Artificial Intelligence in Global Finance

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**Abstract.** In this epoch, Artificial Intelligence (AI) is pervasive across various areas, especially in global finance. The development of AI-driven technologies has played a crucial role in reshaping financial markets in terms of efficiency, accuracy, and effectiveness. As an example, FinTech, High-Frequency Trading (HFT), Big Data, and digital banking have modernized the traditional ways of working in the financial sector, helped with making smarter decisions and increased efficiency in operations. This project aims to study the measurable impact of AI technologies in global finance markets by using data-driven analysis, exploring its advantages and disadvantages. By implementing AI, it helps businesses handle risk better, increase their efficiency and obtain stronger predictive power. However, there are several issues that global finance faces because of AI despite these benefits. Therefore, this project points out key concerns, such as ethical issues, AI bias, and cybersecurity risks, which are important for supporting safe and responsible AI adoption in the world’s financial markets. In addition, this project will offer solutions to deal with ethical concerns related to AI in finance and promote transparency, accountability, and security. Through this analysis, this research highlights how AI is could reshape the global financial industry in the future and outline potential strategies to support its ethical and effective integration.

# INTRODUCTION

Artificial Intelligence (AI) is a transformative technology that allows machines to replicate human ways of understanding, solving issues and making decisions. Lately, the adoption of AI has set off a major shift in relationships among shareholders and roles people play in the economy within the economy [1]. For instance, Financial Technology (FinTech), risk assessment, fraud detection, and so on. These techniques have significantly increased operational efficiency, quality, and speed while reducing security risks. Thanks to it, market trends and forecasts can be made which guides investors in their decisions. Particularly, AI has started working in financial systems to help make decisions-making processes more effective. On top of that, AI also helps in detecting fraud by using advanced analytics without relying on human input. However, AI adoption raises issues like “black box problem”. This leads to problems with being accountable and increases the difficulties of human oversight [2]. Since AI and Machine Learning (ML) models heavily rely on input data, if biased and incorrect data is used, it might cause the outcomes to be misleading. Thus, it is essential to make sure that AI technology does not create discrimination against communities. Moreover, AI is responsible for system failures and data breaches. These issues threaten the stability of the financial system [3]. This project’s purpose is to study the roles AI plays in global finance and highlights the benefits and challenges of AI. A survey will be conducted to collect data and provide insights to resolve the problem.

# LITERATURE REVIEW

Even though AI has been here for a decade, recent new developments have notably broadened its usefulness across different sectors. AI is now applied in various fields, such as adaptive language for learning in education [4], autopilot systems in self-driving vehicles in transportation [5], and robo-advisors that assisting investments [6]. These advancements suggest that AI brings many improvements and changes to traditional practices. A 2024 case study [7] intended to innovate intelligent machines that notice the environment and function by themselves, with no help from humans. At present, data science and big data play a major role in helping people achieve long-term financial goals [8]. It turned out that AI affects global finance more than expected.

Initially, the financial industry was operated manually and human-driven, but today most of these operations are performed through AI-driven automated systems. The demands of modern finance can no longer be addressed by traditional financial analysis methods [9]. As an example, AI integration helps to handle information asymmetry, which is a major concern in advancing financial inclusion [10]. Despite these advantages, incorrect AI-based decisions raise concerns, especially related to accountability issue [10]. Therefore, human expertise and oversight remain vital to ensure the correct use of AI in finance [11]. Moreover, AI introduces several techniques used under like High-Frequency Trading (HFT), predictive analysis, and risk management. These technologies streamlined the operational flows and made it easier for businesses to react to market situations [12]. By utilizing deep learning, complicated data can be simplified by AI more quickly and help figure out hidden trends to reveal actual market segmentation. In this case, AI can cultivate human learning and assist investors in making the right investment decisions [13].

In order to explore the effect of AI recommendations on investor decisions, a survey has been conducted, validated, and analysed. Researchers applied descriptive statistics, T-test, ANOVA, and Tukey HDS Analysis to investigate the relationship between demographic factors and the survey’s outcomes [13]. Furthermore, AI applications in the banking sector can also be examined through systematic literature reviews. For instance, a group of researchers identify, select, and assess relevant research from various sources. Afterwards, the important data and results were extracted, and the AI implementation in the banking industry and its effectiveness were discussed [14]. Fraudulent transactions and malicious behaviour remain challenges that must be addressed by banks nowadays [15]. Fraud detection technology, which is AI-applied, is highly critical. According to research, CatBoost and LightGBM deep learning algorithms have demonstrated strong performance in detecting fraudulent activity [16]. These models will detect anomalies in users’ spending habits and transaction patterns and then send notifications to them when potential fraud is suspected. Additionally, by implementing AI, banks may better gain deeper insights into clients’ habits and behaviour. As a result, AI-powered technology enables them to provide a personalized financial service to meet clients' needs [17].

A case study of 2024 [7] aims to focus attention on the challenges related to AI integration. Notably, AI integration can give rise to a range of concerns, such as ethical concerns, and data collection concerns. For example, a Tesla car’s driver was killed in an incident after its Autopilot system failed to respond immediately to the overturned vehicle [18]. In addition, some people have started using AI technology to harm society. Therefore, ethical AI systems must be developed to align with moral norms and principles to determine what is ethically right and wrong [2]. More solemnly, the detailed procedure is difficult to explain due to the “black box” problem, which refers to algorithms unable to provide persuasive information for their predictions [2].

Nonetheless, the complexity of AI presents unresolved challenges. Implanted biases and discriminatory tendencies in AI have the possibility to raise societal gaps and cause harm [19]. Therefore, it is significant to form the administration of algorithms' decision-making by allocating responsibilities. Accordingly, there is a need for administering the decision of algorithms making by allocating accountability. In addition to that, human dignity should be protected, i.e. individuals should be protected from harm, and it should be prioritized when structuring AI technology [2]. The only way to mitigate the risk is to conserve privacy rights and data protection in the AI systems.

# RESEARCH METHODOLOGY

The Technology Acceptance Model (TAM) theoretical framework and Perceived Risk theory were adapted to analyse and investigate the effects of AI adoption by users. Perceived Usefulness (PU) refers to users’ belief that AI-powered financial tools offer valuable benefits [21]. Additionally, Perceived Ease of Use (PEOU) reflects users’ readiness to adopt AI-powered financial tools in their lives [21]. Besides, Behavioural Intention to Use (BI) reflects user’s willingness to perform a behaviour [22]. The Perceived Risk shows the amount of risk perceived by the users when deciding [23]. It is viewed as a negative factor that can influence users’ behaviour. It also relates to the users’ perception that AI applications are risk-oriented [24]. Figure 1 shows the framework used in this study.

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**Figure 1.** Framework used in this study

For this study, the quantitative methodology was adopted by conducting an online questionnaire. It was distributed to a group of participants in Malaysia through email and WhatsApp. The questionnaire consists of 5 sections: Section A is the participant’s demographic information, Section B examines their views of AI implications in global finance, Section C investigates user trust and AI usage within the investment and banking sectors, Section D explores the user concerns about AI ethics issues, and Section E explores the participants’ overall acceptance of AI in finance. All questions have been validated by a group of experts by assessing the questionnaire’s accuracy and reliability for research purposes. The questionnaire was categorized into five classifications, Section B is related to PU, Section C is related to PEOU and Self-efficacy (SE) that will affect PEOU, Section D is related to Perceived Risk, and Section E is related to BI. PU shows that participants identify that AI implementation brings benefits to them compared to using conventional financial practices [21]. PEOU represents the participants’ perception of how simple and convenient it is to use the mentioned technology. Self-efficacy is defined as the participant’s confidence in their capacity to perform AI-related tasks [25]. Perceived risk represents the participants’ judgment of the potential outcome of using AI. Lastly, BI refers to the participants’ willingness to adapt AI into their daily routines [22].

# RESULTS AND DISCUSSION

The questionnaire collected 120 responses to analyze the users’ perception towards AI’s impact on global finance and gathered valuable insights. The participants involved themselves in expressing their opinions. 61.7% of female and 38.3% of male participants involved themselves in the data collection. Most of them were aged 22-25, and the majority were Chinese and Malay. They were all Malaysian university students. Nearly half of the participants, which is 45%, majored in Information Technology (IT), while 42.5% of the participants majored in Business.

From the aspect of PEOU, 45.83% of participants agreed, and 29.17% of participants strongly agreed that AI-powered financial tools are easy to use. According to the results shown in Figure 2, most users found that AI-powered financial tools are user-friendly and frequently use them in their financial routines. This may be attributed to the simple, intuitive, and well-designed User Interfaces (UI) of these tools. The result supports that these tools need a relatively low learning curve, thereby increasing the AI adoption rate [26]. However, approximately 25% of users remain neutral or disagree about the usability of AI financial tools. It may be due to limited technological literacy or a lack of education on the accessibility of AI.

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**Figure 2.** Simplicity of AI Financial Tools

From the aspect of PU, 50% of participants agreed, and 34.17% of participants strongly agreed that AI implementation in finance contributes positively to the finance sector. Based on Figure 3, a strong majority of users are more willing to use AI tools in finance because they perceive them to simplify daily tasks. The results indicate that no participant strongly opposed AI’s positive impact in finance. Nonetheless, still have 15% of participants remained neutral or slightly disagreed that AI will bring benefits to them. Possible reasons for this may include a lack of knowledge about how AI works, and limited exposure to AI-driven services [27].

From the aspect of SE, 45.83% of participants believed and 38.33% of participants strongly believed that better financial decisions can be made with the help of AI. The level of self-efficacy will positively influence the level of PEOU, as participants who feel confident using AI will be easier to use. In accordance with Figure 4, many participants demonstrate trust in AI implementation in global financial markets. Besides, most participants discerned AI as a valuable assistant within investment and financial planning.

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**Figure 3.** Positive Impact of AI on the Finance Sector

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**Figure 4.** Perceptions of AI in Decision-Making Processes

From the perspective of BI, 40% of participants recommended it and 32.5% of participants strongly recommended using AI tools in financial decision-making processes. Figure 5 demonstrates that most participants reckon that AI is more beneficial to the finance sector. In addition, they are willing to continue using and recommending AI tools for finance. They also believe that AI tools are essential for the future finance sector. Furthermore, these findings suggest that AI still has considerable growth potential in the finance industry. Therefore, financial organizations need to handle trust-related and transparency issues nicely to prevent fraudulent transactions and malicious behaviour [15].

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**Figure 5.** Recommended Use of AI Tools in Decision-Making Processes

Regression analysis has been conducted to investigate the relationship between BI, PU, and PEOU. As shown in Figure 6, a positive linear association between BI and PU is presented. It implies that when PU rises, BI also rises. The slope is upward, showing a positive coefficient in regression. Besides, the data points are close to the line, implying a moderate to strong correlation. Thus, the chart shows that people are pleased to use AI financial products when they find them useful.

A graph with blue dots and lines

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**Figure 6.** Regression analysis: BI vs PU

In accordance with Figure 7, it also shows a positive linear relationship between BI and PEOU. Hence, as PEOU increases, so does BI. The data appears slightly more dispersed than the PU plot but still shows a clear positive trend. It points out that people are more willing to use a system if it is simple to use. In short, both PU and PEOU have positive effects on BI, PU tends to have a stronger effect on BI compared to PEOU.

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**Figure 7.** Regression analysis: BI vs PEOU

From the perspective of Perceived Risk, 31.93% of participants agreed, and 40.34% of participants strongly agreed that there are risks associated with AI ethics in finance. Higher perceived risks will reduce willingness. Besides, the results show that nearly half of the participants have confidence in AI’s privacy standards, but still, a huge portion of the participants remain sceptical or unconvinced. As shown in Figure 8, most users feel that there are risks associated with AI ethics in finance. They are concerned about the potential biases, and data privacy issues.

The results showed that most participants are willing to use AI-powered financial tools and believe they will benefit finance. Participants acknowledge the ethical challenges of AI in finance but still support its adoption because of their positive assessment of its benefits. The reception of AI in finance is positive because users find it easy to use and beneficial, with a high rate of recommendations. This research highlights both the measurable AI’s impact on finance and the need to address ethical challenges to foster more effective adoption. It underscores AI’s transformative role in financial services while offering solutions for responsible implementation.

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**Figure 8.** Perceived Risks of AI Ethics in Finance

# CONCLUSION

The research suggests that AI is essential for improving productivity and revolutionizing banking procedures. Its implementation across a wide variety of sectors enables users to access high-quality financial services. Notwithstanding these advantages, user trust and the degree of adoption of AI will be influenced by privacy, transparency, and ethical considerations. Moreover, the responses on user perceptions highlight the significance of ethical considerations in AI adoption. In a nutshell, this research suggests the practical implications of AI in transforming the financial sector and its potential influence in the future.

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