Peluang dan Implementasinya di Era Industri 4.0	IAI Pangeran Diponegoro Nganjuk
7.	Bank Digital sebagai Peradaban Lembaga Keuangan Syariah di Indonesia	Universitas Islam Negeri Raden Fatah Palembang
8.	Persepsi Masyarakat terhadap Penggunaan *Fintech* Dana Syariah dalam Perspektif Hukum Islam	Sekolah Tinggi Agama Islam Siliwangi
9.	Inovasi dan Pengembangan Produk Keuangan Syariah: Tantangan dan Prospek di Era Revolusi Industri 4.0	Universitas Islam Negeri Sayyid Ali Rahmatullah Tulungagung
10.	Keuangan Terdesentralisasi (DeFi) dan *Fintech* Syariah dalam Sistem Keuangan Abad 21	Universitas Sipatokkong Mambo
11.	Peran Pemerintah Indonesia Dan Malaysia Dalam Mendukung Implementasi Teknologi Keuangan Islam pada Aspek Regulasi	Sekolah Tinggi Agama Islam

No	Judul	Affiliation
		Negeri Mandailing Natal
12.	Fintech Syariah: Kolaborasi Teknologi dan Moral sebagai Instrumen Pembiayaan di Masa Depan	Sekolah Tinggi Ilmu Ekonomi Malangkucecwara
13.	Peluang dan Tantangan Bank Syariah di Era Industri 4.0	Institut Agama Islam Riyadlotul Mujahidin Ponorogo
14.	Konsep *Fintech* Lending Dalam Perspektif *Maqāṣid Syarī'ah*	Universitas Muhammadiyah Malang
15.	*Does Technology Matter*?: Literature Review Adopsi Teknologi Dalam Riset Ekonomi Keuangan Syariah	Universitas Islam Negeri Walisongo

Implementation and Development of Artificial Intelligence in Islamic Financial Institutions in Indonesia

A. Financial Technology

Financial technology is a financial service that is available digitally with various accesses such as banking, digital payments, lending and insurance (KK & Maharani, 2023). Fintech is part of the results of creativity and innovation in technology-based financial services to facilitate customer service and banking product services and Islamic financial institutions (Syafitri & Padli Nasution, 2023). Fintech innovation can offer alternative choices for people in transactions while adhering to the principles and values of Islam (Nursiwan, 2023). It is also stated that Islamic fintech has a very active role in maintaining and creating a stable economy (Zuchroh, 2021). The use of fintech in Indonesia currently has enormous potential, especially in the Islamic fintech (P2P) lending industry, as one of the transaction tools that can be obtained with electronics and the internet (Sirait et al., 2023b). Peer-to-Peer Lending or P2P is one of the most discussed business models in several journal articles because its use brings together people who give and use funds. In line with this, fintech makes use of cash to electronics such as debit/credit cards, digital wallets, and QR technology (KK & Maharani, 2023).

B. Digital Security and Biometrics

The use of artificial intelligence in the micro Islamic financial industry can provide fast, precise and accurate information services as a function in assessing risk management (Sulistyowati et al., 2023). The application of artificial intelligence can reduce dependence on manual work in practice in accounting making it easier to prepare financial reports, analyse data, can facilitate and minimise errors (A. R. Ramadhan, 2023).

C. Blockchain

This technology can increase transparency and security in financial transactions in its use that can be monitored directly (Qothrunnada, 2023). Blockchain is a financial technology that builds or creates Decentralised Finance or decentralised finance with various uses for lending, saving, investing, exchanging, and buying digital assets, as well as services and money markets (Kadir, 2023). This product offers a lot of convenience that was previously traditionally now electronically.

D. Robo-Advisors

Robo-advisor technology comes as an assistant to investors in helping to manage their portfolios automatically, including in terms of Islamic investment. Robo-advisors use artificial intelligence and algorithms to analyse risk profiles and investor preferences, so as to provide portfolio recommendations that are in accordance with sharia principles (Qothrunnada, 2023). This makes the use of robo-advisors a solution in making investments easily and effectively.

E. Digital Bank

The growing banking industry requires every institution to have innovation and creativity in developing its business. One of the efforts to facilitate services and transactions is the formation of digital banks that are innovated by every bank, be it conventional or sharia. Digital banks are only different in operation if banks are usually accessed offline, then this is accessed online. Services and transactions in digital banks include opening accounts, transfers, deposits, and closing accounts only through smartphones by only being accessed anywhere and anytime (Pertiwi et al., 2023).

Islamic financial institutions in their current implementation have been able to adapt to digital applications and processes. Transformation continues to be carried out starting from internal to the services provided to each customer and customer. The following is the state of application and development of artificial intelligence in Islamic financial institutions in Indonesia

Artificial intelligence has been applied to institutions in Indonesia through information systems, risk management control, digital technology utilisation, data analysis, and business processes. The banking and non-banking industry uses artificial intelligence by innovating digital bank services, biometric processes in maintaining data security, ease of transactions through QR scan fintech, and services and data centralisation with high security. This is evidenced by Islamic financial institutions that can have a good artificial intelligence utilisation system, which can compete with other industries and become a great opportunity for institutional progress (Sulistyowati et al., 2023). This application is also carried out on improving human resources and proving AI-based accounting information systems can have a positive influence on employee development performance (Yunita et al., 2023).

The development of artificial intelligence in Islamic financial institutions in Indonesia has become an obligation to be able to compete in the industry. Ease of transactions will be an added value and attract a wider range of consumers. Efforts from bank and non-bank Islamic financial institutions in conducting development start from human resources to business processes. Evidence of good development is that Islamic digital banks in Indonesia can have a positive

impact on the growth of Islamic financial institutions in Indonesia (Pertiwi et al., 2023). Another development of artificial intelligence in Islamic financial institutions is the change in culture and lifestyle of people who move from traditional to digital transactions (Kadir, 2023). This HR improvement can continue to be carried out, especially in understanding internet of things technology to continue to provide the best innovation (Tazkiyyaturrohmah & Sriani, 2020). Good implementation must be accompanied by good development. Achieving a common goal for the development of AI in Islamic financial institutions must be balanced with good regulations.

Progress also needs to be improved on regulation and digital security. These efforts have been made to maintain the desired trust and sustainability. Minimising illegal activities requires easy-to-understand regulations, the strength of sharia principles, and a good understanding of literacy (Sirait et al., 2023b).

Challenges and Opportunities for Artificial Intelligence in Islamic Financial Institutions in Indonesia

A. Challenges

Product innovation, greater transparency and efficiency in transactions are challenges that must be improved while still trying to maintain the application of sharia principles (KK & Maharani, 2023). Accompanying this, regulations that are made can cover various existing industries, especially in the application of artificial intelligence, which still has no regulations (Darma, 2022). Sustainability in terms of security and maintaining public trust is something that needs to be improved. The role of supervision and protection as a regulator in protecting the market, investors and consumers in the form of laws to be a guardian in the application and security (Tazkiyyaturrohmah & Sriani, 2020).

Efforts to improve the quality of regulations that are easy to understand, good implementation, and dissemination of education to the public are more enhanced (Sirait et al., 2023b). Increasing financial literacy and inclusion in the community using digital technology is one of the challenges in artificial intelligence in Islamic financial institutions (Qothrunnada, 2023). This increase in human resources must be accompanied by the use and good understanding of digital technology. The role of various parties in the sustainability of a good Islamic economy also needs to be improved.

The insights of practitioners, policy makers, and academics need to be collaborated to understand and prepare for change (KK & Maharani, 2023). The role of academics in researching and moving to form alliances together maximises the role and function of technology (Wasyith, 2019). Collaboration from each party will create more innovation and achievement while maintaining sharia principles and security.

B. Opportunities

Improving human resources can be better when artificial intelligence can help and company performance. According to Yunita et al., (2023), artificial intelligence-based accounting information systems can significantly improve employee performance. Another opportunity that can be felt is that it makes it easier to reduce risk management. Digital innovation minimises the occurrence

of problems and can optimise the results of opinions on the application of artificial intelligence into risk management (Sulistyowati et al., 2023).
Good management for every Islamic financial institution will create extraordinary opportunities. The economy will advance in line with the application of good principles and work processes. Achieving a sustainable economy, financial accessibility, and creating businesses with an inclusive environment is one of the opportunities from the application of artificial intelligence in Islamic financial institutions in Indonesia (A. R. Ramadhan, 2023).

CONCLUSION AND RECOMMENDATION

Journal article data obtained from Publish or Perish with the help of Zotero shows the results of 118 journal articles with keywords artificial intelligence, Islamic financial institutions, and artificial intelligence and Islamic financial institutions with a time limit from 2014 to 2023. After selection by adjusting the criteria, there are 15 journal articles that are relevant to the research and criteria that have been determined. Artificial intelligence that exists in Islamic financial institutions in Indonesia has the most 5 types, namely financial technology, digital security, blockchain, robo-advisors, and digital banks. The challenges that must be faced by Islamic financial institutions in Indonesia in implementing and utilizing artificial intelligence are how to increase product innovation, supervision and protection, public literacy and inclusion, and collaborate with various parties in the implementation, application, and development to create maximum regulations or regulations.

FURTHER STUDY

This research has limitations in processing time, research keywords journal articles entered only in Indonesian, and journal article search tools only on Publish or Perish so that it still cannot describe comprehensively. Future researchers can add more diverse keywords and use other search applications to collect journal articles to be researched such as Scopus to make it more comprehensive and broad.

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