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THE ROLE OF GENERATIVE ARTIFICIAL INTELLIGENCE IN MANAGING SPECULATIVE FINANCING RISKS IN ISLAMIC BANKS

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Abstract

Artificial intelligence (AI) has witnessed unprecedented growth, driven by technological advancements, data proliferation, and the increased precision of machine learning models. The role of AI has expanded beyond merely understanding our environment to actively shaping it, with generative AI, in particular, emerging as a critical tool. Generative AI produces new, innovative content across various fields, including finance, where its applications are transformative. In Islamic banking, early theorists emphasized mudaraba, a profit-sharing mechanism, as a means to effectively mobilize resources for economic and social development. Mudaraba financing promotes fair income distribution and provides a viable way to gather investment capital and allocate financial resources. However, despite its theoretical advantages, mudaraba financing is relatively limited in modern Islamic banks. The primary reason is the associated risk management challenges, which impact the banks, clients, and broader environmental factors, creating an urgent need for effective, practical solutions. This research investigates AI in general and generative AI in particular, focusing on their potential role in managing the risks inherent in mudaraba financing within Islamic banks. It aims to understand how generative AI applications can help mitigate these risks, allowing Islamic banks to protect their funds and broaden their focus beyond traditional debt-based financing. Adopting a descriptive-analytical methodology, the study first describes generative AI's mechanisms, then examines the specific risks of mudaraba financing, and finally analyzes AI's role in managing these risks. By integrating technological advancements, this research seeks to open new avenues for sustainable growth in Islamic finance, enabling Islamic banks to safeguard their investments while supporting broader economic development.

Keywords: Islamic jurisprudence - Generative Artificial Intelligence - Islamic Banks - Mudaraba Financing - Risk Management.

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İSLAMİ BANKALARDA SPEKÜLATİF FİNANSMAN RİSKLERİNİN YÖNETİLMESİNDE ÜRETKEN YAPAY ZEKANIN ROLÜ

Öz

Yapay zeka (YZ), hızlı teknolojik gelişmeler, veri hacmindeki artış ve çeşitlilik, bilgisayarların gücü ve hızı ile makine öğrenme modellerinin doğruluğu sayesinde büyük bir öneme sahip olmuş ve hızla büyümüştür. Artık makinelerin rolü sadece dünyamızı anlamakla sınırlı kalmayıp, aynı zamanda onu şekillendirmeye de güçlü bir şekilde katkıda bulunmaktadır. Bu bağlamda, yapay zeka teknolojilerinden biri olan üretken yapay zeka ön plana çıkarak makinelerin kullanıcılarla nasıl etkileşime girdiğini ve çeşitli alanlarda, özellikle finans alanında, yeni ve yenilikçi içerik ürettiğini göstermektedir.

İslami bankacılığın ilk teorisyenlerinin, yatırım yapılabilir nakit birikimlerini toplamada ve ekonomik ve sosyal kalkınma amaçları için mevcut mali kaynakları en iyi kullanım alanlarına dağıtmada daha etkili bir yöntem olarak gördükleri *mudaraba* (kar-zarar ortaklığı) yöntemine büyük önem verdikleri bilinmektedir. *Mudaraba*, ayrıca milli gelirin adil dağılımına doğrudan katkıda bulunur.

Ancak günümüzde İslami bankalarda *mudaraba* finansmanı sınırlı düzeydedir. Bu durum, gerek İslami bankaların kendileri, gerekse finansman müşterileri veya çevresel koşullar ile ilgili risklerin yönetilmesindeki zorluklardan kaynaklanmaktadır. Bu gerçeklik, pratik ve uygulanabilir çözümler gerektiren bir sorun teşkil etmektedir.

Bu araştırmanın amacı, genel olarak yapay zekayı ve özel olarak üretken yapay zekayı incelemek, ayrıca İslami bankalarda *mudaraba* finansmanı ve risk yönetimini teorik ve uygulamalı olarak ele almak ve bu bankalarda *mudaraba* finansmanı risklerinin yönetiminde üretken yapay zeka uygulamalarının rolünü ortaya koymaktır.

[Geniş Öz, çalışmanın sonunda yer almaktadır.]

Anahtar kelimeler: İslami hukuk, Üretken Yapay Zeka, İslami Bankalar, Mudaraba Finansmanı, Risk Yönetimi.

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Introduction

In the name of Allah, the Most Gracious, the Most Merciful. Praise be to Allah, and peace and blessings be upon the Messenger of Allah, his family, companions, and all those who follow them.

Artificial intelligence (AI) has gained tremendous importance, growing rapidly with technological advancement, the increase and diversity

of data, the power and speed of computing, and the accuracy of machine learning models. Its role is no longer confined to understanding our world but has expanded to significantly shaping it. Here, generative artificial intelligence has emerged to reflect how machines interact with users, generating new and innovative content across various fields, especially the financial sector.

A. Research Problem:

Early theorists of Islamic banking focused on Mudarabah as a primary method for mobilizing and utilizing resources in Islamic banks, as it is more capable of gathering investable funds and distributing available resources for economic and social development. It also contributes directly to the fair distribution of national income.

However, the current limited use of Mudarabah financing in Islamic banks, due to the difficulty in managing its risks, whether related to the bank itself, financing clients, or surrounding conditions, presents a practical problem that requires applied solutions.

B. Research Objectives:

This research aims to explore artificial intelligence in general and generative artificial intelligence specifically, while also analysing Mudarabah financing and its risk management in Islamic banks, both theoretically and practically. It further aims to determine the role of generative AI applications in managing the risks associated with Mudarabah financing in these banks.

C. Significance of the Research:

The importance of the research lies in benefiting from technological advancements through generative artificial intelligence in managing the risks of Mudarabah financing in Islamic banks, given the marginalization of this type of financing in practical reality, in a way that enables Islamic banks to protect their funds and open up new avenues for development, instead of focusing on credit-based financing.

D. Previous Studies:

Upon reviewing existing literature, the researcher found no direct studies combining generative artificial intelligence and risk management of Mudarabah financing. However, there are related studies that address the topic indirectly.

For instance, in a study by Hussain Hamed Hassan titled “Proposed Methods for Hedging Against Risks in Investment Contracts (Mudarabah,

Musharakah, and Agency)", published on his website[1], the author proposed using guarantees, purchase promises, and shifting the burden of proof to the trustee as hedging methods against risks. He discussed the last point extensively, paving the way for further exploration in this research, a view also supported by the International Islamic Fiqh Academy.

In another study by Halima Bazzaz and Jamal Sharfa titled "Risk Management in Mudarabah and Musharakah Financing Structures as a Necessity to Eliminate Practical Obstacles", presented at the International Symposium on the International Financial System and Islamic Finance at Emir Abdelkader University for Islamic Sciences in Algeria (November 11-12, 2013), the authors proposed several common solutions for managing Mudarabah financing risks. These included conducting feasibility studies, securing guarantees against transgressions and negligence, increasing profit incentives for the entrepreneur (Mudarib), fragmenting capital, and restricting the Mudarabah contract. These are conventional solutions that, although relevant, do not incorporate technological advancements.

In a study by Muhammad Ruslan Muhammad Noor and Abdul Karim bin Ali titled "Risks of Mudarabah Applications in Islamic Banks and Their Management Methods," published in Al-Basira Journal, Center for Research and Community Service of the Higher Institute of Islamic Studies and Arabic Language, Makassar, Indonesia, Volume 8, Issue 1, June 2018, the researchers proposed solutions for managing the risks of Mudarabah financing, including finding clients with experience, trustworthiness, and a good reputation, and selecting and attracting them using scientific and statistical methods. They also suggested training employees and involving clients in the process. However, these are all conventional solutions.

In another study by Ibrahim Nasser Al-Sawafi titled "Risks Associated with Bank Mudarabah and Ways to Minimize Them," published in ISRA International Journal of Islamic Finance in Malaysia, Volume 12, Issue 2, December 2021, the researcher sought to provide solutions to reduce the risks of Mudarabah financing, but these were also conventional solutions, including third-party guarantees, creating investment risk reserves, and profit rate risk reserves.

Additionally, in a study by Fadl Abdul Karim titled "Developing Islamic Financial Products Through Natural Language Processing: Opportunities and

[1]https://drive.google.com/file/d/1gJ7upQQETowzJqMhNcDyEPQqv6BGCUdW/view?pli=1 14-5-2024.

Challenges," published in the Tenth International Islamic Finance Conference: Toward Islamic Finance: Integration of Principles and Technology, Doha, Qatar, February 27, 2024, the researcher did not address Mudarabah financing. Instead, the study focused on using natural language processing technology to communicate with clients, analyze Sharia texts, analyze fatwas, and improve financial disclosure for Islamic financial products.

Thus, previous studies have provided traditional and conventional solutions for managing Mudarabah financing risks. Although the last study incorporated a technological aspect, it did not address Mudarabah financing in general or its risk management in particular. Therefore, this research differs from previous studies by utilizing technology through artificial intelligence to manage Mudarabah financing risks in Islamic banks, opening the door for these banks to return to equity-based financing rather than restricting financing to credit-based models such as Murabaha.

E. Research Methodology:

To test the research hypotheses and achieve its objectives, the most suitable methodology is the descriptive-analytical approach. This involves describing generative artificial intelligence, analyzing Mudarabah financing risks in Islamic banks, and reflecting on how generative AI can play a role in managing these risks. The research also relies on field and library research to analyze the available data on the topic.

1. Defining Artificial Intelligence and Generative AI

Artificial intelligence, particularly generative artificial intelligence, plays a crucial role in daily life and is increasingly influential in the financial sector, both traditional and Islamic. It is important to understand the concept, origin, and development of generative AI and its role in the financial domain.

a. Concept of Artificial Intelligence

There are various definitions of artificial intelligence, but they generally revolve around systems or devices that simulate human intelligence to perform tasks based on the information they can gather. John McCarthy, who coined this term in 1955, defined artificial intelligence as "the science and engineering of making intelligent machines, especially intelligent computer programs, or a branch of computer science that aims to create

intelligent machines."[2]

Arsel Bell defined artificial intelligence as "an attempt to make ordinary machines behave like the machines we see in science fiction movies. Artificial intelligence is a science whose primary goal is to make computers, and other machines acquire the attribute of intelligence, with the ability to perform tasks that, until recently, were exclusive to humans, such as thinking, learning, creativity, and communication."[3]

Marvin Lee Minsky defined artificial intelligence as "the construction of computer programs that engage in tasks satisfactorily performed by humans, as they require high-level mental processes such as perceptual learning, memory organization, and critical thinking."[4] The Organisation for Economic Co-operation and Development (OECD) defined artificial intelligence as "the intelligence demonstrated by machines and programs with the aim of making predictions, providing suggestions, or making decisions that affect the real or virtual world for a group of people or objects."[5]

Thus, artificial intelligence is a way to create a computer or robot controlled by a computer or a program that thinks intelligently, just as intelligent humans do. It is the science of making machines capable of doing things that require intelligence when performed by humans. Therefore, it is a scientific system that includes methods of manufacturing and engineering so-called intelligent devices and programs. The goal of artificial intelligence is to produce autonomous machines capable of performing complex tasks using reflective processes similar to those of humans.[6]

It can be said that artificial intelligence refers to the ability of machines to simulate human intelligence by relying on deep learning algorithms and programming devices to perform these tasks efficiently and effectively.

[2] Ahmed Saleh SEBAA, Mohamed YOUSFI, and Omar MELOUKI, "Applying Artificial Intelligence Strategies at the International Level: The Case of the United Arab Emirates," *Mayadeen Economic Journal*, Algeria, Faculty of Economic Sciences, Commercial Sciences, and Management, University of Algiers 3, Vol. 1, No. 1 (2018): 32.

[3] "Adel ABDUL NOOR, *Artificial Intelligence*, King Abdulaziz City for Science and Technology, (Kingdom of Saudi Arabia: 2005), 8."

[4] "Abdullah MOUSA and Ahmad Habib BILAL, *Artificial Intelligence: A Revolution in Modern Technologies*, (Cairo: Arab Group for Training and Publishing, 2019), 20."

[5] "Ministry of Artificial Intelligence, Digital Economy, and Remote Work Applications, *100 Applications and Practical Uses of Generative Artificial Intelligence*, (United Arab Emirates: April 2023), 2."

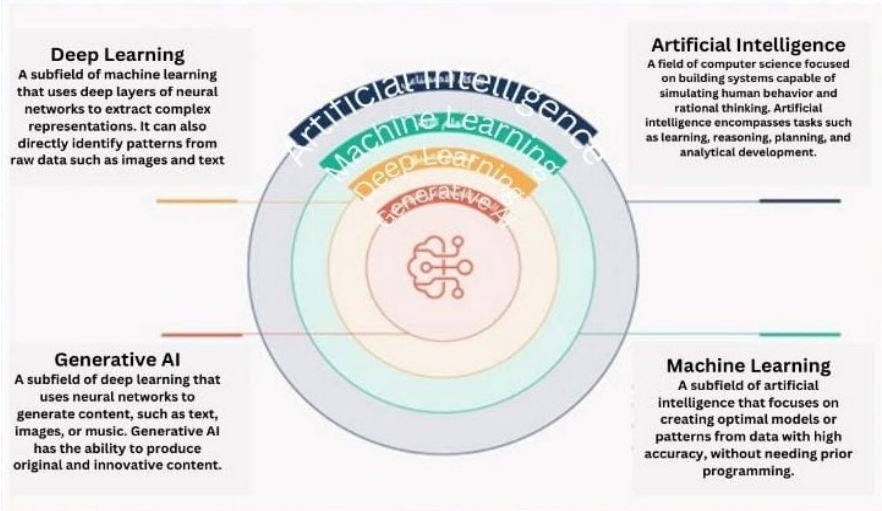
[6] "MOUSA and BILAL, *Artificial Intelligence: A Revolution in Modern Technologies*, 20."

b. The Concept of Generative Artificial Intelligence:

While artificial intelligence refers to the ability of machines to simulate human intelligence, generative artificial intelligence emerges from it. The "Saudi Data and Artificial Intelligence Authority" defines generative artificial intelligence as: "A type of artificial intelligence that uses machine learning techniques and deep neural networks to simulate human capability in creating new data or original and innovative content, such as text, images, and videos. Generative artificial intelligence models can produce outputs of the same type as the inputs, such as from text to text, or of a different type, such as from text to an image or video clip."[7]

"And the 'Ministry of Artificial Intelligence, Digital Economy, and Remote Work Applications of the UAE' defines it as: 'A machine learning technique that has the ability to create new data such as images, texts, and audio clips based on human training of these technologies.'[8] The World Economic Forum defines it as: 'Referring to a class of artificial intelligence algorithms that generate new outputs based on the data they have been trained on.'[9]

Figure 1: Generative Artificial Intelligence and Related Terms



Source: Generative Artificial Intelligence, Saudi Data and Artificial Intelligence Authority, p. 6.

[7] Saudi Data and Artificial Intelligence Authority, *Generative Artificial Intelligence*, (Kingdom of Saudi Arabia: November 2023), 6.
[8] *100 Applications and Practical Uses of Generative Artificial Intelligence*, 3.
[9] Hind AL-KHALIFAH, *Introduction to Generative Artificial Intelligence*, Kingdom of Saudi Arabia: King Saud University, June 2023, 8.

It can be said that generative artificial intelligence means: the automatic creation of new and innovative content by utilizing available data to produce new data that resembles or differs from the input data, in the form of texts, images, sounds, codes, and others, which appear as if they were created and innovated by humans."

c. Origins and Evolution of Generative Artificial Intelligence:[10]

Artificial intelligence (AI) first appeared at the Dartmouth Conference in 1956, and it has expanded significantly over the past few years. One notable development is generative AI, which has gone through three stages. The first stage, from 1960 to 1990, marked the beginnings of generation, where early attempts were made to create AI systems capable of generating new content, particularly in natural language processing. The second stage, lasting until 2020, saw significant advancements in generative AI thanks to the emergence of new technologies like artificial neural networks, generative adversarial networks (GANs), and transformers. The third stage, from 2020 to the present, is the "generation explosion," where generative AI has become one of the most prominent fields in AI due to the increase in the volume and diversity of available data, greater computing power, and improved accuracy and complexity of machine learning models.

A key milestone in this period was the launch of ChatGPT in November 2022 by OpenAI. It uses an enhanced language model for conversations, capable of generating human-like responses. Designed to assist with answering questions, providing information, creating creative texts, and participating in open-topic conversations, ChatGPT was trained in multiple languages, relying on deep learning technology to understand texts and respond to questions. It quickly surpassed 100 million users, becoming the fastest-growing application in the history of the internet.

d. Generative AI and Finance:[11]

The success of ChatGPT has created numerous opportunities across industries, inspiring companies to design their own large language models. The finance sector, driven by data, is now more data-intensive than ever before.

At the beginning of 2023, some major global banks such as Bank of

[10] The previous reference, 10-12, Abdullah MUSA and Ahmed Habib BILAL, *Artificial Intelligence: A Revolution in Modern Technologies*, pp. 33-41.

[11] The previous reference, Ayoush Metal, *Generative AI in Finance*, dated 15-3-2024, https://www.unite.ai/ar/وراءه-بلومبيرجغبت-fingpt-التمويل-في-التوليدي-الاصطناعي-الذكاء/, Asharq Bloomberg, dated 15-3-2024, https://www.asharqbusiness.com/amp/article/50880.

America, Citigroup, and Goldman Sachs imposed restrictions on the use of OpenAI's ChatGPT by their employees. In contrast, other industry peers took a more comprehensive approach, viewing generative AI tools and the individuals using them as essential assets. For example, Morgan Stanley integrated OpenAI-powered chatbots as a tool for its financial advisors. By leveraging the company's extensive research and internal data, these chatbots serve as rich knowledge resources, enhancing the efficiency and accuracy of financial operations. JPMorgan Chase has also made efforts to harness large language models for fraud detection, using email patterns to identify potential compromises. Moreover, the bank set an ambitious goal of adding up to $1.5 billion in value with AI, aiming to achieve this by the end of last year. In June 2023, JPMorgan announced 3,600 open positions in the AI field. Goldman Sachs has also utilized the power of generative AI to enhance its software engineering capabilities, believing that its use could transform its workforce into something formidable.

According to International Data Corp (IDC), sales of software, hardware, and services required for AI systems jumped by 29% to reach $166 billion, with projections to hit $400 billion by 2027. The market research firm indicated that financial sector spending on AI is expected to more than double, reaching $97 billion by 2027, with a compound annual growth rate (CAGR) of 29%, the fastest among all sectors.

Additionally, the Basel Committee on Banking Supervision concluded that AI could make financial operations more efficient, particularly in areas like credit decisions and anti-money laundering efforts. The committee, one of the world's leading authorities in banking regulation, addressed some risks associated with AI, such as understanding outcomes derived from opaque models, the potential for bias, and heightened cybersecurity risks. The European Central Bank also employs AI in applications such as automating data classification from 10 million businesses and government entities, extracting data from websites to monitor real-time product prices. The bank also uses this technology to help banking supervisors discover and analyze new news, oversight reports, and company filings.

2. Mudaraba Financing and Its Risks in Islamic Banks:

Mudaraba financing is of great importance in helping Islamic banks achieve their developmental goals on both the economic and social levels. However, its practical application has become limited due to considerations related to its risks.

a. Concept of Mudaraba Financing in Islamic Banks:

Mudaraba in the Terminology of Jurists: Mudaraba refers to the act of providing capital to someone who will trade with it in exchange for a portion of the profits. This definition is agreed upon by jurists, even though their expressions may differ.[12] It signifies an agreement between two parties in which one party, called the provider of capital (Rabb al-Mal), supplies a known amount of cash to the other party, known as the manager (Rabb al-Amal), who will work with it. The profits are to be shared in a pre-agreed and specified ratio, with the understanding that the manager is not liable for the capital unless there is negligence or wrongdoing on their part. This concept differs from "speculation" in its economic sense, which refers to buying and selling for the purpose of profiting from price differences, especially in stock exchanges.

Based on this, it can be said that mudaraba financing in Islamic banks means providing funds to clients for investment purposes, with profits shared according to their agreement. The bank bears the loss if it occurs, provided there is no wrongdoing, negligence, or violation of the mudaraba conditions by the client (the investor).

b. Legitimacy of Mudaraba:

The legitimacy of Mudaraba is established through the Quran, the Sunnah, Ijma', and reason.

From the Quran: {وَءَاخَرُونَ يَضْرِبُونَ فِي الأَرْضِ يَبْتَغُونَ مِنْ فَضْلِ اللَّهِ} **"And others travel in the land seeking the bounty of Allah." [**المزمل: 20**]** and also, { لَيْسَ عَلَيْكُمْ جُنَاحٌ أَنْ تَبْتَغُوا فَضْلاً مِنْ رَبِّكُمْ } **"There is no blame upon you for seeking bounty from your Lord." [**البقرة: 198**]**

In Mudaraba, there is a pursuit of bounty, request, and growth.[13]

From the Sunnah: It is narrated by Ibn Abbas (may Allah be pleased with him) that he said: "When Al-Abbas bin Abdul Muttalib would give money for Mudaraba, he would stipulate to his partner not to take it to the

[12] Ali AL-MAWARDI, *Al-Mudaraba: A Comparative Study of Islamic Jurisprudence Schools*, Applied Study, edited by Abdul Wahab Al-Sayyid Al-Siba'i Hawas, (Cairo: Dar Al-Ansar, no publication date), pp. 98-100; Alaa Al-Din Al-Kasani, *Bada'i' Al-Sana'i' fi Tartib Al-Sharai'*, (Cairo: Al-Jamaliya Press, 1328 AH), vol. 6, p. 80; Muhammad ibn Rushd, *Bidayat Al-Mujtahid wa Nihayat Al-Muqtasid*, (Cairo: Dar Al-Kutub Al-Islamiyya, 1983), vol. 2, p. 285; Abdullah ibn Qudamah, *Al-Mughni*, (Cairo: Cairo Library, 1968), vol. 5, p. 19.

[13] الماوردي، المضاربة، 101.

sea, nor to descend into a valley, nor to buy a wet liver (i.e., livestock), and if he did that, he would be liable. He raised this condition to the Messenger of Allah (peace be upon him), and he approved it." [14]

It is also narrated from Hakim bin Hizam, a companion of the Messenger of Allah (peace be upon him), that he would stipulate to a man when he gave him money for Mudaraba that he should not place his money in a wet liver, nor take it to the sea, nor descend into a valley, and if he did any of that, he would be liable for my money.[15]

From the Ijma': Ibn Qudamah (d. 620 AH / 1223 CE) narrated from Ibn Al-Mundhir that he said: "The scholars have agreed on the permissibility of Mudaraba."[16]

Ibn Rushd (d. 595 AH / 1198 CE) stated: "There is no disagreement among Muslims regarding the permissibility of Mudaraba, and it was something practiced in the pre-Islamic era that Islam approved."[17]

Al-Kasani (d. 587 AH / 1191 CE) mentioned regarding Mudaraba: "People have been engaging in this practice since the time of the Messenger of Allah (peace be upon him) until today in all regions, with no objection from anyone, and the consensus of every era is a proof."[18]

It has been narrated from a group of the companions that they engaged the orphan's wealth in Mudaraba, including Umar, Uthman, Ali, Abdullah ibn Mas'ud, Abdullah ibn Umar, Abdullah ibn Amr, and Aisha (may Allah be pleased with them all), and it has not been reported that any of their peers objected to them.[19]

Malik narrated from Zayd ibn Aslam, from his father, that he said: Abdullah and Ubaidullah, the sons of Umar ibn Al-Khattab, went out in an army to Iraq. When they returned, they passed by Abu Musa Al-Ash'ari, who was the governor of Basra. He welcomed them and said: "If I could find something beneficial for you, I would do it." He then said: "Indeed, there is

[14] Ahmad AL-BAYHAQI, *Al-Sunan Al-Kubra*, edited by Muhammad Abdul Qadir Atta, (Beirut: Dar Al-Kutub Al-Ilmiyya, no publication date), vol. 6, p. 111, Hadith No. 11611, which Al-Bayhaqi deemed weak.
[15] AL-DARAQUTNI, *Sunan Al-Daraqutni*, edited by Al-Sayyid Yamani, (Beirut: Dar Al-Ma'arifah, 1966), vol. 3, p. 63, Hadith No. 2033. Al-Albani stated that its chain of narration is authentic according to the conditions of the two Shaykhs.
[16] IBN QUDAMAH, *Al-Mughni*, vol. 6, p. 79.
[17] IBN RUSHD, *Bidayat Al-Mujtahid wa Nihayat Al-Muqtasid*, vol. 2, p. 285.
[18] AL-KASANI, *Bada'i Al-Sana'i fi Tartib Al-Shara'i*, vol. 5, p. 3595.
[19] AL-MAWARDI, Al-Mudarabah, pp. 105-106. Muhammad Al-Shawkani, *Nail Al-Awtar*, (Cairo: Dar Al-Hadith, no publication date), vol. 5, p. 267.

wealth from the wealth of Allah here; I want to send it to the Commander of the Faithful. I will give it to you as a loan so that you can purchase goods from Iraq, then sell them in Al-Madina, returning the principal to the Commander of the Faithful, and the profit will be yours." They said, "We wish for that." He did so and wrote to Umar ibn Al-Khattab to take the money from them. When they arrived, they sold the goods and made a profit. When they gave that to Umar, he said: "Did all the army receive a loan like you?" They replied: "No." Umar ibn Al-Khattab said: "You are the sons of the Commander of the Faithful, and he gave you a loan, so return the money and its profit." Abdullah remained silent, while Ubaidullah said: "It is not appropriate for you, O Commander of the Faithful, that if this wealth were to diminish or be lost, we would be liable for it?" Umar replied: "Return it." Abdullah remained silent, while Ubaidullah continued to argue. One of Umar's companions said: "O Commander of the Faithful, why don't you make it a Mudaraba?" Umar responded: "I have made it a Mudaraba." So, Umar took the principal and half of the profit, while Abdullah and Ubaidullah ibn Umar ibn Al-Khattab received half of the profit from the money.[20]

From reason: people have a need to engage in mudaraba (profit-sharing) because there are those who possess wealth but do not know how to trade with it or make good use of it. On the other hand, there are those who have expertise in trade or in utilizing wealth but do not have the money to do so. Thus, there is a pressing need for one party to benefit from the other, resulting in mutual benefit for both parties and for society as a whole.

c. Types of Mudarabah:

i. Unrestricted Mudaraba:

In this type of mudaraba, there are no restrictions concerning time, place, type of work, the goods the mudarib (investment manager) trades in, or who they deal with. The mudarib has full freedom to act as they see fit without needing to consult the capital provider (rabb al-mal) except at the end of the partnership. However, this form of mudaraba is not commonly used in practical applications of mudaraba financing in Islamic banks due to the risks it poses to the capital provider.

ii. Restricted Mudaraba:

In this type of mudaraba, there are one or more restrictions, such as limitations on location, time, the type of goods, storage and insurance

[20] Malik IBN ANAS, *Al-Muwatta*, edited by Muhammad Fuwad Abdul-Baqi, (Cairo: Dar Ihya Al-Kutub Al-Arabiya, 1951), vol. 2, pp. 687-688.

conditions, or the parties with whom the mudarib (investment manager) can engage, among others. If the mudarib violates any of these restrictions, they are liable for any resulting losses. This form of mudaraba is the most common and widely used in mudaraba financing within Islamic banks because it allows the capital provider (rabb al-mal) to impose conditions and controls that they deem appropriate.

d. Practical Implementation Mechanism of Mudaraba Financing in Islamic Banks:

Through mudaraba financing, the Islamic bank provides funds to the customer (the mudarib) after conducting an assessment of the investment opportunity's viability and the customer's managerial competence. The customer exerts the necessary effort to invest the funds, either under unrestricted or restricted terms. The profits are distributed based on the agreed-upon profit-sharing ratio stated in the mudaraba contract. However, any losses are borne solely by the Islamic bank as the capital provider (rabb al-mal), unless the losses result from negligence, misconduct, or breach of contractual conditions by the mudarib (customer).

The Islamic bank executes mudaraba financing through the following steps:

a. The customer submits a comprehensive feasibility study related to the mudaraba.

b. The bank evaluates the mudaraba proposal, assessing its profitability for both the bank and the customer, and prepares a detailed report to present to the relevant financial authority.

c. Once approval is granted by the relevant financial authority, a mudaraba contract is formalized between the bank and the customer, and necessary guarantees are secured. These guarantees are not intended to ensure the bank's share in the mudaraba but to protect against risks such as mismanagement or breach of trust, should the customer be proven negligent or violate the mudaraba terms.

d. The bank disburses its share of the capital to the mudarib, either in a lump sum or in installments, according to the terms agreed upon.

e. The bank provides banking services for a fee, which is considered part of the actual expenses of the mudaraba operation and is paid to the bank.

f. The bank monitors the customer to safeguard its funds and those of its clients, without interfering in the mudarib's management of the mudaraba.

e. The Reality of Mudaraba Financing in Islamic Banks:

The early advocates[21] of Islamic banking emphasized that mudaraba and musharaka (profit-sharing arrangements) should hold the largest share of financing in these banks. These forms of financing align well with the objectives of Islamic banks in contributing to social and economic development. However, this vision was only realized during the initial phase of these banks' operations. Over time, murabaha (cost-plus financing) became the dominant financing method, while mudaraba has significantly declined.

For instance, the following table shows the percentage of mudaraba financing to clients compared to the total financing in various Islamic banks. The percentage is quite modest, highlighting the issue of Islamic banks not leaning toward mudaraba financing.

Table 1. Percentage of Mudaraba Financing to Clients Compared to Total Financing in a Number of Islamic Banks.

Bank Name (date)	**Mudarabah Profit Rate for the Fiscal Year (%)**	
	2022	**2023**
Dubai Islamic Bank (12/31)	5.3	4
Emirates Islamic Bank (12/31)	0	0
Kuwait Finance Bank 12/31	0	0
Jordan Islamic Bank (12/31)	0	0
Abu Dhabi Islamic Bank – Egypt (12/31)	0	0
Faisal Islamic Bank of Egypt (12/31)	Not Available	Not Available
Kuveyt Turk Bank (30/06)	0	0

Source: Data prepared by the researcher based on the financial reports of these banks (2023).[22]

[21] The early theorists who laid the foundation for the emergence of Islamic banks in the 1970s include Dr. Issa Abdu, Dr. Ahmed Al-Najjar, and Dr. Mohamed Abdullah Al-Arabi. For more details, see Ashraf Mohamed Dawaba, *Fundamentals of Islamic Banking* (Cairo: Dar Al-Salam for Printing and Publishing, 2012), pp. 18-19.

[22] *Integrated Annual Report for the year 2023*, (United Arab Emirates, Dubai Islamic Bank, 2023), 7. https://argaamplus.s3.amazonaws.com/eb920b0b-68f3-4378-bc4f-e486324510f9.pdf, Annual Report for the year 2023, (United Arab Emirates: Emirates Islamic Bank, 2023), 108, https://www.emiratesislamic.ae/-/media/ei/pdfs/financial-information/annual-report-pdf/2023/ei_annualreport_2023_arb.pdf, Annual Report for the year 2022, (Kuwait: Kuwait Finance House, 2023), 181. https://www.kfh.com/reports/kuwait/Annual-Reports/Annual-Report-2023/document/KFH%20Annual%20Report%20Ar%202023.pdf.pdf, Annual Report for

f. Mudarabah Financing Risks in Islamic Banks:

Mudarabah Financing Risks in Islamic Banks: Islamic banks have refrained from engaging in Mudarabah financing due to the stringent requirements for carefully selecting clients who must possess high levels of trustworthiness, integrity, and managerial competence. Additionally, Mudarabah financing requires regular monitoring, which Islamic banks find difficult to achieve, thus exposing them to high levels of risk, particularly in the face of moral decay, especially since the client is not liable except in cases of negligence or misconduct.

It can be said that Mudarabah financing faces several risks, some of which are related to the Mudarib (investment manager), some to the activity itself, some to general circumstances, and some to operational factors, as follows.[23]

a. Mudarib Risks:

These risks stem from the character of the Mudarib (investment manager) himself, represented by his ethics and behaviors (trustworthiness) in reporting everything related to the investment of Mudarabah funds, especially given that "the Mudarib is a trustee of the Mudarabah funds, and his word is accepted regarding any claims of loss or damage to the funds."[24] Therefore, the burden of proving any misconduct, negligence, or violation of the conditions by the Mudarib falls on the capital provider, not the Mudarib.

These risks also relate to the Mudarib's ability to manage the Mudarabah and use its funds efficiently and effectively for the designated purpose, enabling him to generate future cash flows that achieve fair profitability.

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the year 2023, (Jordan: Jordan Islamic Bank, 2023), 111, https://www.jordanislamicbank.com/uploads/2024/04/anuual-report-2023.pdf, Annual Report for the year 2023, (Egypt: Abu Dhabi Bank, 2023), 4, https://www.adib.eg/media/644552/ADIBEG_Financial_Arabic_Standalone_Q4_31-12-2023.pdf, Annual Report for the year 2023, (Cairo: Faisal Islamic Bank, 2023), 21. https://www.faisalbank.com.eg/ar/Reports, Consolidated Balance Sheet for the year 2023, (Turkey, Kuveyt Turk Bank, 2023). https://www.kuveytturk.com.tr/medium/konsolide-mali-tablo-30062023-1183.pdf

[23] Ashraf Muhammad DAWABAH, *Islamic Social Finance*, (Istanbul, Dar Al-Mudarris, 2020), 353-357. Islamic Financial Services Board, Guiding Principles for Risk Management for Institutions (Including Insurance Institutions) Offering Islamic Financial Services, (Malaysia: 2005), 13-14. https://www.ifsb.org/wp-content/uploads/2023/10/IFSB-1-December-2005_Ar.pdf

[24] IBN QUDAMAH, *Al-Mughni*, 5/55.

b. Activity Risks:

These risks arise from the specific risks associated with the Mudarabah activity, and they vary in nature and causes depending on the economic activities, which differ in their production and marketing conditions. The agricultural activity, in general, is influenced by various factors, including climatic conditions, water availability, and exposure to agricultural pests. Consequently, the supply of agricultural products is characterized by short-term elasticity, while the demand for them is often inelastic, especially for essential goods. On the other hand, the supply of industrial production tends to be inelastic in the short term, while the degree of demand elasticity varies depending on whether the products are essential or luxury goods.

c. General Condition Risks:

These risks arise from the surrounding general conditions that are beyond the control of the Mudarib and are also known as market risks. They relate to the upward and downward trends that occur in market prices due to economic, social, or political factors, whether in real asset markets, characterized by fluctuations in the prices of tradable assets, or in financial markets, which are associated with exchange rate risks, inflation risks, and similar factors. These risks also reflect the trends of economic cycles, both in the short term and the long term, and their impact on various activities.

d. Operational Risks:

These risks arise from operational errors within the Islamic bank, which acts as the capital provider in the Mudarabah. Consequently, they stem from human or technical errors, whether internal or external events. Among the most significant of these risks are inadequate or failed internal procedures, systems, equipment, and technological means, as well as the lack of competent human resources, both administratively and technically, to effectively support Mudarabah financing.

3. Generative Artificial Intelligence and Mudarabah Financing Risk Management in Islamic Banks:

The advancements in machine learning and deep learning algorithms have enabled the training of generative artificial intelligence models on vast datasets, including financial data.

The true evolution in the field of generative artificial intelligence lies in two aspects: first, the transformer tools, and second, advanced language models. Transformer tools are a type of machine learning that allows

researchers to train models larger than ever before without the need to predefine all the data. This has made it easier to train new models on billions of textual pages, resulting in deeper answers. Additionally, transformer tools introduced a new concept called "attention," which allows learning models to track connections between words across different pages, chapters, and books rather than focusing solely on individual sentences.

Rapid advancements in what are known as large or advanced language models, which contain billions or even trillions of learning parameters, have ushered in a new era. Generative artificial intelligence models can now write engaging text and create images. Moreover, innovations in artificial intelligence have enabled the generation of content across multiple media types, including text, graphics, and video. This has formed the basis for tools that automatically generate images from textual descriptions or create textual comments from input images. Generative artificial intelligence can also be utilized in contract design, interpretation, evidence analysis, and argumentation suggestions.[25]

In light of this significant development in generative artificial intelligence applications, along with its distinct capabilities in the financial sector and its ability to analyze large financial datasets related to the economy as a whole, specific activities, or clients, its importance in managing Mudarabah financing risks in Islamic banks becomes evident. This ensures soundness in financial decision-making.

a. Generative Artificial Intelligence and the Stages of Mudarabah Financing Risk Management in Islamic Banks:

Risk management is viewed as a scientific approach to dealing with pure risks by anticipating potential incidental losses and designing and implementing measures that reduce the likelihood of loss or minimize the financial impact of losses that occur.[26]

This requires an effective framework for managing Mudarabah financing risks in Islamic banks, including the presence of efficient systems to measure, monitor, report, and control the extent of risks in accordance with the bank's risk management strategies, objectives, policies, and procedures. It is essential to ensure the independence of risk management from activities that give rise to risks, with accountability to senior

[25] *Generative Artificial Intelligence: Concept, Opportunities, and Risks, Argaam Platform,* dated 21-3-2024. https://www.argaam.com/ar/article/articledetail/id/1649386

[26] Ashraf Muhammad DAWABAH, *Islamic Banking Finance*, (Cairo: Dar Al-Salam for Printing and Publishing, 2015), 294.

management outside the scope of the management responsible for activities that lead to the emergence of risks.

The scientific approach to managing Mudarabah financing risks necessitates the implementation of sound procedures for executing all elements of risk management, including risk identification, measurement, mitigation, monitoring, and control. It also involves leveraging generative artificial intelligence to achieve this at each stage of Mudarabah financing risk management, as follows:[27]

i. Risk Identification:

Through generative artificial intelligence, it is possible to identify the expected types of risks associated with Mudarabah financing, whether they are risks related to the Mudarib, the activity, general conditions, or operational risks. This technology can also classify those risks and reveal their causes through a financial database on those risks.

ii. Risk Assessment:

Risk assessment is used as a planning tool and should provide a comprehensive view of the risks. After identifying the risks of Mudarabah financing, they should be measured and evaluated to ascertain the probabilities of loss, arranged according to their severity, whether they are categorized as High Risk, Moderate Risk, or Low Risk, and whether they are increasing, stable, or decreasing. This enables the necessary measures to be taken to address them, highlighting the role of generative artificial intelligence in mapping this risk matrix.

iii. Studying and Selecting Appropriate Alternatives to Address Risks:

This involves examining the alternatives necessary to handle Mudarabah financing risks and making the necessary decisions to select the appropriate alternative, whether to avoid those risks as much as possible, distribute them, or accept and manage them, especially in the presence of good risk management. In any case, the comparison between the benefits and costs resulting from those risks serves as a suitable criterion for following the appropriate method of dealing with risks. Economic and social benefits should outweigh the costs associated with those risks. Generative artificial intelligence can test the suitable alternative while ensuring that it is reviewed before implementation.

[27] Ashraf Muhammad DAWABAH, *Islamic Social Finance*, 359-362.

b. Generative Artificial Intelligence and Mechanisms for Managing Mudarabah Financing Risks in Islamic Banks:

Generative artificial intelligence, through its products such as texts, images, graphics, and the like, can play an important role in the mechanisms for managing Mudarabah financing risks by studying and analyzing the following:[28]

i. The Mudarib's Character:

This reflects the traits that reveal the trustworthiness and competence of the Mudarib. It requires assessing the extent to which the client meets their obligations on time, their integrity, business relationships, practical experience, level of education, culture, lifestyle, spending habits, personal habits, social and ethical standing, position in their community, health status, and potential successors in managing the business in case of their withdrawal or death.

The importance of generative artificial intelligence lies in its ability to identify elements of the client's character and uncover their reputation by recognizing customer patterns and behaviors through analyzing vast amounts of data, particularly central bank data, while also detecting fraud and deception in an advanced manner. This provides a more proactive approach, reduces errors, and ensures safer financial transactions.

ii. The Mudarabah Process:

This reflects the feasibility of the process and its ability to generate returns commensurate with its risks. The role of generative artificial intelligence is highlighted in analyzing the feasibility study of the Mudarabah project, particularly regarding the economic viability of the project in achieving appropriate profitability, as well as social profitability for the community. It is crucial to pay attention to cash inflows and outflows and to general and administrative expenses in the Mudarabah process, as higher expenses indicate increased risks.

iii. Surrounding Conditions:

These reflect the impact of the prevailing economic conditions on the activity of speculation and the extent to which they affect the profitability generation. This requires understanding the current economic

[28] Ashraf Muhammad DAWABAH, *Islamic Banking Finance*, 296-300. Guiding Principles for Risk Management for Institutions (Including Insurance Institutions) Offering Islamic Financial Services, 16-66. https://www.ifsb.org/wp-content/uploads/2023/10/IFSB-1-December-2005_Ar.pdf

circumstances related to the sector in which the speculation project operates and its relation to other sectors, its position in the economic cycles, the competition it faces, and its ability to market its products, as well as changes in financial regulations such as taxes, customs duties, and others. The effects of technological developments on the project should not be overlooked.

Through generative artificial intelligence, it is possible to analyze market data and the sector in which the speculation project operates, thereby analyzing the current situation and predicting financial changes related to the economy and the sector, which helps mitigate potential risks.

iv. Guarantees:

The speculator is considered a trustee and is liable only for transgression, negligence, or violation of conditions; hence, it is not permissible to require a capital guarantee from the speculator. However, risks associated with mismanagement and breach of trust can be addressed by requiring the bank to obtain a guarantee from the speculator against transgression, negligence, or violation of conditions. Additionally, the speculator and the speculation process can be insured through Islamic cooperative insurance, with the cost of this insurance deducted from the speculation fund and settled from the profit upon its realization.

Through generative artificial intelligence, personal and real guarantees can be classified and analysed regarding their strength, appropriateness, and liquidity, if necessary, especially in cases of mismanagement or breach of trust by the speculator, in addition to discovering their legality and whether they involve fraud.

A significant issue that has hindered Islamic banks in financing speculation is determining who bears the burden of proof in the event of a loss. This burden primarily falls on the capital provider, as the speculator is considered a trustworthy person whose claims are accepted unless proven otherwise. However, this burden can be shifted from the capital provider to the trustee, as the trustee is in a position to claim against the norm and must provide evidence for their claims. There is no legal basis or consensus stating that the trustee's word is final in all cases.[29]

Ibn al-Mundhir mentioned that there is consensus that if a person provides funds for speculation and a dispute arises where the worker presents two thousand dirhams while the capital provider claims the capital

[29] Hussein Hamed HASSAN, *Proposed Methods for Hedging Against Investment Contract Risks*, 13-16. Dated 20-3-2024. https://www.hussein-hamed.com/w/eHotline

was two thousand dirhams, and the worker claims it was one thousand dirhams with a profit of one thousand dirhams, the worker's statement prevails with an oath, unless the capital provider has evidence.[30]

The International Islamic Fiqh Academy stated that "the burden of proof in a loss claim shifts to the speculator contrary to the original assumption, provided there are indications that contradict their claim of non-transgression." Factors that support this principle include:

- If there is a common understanding that the speculator's word is not accepted until they provide evidence for their claim of non-transgression or negligence.
- The presence of suspicion regarding the trustee's honesty in claiming non-transgression or negligence.
- The necessity to transfer the burden of proof to the speculator to protect investors' funds from loss when the speculator claims loss of the investors' funds.[31]

Accordingly, risks associated with the speculator can be mitigated to prevent those who are averse to speculation financing due to concerns about trustworthiness, even though this characteristic is not absent in societies. The key is to apply scientific methods in risk management.

v. Monitoring:

For speculation financing to succeed, the Islamic bank must monitor the speculating client. This is further emphasized by the bank's non-involvement in managing the speculation process per the conditions of Shariah-compliant speculation. This requires a specialized, diverse creative team within the Islamic bank capable of monitoring the project after granting financing to ensure its proper utilization, including periodic field visits to assist and advise when needed.

In this context, the Islamic bank should ensure that the speculator fulfils all responsibilities regarding the specifications of the investments subject to speculation, follows scientific methods in storage and marketing operations, maintains regular records of the speculation process, and

[30] Mohammed bin AL-MUNDHIR, *Al-Ijma'* (Consensus), (Ajman: Al-Furqan Library, 1999), 140.

[31] See, *International Islamic Fiqh Academy Decision No. 212 (22/8) regarding the bank's guarantee for risks arising from the mismanagement of customer funds and compensating them for the resulting damages* (Kuwait: Session: 22, from: 2-5 Jumada al-Thani 1436 AH, corresponding to: March 22-25, 2015). Dated March 20, 2023. https://iifa-aifi.org/ar/3996.html

discloses financial statements, trading accounts, operational accounts, and investment reports related to the speculation process, ensuring the safety of the project's assets and that no prior liens or encumbrances exist.

The role of generative artificial intelligence appears to facilitate the monitoring process by providing necessary data for both office and field follow-ups. Additionally, the bank's speculation accounts can be linked through accounting software, and camera technology can be employed to monitor the speculating client.

Thus, it is possible to mitigate risks associated with speculation financing through technological means, relying on generative artificial intelligence. However, one must not overlook the risks associated with the use of generative AI applications regarding the quality of results, potential misuse, the disruption of current business models, and the creation of misleading or inaccurate information, necessitating caution and verification of information credibility when using such applications.

Conclusion:

This research aimed to explore generative artificial intelligence and its role in managing the risks of mudaraba financing in Islamic banks. It concluded with a set of findings and recommendations.

Findings:

The research yielded several key findings, including the following:

1. **Definition of Artificial Intelligence**: Artificial intelligence refers to the ability of machines to simulate human intelligence by relying on deep learning algorithms and programming on devices to perform these tasks efficiently and effectively.
2. **Historical Background**: Artificial intelligence first emerged at the Dartmouth Conference in 1956 and has expanded significantly in recent years, particularly with the rise of generative artificial intelligence.
3. **Impact of ChatGPT**: The success of ChatGPT has led to the emergence of numerous opportunities across industries, inspiring companies to design their own large language models. The finance sector, driven by data, is now more data-intensive than ever before.
4. **Mudaraba Financing in Islamic Banks**: Mudaraba financing in Islamic banks involves the banks providing funds to their clients for investment purposes, with profits shared according to their agreement, while the bank bears any losses incurred without

negligence or misconduct from the client.

5. **Historical Focus on Mudaraba**: Early theorists of Islamic banking aimed for mudaraba and partnership to dominate the financing of these banks, as these models align with Islamic banks' goals of contributing to social and economic development. However, this was only realized in the initial phase of these banks, after which murabaha (cost-plus financing) took the largest share of Islamic banking financing, significantly diminishing mudaraba.
6. **Challenges in Mudaraba Financing**: Islamic banks have shied away from mudaraba financing due to the meticulous selection of clients, requiring them to be trustworthy, highly reliable, and administratively competent. Additionally, mudaraba financing demands regular monitoring, which is challenging for Islamic banks, exposing them to high levels of risk, especially in cases of client insolvency, as clients are only liable in cases of misconduct or negligence.
7. **Risks of Mudaraba Financing**: Mudaraba financing is subject to various risks, including those related to the investor, the activity, general conditions, and operational aspects.
8. **Advancements in Machine Learning**: Developments in machine learning and deep learning algorithms have enabled the training of generative artificial intelligence models on vast datasets, including financial data.
9. **Importance in Risk Management**: Given the notable advancements in generative artificial intelligence applications, particularly in the financial sector, its significance in managing the risks of mudaraba financing in Islamic banks is apparent, facilitating rational decision-making in financing.
10. **Approach to Risk Management**: Risk management is viewed as a scientific approach to dealing with pure risks by anticipating potential incidental losses and designing and implementing measures to minimize the likelihood of losses or their financial impacts.
11. **Scientific Approach in Risk Management**: The scientific approach to managing mudaraba financing risks requires proper procedures to implement all risk management elements, including identifying, measuring, mitigating, monitoring, controlling risks, and utilizing generative artificial intelligence in each stage of managing these

risks.

12. **Role of Generative AI in Risk Management**: Generative artificial intelligence can play a crucial role in the mechanisms of managing mudaraba financing risks by studying and analyzing the investor's profile, the mudaraba process, the surrounding circumstances, guarantees, and monitoring.
13. **Caution in Using Generative AI**: The risks of using generative artificial intelligence applications, concerning the quality of results, the potential for misuse, disruption of current business models, counterfeiting, and the generation of misleading or inaccurate information, should not be overlooked. This necessitates careful consideration when employing these applications, particularly in verifying the credibility of information.

Recommendations:

In light of the findings from this research, a set of recommendations can be presented as follows:

1. **Regulatory and Legal Framework**: It is crucial to establish a regulatory, legal, and supervisory environment for the applications of generative artificial intelligence that enables Islamic banks to utilize these applications efficiently and effectively.
2. **Training in Islamic Banks**: It is important to activate training programs within Islamic banks focused on artificial intelligence applications in general and generative artificial intelligence in particular, which will provide skilled human resources capable of handling technological advancements.
3. **Central Bank Utilization**: The central bank should leverage generative artificial intelligence applications to establish an informational infrastructure about clients that facilitates the management of Islamic financing risks and prevents fraud.

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REFERENCES

ABDUL KARIM, Fadl. "Developing Islamic Financial Products through Natural Language Processing Technology: Opportunities and Challenges," *Tenth State Conference on Islamic Finance: Towards Islamic Financing: Integration of Principles and Technology*, Doha (2024).

ABDUL NOUR, Adel. *Artificial Intelligence*. Saudi Arabia: King Abdulaziz City for Science and Technology, 2005.

Abu Dhabi Islamic Bank. *Annual Report*. Egypt, 2023.

AL-BAYHAQI, Ahmad. *Al-Sunan al-Kubra*. Edited by Muhammad Abdul Qader Atta. Beirut: Dar al-Kutub al-Ilmiya, no publication date.

AL-DAR QUTNI, Ali. *Sunan al-Dar Qutni*. Edited by Al-Sayyid Yamani. Beirut: Dar al-Ma'rifa, no publication date.

AL-KASANI, Alaa al-Din. *Baday' al-Sanaye' fi Tartib al-Shara'i*. Cairo: Al-Jamal Press, 1328 AH.

AL-KHALIFA, Hind. *Introduction to Generative Artificial Intelligence*. Saudi Arabia: King Saud University.

AL-MAWARDI, Ali ibn Muhammad. *Mudaraba: A Comparative Study Among Jurisprudential Schools*. Edited by Abdul Wahab al-Sayyid al-Sebai Haws, Cairo: Dar al-Ansar, no publication date.

AL-SHAWKANI, Muhammad. *Nail al-Awtar*. Cairo: Dar al-Hadith, no publication date.

AL-SUWAFI, Ibrahim Nasser. "The Risks Associated with Mudaraba

Financing and Ways to Mitigate Them," *Isra International Journal of Islamic Finance*, Global Academy for Sharia Research in Islamic Finance (Isra), Malaysia (2021).

BAZZAZ, Halima and SHARAFAH, Jamal. "Risk Management of Mudaraba and Musharaka Financing as a Necessity to Overcome Practical Obstacles," *International Conference on the International Financial System and Islamic Finance*, Algeria: Prince Abdurrahman University of Islamic Sciences, (November 11-12, 2013).

DAWABEH, Ashraf Muhammad. *Islamic Banking Finance: Theoretical and Practical Foundations*. Cairo: Dar al-Salam, 2015.

DAWABEH, Ashraf Muhammad. *Islamic Social Finance*. Istanbul: Dar al-Mudarris, 2020.

Dubai Islamic Bank. *Integrated Annual Report*. United Arab Emirates, 2023.

Emirates Islamic Bank. *Annual Report*. United Arab Emirates, 2023.

Faisal Islamic Bank of Egypt. *Annual Report*. Egypt, 2023.

https://argaamplus.s3.amazonaws.com/eb920b0b-68f3-4378-bc4f-e486324510f9.pdf

https://drive.google.com/file/d/1gJ7upQQETowzJqMhNcDyEPQqv6BGCUdW/view?pli=1

https://iifa-aifi.org/ar/3996.html

https://www.adib.eg/media/644552/ADIBEG_Financial_Arabic_Standalone_Q4_31-12-2023.pd

https://www.argaam.com/ar/article/articledetail/id/1649386

https://www.asharqbusiness.com/amp/article/50880

https://www.emiratesislamic.ae/-/media/ei/pdfs/financial-information/annual-report-pdf/2023/ei_annualreport_2023_arb.pdf

https://www.faisalbank.com.eg/ar/Reports

https://www.hussein-hamed.com/w/eHotline

https://www.ifsb.org/wp-content/uploads/2023/10/IFSB-1-December-2005_Ar.pdf

https://www.jordanislamicbank.com/uploads/2024/04/anuual-report-2023.pdf

https://www.kfh.com/reports/kuwait/Annual-Reports/Annual-Report-2023/document/KFH%20Annual%20Report%20Ar%202023.pdf

https://www.kuveytturk.com.tr/medium/konsolide-mali-tablo-30062023-1183.pdf

https://www.unite.ai/ar/https://eureeca.com/static/about-us

IBN ANAS, Malik. *Al-Muwatta*. Edited by Muhammad Fouad Abd al-Baqi. Cairo: Dar Ihya al-Kutub al-Arabiya, 1951.

IBN MUNDHIR, Muhammad. *Al-Ijma*. Ajman: Dar al-Furqan, no publication date.

IBN QUDAMA, Abdullah. *Al-Mughni*. Cairo: Al-Maktaba al-Qahira, 1968.

IBN RUSHD, Muhammad. *Bidayat al-Mujtahid wa Nihayat al-Muqtasid*. Cairo: Dar al-Kutub al-Islamiyya, 1983.

Islamic Financial Services Board. *Guiding Principles for Risk Management for Institutions (Other than Insurance Institutions) Offering Only Islamic Financial Services*. Malaysia, 2005.

Jordan Islamic Bank. *Annual Report*. Jordan, 2023.

Kuwait Finance House. *Annual Report*. Kuwait, 2023.

Kuwait Turk Bank. *Consolidated Balance Sheet*. Turkey, 2023.

Ministry of Artificial Intelligence, Digital Economy, and Remote Work Applications. *100 Applications and Practical Uses for Generative Artificial Intelligence*. United Arab Emirates, 2023.

MOUSSA, Abdullah and Bilal Ahmed HABIB. *Artificial Intelligence: A Revolution in Modern Technologies*. Cairo: Arab Group for Training and Publishing, 2019.

RUSLAN, Muhammad, NOOR, Muhammad, and BEN ALI, Abdul Karim. "Risks of Mudaraba Applications in Islamic Banks and Management Methods," *Al-Basira Journal*, Research and Community Service Center affiliated with the Higher Institute of Islamic Studies and Arabic Language in Makassar, Indonesia (2018).

SABAA, Ahmed Saleh, YOUSFI, Muhammad, and MALOUKI Omar. "Applying Artificial Intelligence Strategies at the International Level: The UAE as a Model," *Al-Mayyadeen Economic Journal*, Algeria, Faculty of Economic Sciences, Commercial Sciences, and Management, University of Algeria 3 (2018).

Saudi Data and Artificial Intelligence Authority. *Generative Artificial Intelligence*. Saudi Arabia: 2023.

The Holy Quran.

bilimname 52, 2024/2, 682-685
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İSLAMİ BANKALARDA SPEKÜLATİF FİNANSMAN RİSKLERİNİN YÖNETİLMESİNDE ÜRETKEN YAPAY ZEKANIN ROLÜ

Eşref DEVABE[a]

Extended Abstract

Yapay zeka (YZ), hızlı teknolojik gelişmeler, veri hacmindeki artış ve çeşitlilik, bilgisayarların gücü ve hızı ile makine öğrenme modellerinin doğruluğu sayesinde büyük bir öneme sahip olmuş ve hızla büyümüştür. Artık makinelerin rolü sadece dünyamızı anlamakla sınırlı kalmayıp, aynı zamanda onu şekillendirmeye de güçlü bir şekilde katkıda bulunmaktadır. Bu bağlamda, üretken yapay zeka öne çıkarak makinelerin kullanıcılarla nasıl etkileşime girdiğini ve çeşitli alanlarda, özellikle finans alanında, yeni ve yenilikçi içerikler ürettiğini göstermektedir.

İslami bankacılığın ilk teorisyenleri, mudaraba (kar-zarar ortaklığı) yöntemine büyük önem vermişlerdir. Bu yöntemi, yatırım yapılabilir nakit rezervlerinin toplanması ve ekonomik ve sosyal kalkınma için mali kaynakların tahsisi açısından verimli bir yöntem olarak görmüşlerdir. Mudaraba, ayrıca milli gelirin adil dağılımına doğrudan katkıda bulunur.

Ancak günümüzde, İslami bankalarda mudaraba finansmanının kullanımı, bu risklerin yönetimindeki zorluklar nedeniyle sınırlıdır. Bu riskler, hem İslami bankanın kendisi, hem de finansman müşterileri veya çevresel koşullarla ilgili olabilir. Bu durum, pratik ve uygulanabilir çözümler gerektiren bir sorun teşkil etmektedir.

Bu araştırmanın amacı, genel olarak yapay zekayı ve özel olarak üretken yapay zekayı incelemek, ayrıca İslami bankalarda mudaraba finansmanını ve risk yönetimini teorik ve pratik açıdan ele almaktır. Araştırma, bu bankalarda mudaraba finansman risklerinin yönetiminde üretken yapay zeka uygulamalarının rolünü ortaya koymayı hedeflemektedir.

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Araştırmanın önemi, teknolojik gelişmelerden, özellikle üretken yapay zekadan yararlanarak İslami bankalarda mudaraba finansman risklerinin yönetilmesine katkıda bulunmasında yatmaktadır. Bu, İslami bankaların fonlarını korumasına ve borç temelli finansman yerine yeni kalkınma yolları açmasına olanak tanıyacaktır.

Araştırmanın hipotezlerini test etmek ve hedeflerine ulaşmak için, tanımlayıcı-analitik bir yöntem benimsenmiştir. Bu yöntem, üretken yapay zekayı ve İslami bankalardaki mudaraba finansman risklerini tanımlayıp, üretken yapay zekanın bu risklerin yönetimindeki rolünü analiz etmektedir.

Yapay zeka, makinelerin insan zekasını simüle etme yeteneğine işaret ediyorsa, üretken yapay zeka bu kavramı bir adım öteye taşıyarak mevcut verileri kullanarak yeni ve yenilikçi içerikler otomatik olarak üretir. Bu içerikler metin, görüntü, ses, kod gibi insan yapımıymış gibi görünen formatlarda olabilir. ChatGPT'nin başarısı, birçok sektörde fırsatlar yaratmış ve şirketleri kendi büyük dil modellerini geliştirmeye teşvik etmiştir. Veri odaklı finans sektörü, artık her zamankinden daha yoğun bir şekilde verileri kullanmaktadır.

İslami bankalarda mudaraba finansmanı, bankanın müşterilerine yatırım amacıyla sermaye sağlaması ve karın daha önce üzerinde anlaşılan oranlara göre paylaşılması esasına dayanır. Zarar ise müşteri tarafından kasıt, ihmal veya şartların ihlali olmaksızın ortaya çıkarsa, banka tarafından üstlenilir.

İslami bankaların ilk teorisyenleri, mudaraba ve musharaka'nın İslami bankaların sosyal ve ekonomik kalkınmaya katkı hedefleriyle uyumlu olduğu için en büyük paya sahip olmasını amaçlamışlardır. Ancak, bu sadece bu bankaların ilk kurulduğu dönemde gerçekleşmiş ve ardından murabaha (maliyet artı finansman) en yaygın finansman yöntemi haline gelmiştir. Mudaraba ise büyük ölçüde azalmıştır. Bu azalma, bankaların yüksek güvenilirlik ve yönetim becerilerine sahip müşterileri dikkatle seçmeleri, ayrıca düzenli bir takip gerektirmesi nedeniyle gerçekleşmiştir. Bankalar, müşteri güvenini sağlamakta zorlandıkları için, özellikle müşteri yalnızca kasıt, ihmal veya ihlal durumunda sorumlu olduğundan, mudaraba finansmanında yüksek risklere maruz kalmaktadır. Mudaraba finansman riskleri, müşteriden, faaliyetlerden, genel koşullardan ve operasyonel risklerden kaynaklanabilir.

Makine öğrenimi ve derin öğrenme algoritmalarındaki gelişmeler, finansal veriler de dahil olmak üzere büyük veri setlerinde üretken yapay zeka modellerinin eğitilmesine olanak tanımıştır. Finans sektöründeki bu hızlı ilerleme, üretken yapay zekanın İslami bankalarda mudaraba finansman

risklerinin yönetiminde kullanılmasının önemini ortaya koymaktadır, böylece finansal karar süreçlerinde daha rasyonel adımlar atılabilir.

Mudaraba finansman risklerinin yönetiminde bilimsel bir yaklaşım, risklerin tanımlanması, ölçülmesi, azaltılması, izlenmesi ve kontrol edilmesi gibi tüm risk yönetimi unsurlarının doğru uygulanmasını gerektirir. Üretken yapay zeka, bu sürecin her aşamasında riskleri belirlemek, değerlendirmek, uygun alternatifleri incelemek ve uygulamak gibi görevlerde yardımcı olabilir. Ayrıca, müşteri profili, yatırım süreci, çevresel koşullar, teminat ve takip analizinde önemli bir rol oynayabilir.

Ancak, üretken yapay zeka uygulamalarının kullanımıyla ilgili sonuçların kalitesi, kötüye kullanım olasılığı, mevcut iş modellerinin bozulması, sahtecilik ve yanlış bilgilerin üretilmesi gibi riskler göz ardı edilmemelidir. Bu riskler, bu tür uygulamaların kullanılması sırasında dikkatle değerlendirilmelidir, özellikle de bilginin doğruluğunun sağlanması açısından.

Bu nedenle, İslami bankaların bu uygulamalardan etkin ve verimli bir şekilde yararlanabilmesi için üretken yapay zeka uygulamalarına yönelik düzenleyici, yasal ve denetleyici bir çerçeve oluşturulması büyük önem taşımaktadır. Ayrıca, merkez bankalarının üretken yapay zeka uygulamalarını kullanarak müşteriler hakkında bir bilgi altyapısı oluşturması, İslami finansman risklerinin yönetimini kolaylaştıracak ve dolandırıcılığın önüne geçecektir.

Anahtar Kelimeler: İslami hukuk, Üretken Yapay Zeka, İslami Bankalar, Mudaraba Finansmanı, Risk Yönetimi.

Hakem: Dış, Bağımsız.

Teşekkür:

-

Beyanname:

1. Özgünlük Beyanı:

Bu çalışma özgündür.

2. Yazar Katkıları:

Fikir: ED; ***Kavramsallaştırma:*** ED; ***Literatür Taraması:*** ED; ***Veri Toplama:*** ED; ***Veri İşleme:*** ED; ***Analiz:*** -; ***Yazma – orijinal taslak:*** ED; ***Yazma – inceleme ve düzenleme:*** ED.

3. Etik Kurul İzni:

Etik Kurul İzni gerekmemektedir.

4. Finansman/Destek:

Bu çalışma herhangi bir finansman ya da destek almamıştır.

5. Çıkar Çatışması Beyanı:

Yazar, herhangi bir çıkar çatışması olmadığını beyan etmektedir.