



Balancing AI Innovation and Regulation in Thailand's Financial Trading

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This paper examined the ethical considerations, workforce implications, market fluctuations, and regulatory perspective on applying AI and ML in performing financial trading and portfolio management in Thailand. Subtopics involve algorithmic bias, employment displacement, market risk and regulatory preparedness. This quantitative study distributed self-developed questionnaires to 200 financial specialists such as traders, portfolio managers and regulators. Descriptive statistics and ANOVA compared age, education level, occupation category, and work experience data changes. This was evident because the level of work experience affected the participants' understanding of the consequences of adopting employment displacement, market risks, and regulations. The ethical risks, job losses, and more stringent regulations were a matter of concern for older participants compared to juniors. Nonetheless, the demographic option permitted for age, gender, and education levels did not correlate consistently with perceptions on ethical or regulatory aspects of AI. The results add up to propositions stipulating that have some ethical implications and alter the patterns in the workforce, as well as market fragility. The study points out the signs of risks that could be managed by solid regulatory systems for AI application and skill development programs for integrating financial services to mitigate risks and imbalance legal conditions with the changing trends.

Keywords: Artificial Intelligence, Financial Trading, Ethical Challenges, Workforce Impact, Market Stability, Thailand.

Introduction

AI and ML have impacted financial trading for portfolio management through enhanced speed, precision, as well as adequate return. Therefore, when it comes to financial trading, big data is analyzed in real-time using AI and ML, resulting in trends and patterns that lead to automatic trading. These technologies are used where there are frequent and fast-changing markets, where algorithmic responses to these changes benefit traders by getting the best chance and avoiding the worst risk. Advanced utilization of artificial intelligence in market prediction lowers risk by assembling data from various sources, social media sentiment analysis, news feeds and historical performance (Kumar, 2024).

AI and machine learning decide on the right mix of products and services in portfolio management besides risk management. Portfolio optimization models also constantly apply changes in investment weights to yield higher returns given some risks. In addition, AI improves the diversification of risks and the likelihood of loss by recognizing possible investment risks, thus improving insurance risks (Dakalbab et al., 2024). These technologies are also applied in other types of fiscal applications like anti-fraud, credit risk assessment, online consultation services, and automatic portfolio management, as well as algorithmic portfolio selection, revealing a ubiquitous integration of AI across the total fiscal industry (El Hajj & Hammoud, 2023).

Nonetheless, using AI and ML as a part of the financial industry has ethical problems. The major issues include prejudice in the algorithms, the problem of sovereignty of black-box models, the problem of replacing people with machines, and the unlawful use of data of citizens. Solving these problems presupposes the development of working regulations and guidelines with the cooperation of regulators and industry players for the ethical deployment of AI technologies. Measures like these are crucial to enhancing fairness, light, and data processing and enabling AI and ML to enrich financial services (Mishra et al., 2024).

Thus, with all the possible benefits AI and ML introduced into the sphere of financial trading and portfolio management, it is significant to look through its risks and unethical practices, which have a great potential to be critiqued and controlled. These technologies will keep on being adopted, and it will be vital to possess a balance between the technology and the contention of pro-social values with AI complementing efficient market while the social construction of ethical problems and the steady career base remains of paramount importance.

AI and ML adoption in Thailand's financial sector

Recently, Thailand's financial sector adopted artificial intelligence technology. Both AI and ML are used profusely in fields to enhance the efficiency of organizational procedures. Fraud detection and prevention are other applications of AI and ML in banking. If the bank can learn the patterns of transactions, it can easily note if something is wrong by comparing it with normal patterns. With this cooperation, it is possible to avoid contractual risk to a greater extent since the process of identifying fraud becomes relatively easy. This assists to avoid further erosion and enhance the solidity of the financial circumstance in the economic systems (Formichella & Sritawat, 2023). Credit scoring and risk management A and ML models are used to estimate the creditworthiness of borrowers, support better lending decisions by financial institutions, and manage risks. Further, voice-activated assistants and bots help customer services respond to queries around the clock, lessening the call volume for human agents and speeding up the response times (Leesa-nguansuk, 2024).

AI and ML are used for investment and portfolio management to capture market trends. This has resulted in better investment decisions and better portfolio performance. These technologies are applied in regulatory compliance to keep track of financial transactions. It supports the institution to avoid legal and regulatory non-compliance (Verma et al., 2024). Furthermore, integrating AI and ML makes it possible to provide customers with personal services regarding final behavior. This allows institutions to give investment recommendations and insurance premiums and to set the setting for tailor-made credit products (The Institute of Public Policy and Development, 2020). Lastly, AI and ML models clinch the final phase of underwriting an insurance application. One reason for this was that it helped the organization avoid long processing of approvals that slowed down its operations (OpenGov Asia, 2023).

Considering the Ethical Aspects of New Product Development and Innovation, the three resources of social, labor, and market are essential in the ethical imperative to make a vision that peacemaker enables fair technological advancements that do not infringe the existing social norms or threaten a person or a group. These include privacy, openness, liability, role equity and prejudice in form AI (Miller, 2024) Continental concerning work sector concerns. Fostering a culture of diversity and inclusion Established principles of intolerance, oppression, and unfair treatment should not be tolerated. All these actions not only target the best interests of the workforce but also stimulate innovation through inclusiveness of diversity to the extent of creating a 'Black Swan' breakthrough by the year 2024, as identified by Faster Capital.

This market encompasses customer needs, wants, and utility, which need to be met while maintaining the viability of products in the market. It also involves evaluation of the impacts of

products on the environment, and engagement in sustainable processes (Sindakis, 2024; Sindakis, 2024; Global Alliance, 2023). In as much as those factors are balanced, organizations can come up with new products and services in the right way. This eventually brings success in the long run and a positive effectiveness to the society.

When AI-driven trading and portfolio management were introduced in the Thai financial market, the following ethical issues emerged to call for thoughtful consideration as to their responsible adoption. These issues were such as, algorithm fairness in which the till AI system reinforced prejudice in its operations such as financial decisions thereby compounding the prejudice in areas such as credit scoring and investment advisory (Thakur & Sharma, 2024). Another cause was the separation of data that again led to biased outcomes with the discriminated groups that are the marginalized ones.

Transparency and explain ability were identified as the other challenges; AI algorithms were said to lack transparency in decision-making to stakeholders (Qureshi et al., 2024). To enhance the transparency of the technologies, some normative rules regarding the development of artificial intelligence were required. Besides, data incorporation into AI systems has been accompanied by many data protection issues leading to the need for efficient data protection frameworks (Owolabi et al., 2024). Last but not the least, the accountability frameworks have been helpful in the aspect of ensuring accountability when it comes to implementing, the legal rules/rules as well as regulation in deploying AI in any business and earning public trust (Ahmed, 2022). Through threats representing considerable ethical threats, they were the chance for the Thai financial market to produce combined protection approaches that incorporate ethical considerations and technologies.

Objectives

1. To assess the ethical aspect of Artificial Intelligence in Thailand's financial sector.
2. To assess the displacement rate in the financial sector due to the introduction of AI.
3. To analyses the effect of AI-based trading on market stability in Thailand.

In line with this research purpose, three research questions were formulated, and the related hypotheses were also postulated, as listed below: What ethical concerns came with the application of AI and ML in the financial trading business in Thailand? How did AI implementation influence the employees in Thailand's financial industry? How did the adoption of AI trading influence the stability of Thailand's financial market? Moreover, to investigate these questions, the research was guided by the following hypotheses:

H1: Lack of ethics was a vice that was sensed in the trading of financial securities by the implemented AI since they involved bias.

H2: This paper found that the integration of AI and ML in places of work in the financial sector triggered massive job loss in Thailand.

H3: The use of AI in trading influences Thailand in terms of market stability and fluctuation.

These hypotheses served as a starting point for the consideration of the topic, AI for Thailand in the financial context and its ethical, workforce, and market impact.

Literature Review

AI and ML in Financial Trading

AI in business settings across various industries is anchored on some vital trends which are global in nature; profitability. AI as part of Industry 4.0, has led to panel-level automation and data analysis to enhance manufacturing, healthcare, and transport industries (Dinmohammadi, 2023), the automotive industry, smart healthcare, and finance through revolutionizing the risk management and stock investment sectors (Bhandari et al., 2022). Hence, it is assumed that restricted expenditure on AI infrastructure and also inadequate availability of human capital for implementation and deployment of AI are two primary impediments to AI utilization (Priya et al., 2024).

By incorporating AI in portfolio management, the evaluation of investment strategies and decisions has been boosted since AI enhances policies, achievements of risk analysis and processing of data in real-time. AI systems can argue better than conventional practices through the handling of large financial data and news and sentiment analysis that would enhance decision improvement through ML and predictive modelling (Jangra et al., 2024). Enhance the risk management capabilities by changing the current conditions and tracking factors that are constantly changing. ESG Continuity for More Sustainable Investing Adeoye et al. 2024. Also, AI in automating investment methodology can also work as an advantage for raising operational efficiency. This makes the market more responsive and better at relating resources in a more effective manner (Lincy & Sinduha, 2024). A good deal of consideration should be given when utilizing artificial intelligence in the investment process (Akour et al., 2024).

Ethical Challenges in AI-driven Finance

It is equity metrics like Demographic Parity (DP) and Equalized Odds (EO) that are used in evaluating of the performance of the machine learning models usually affecting the fairness-accuracy balance. But it is also clear that in multitudes, positive, positive, and false rates are

straightened and equated, and while obtaining high accuracy and low bias can be challenging, they are constrained by data distribution, (Zhong& Tandon, 2024). A type of criterion fairness, demographic equality, which tries to make the classifications equal to the demographic distribution, has shown to produce bias in classifications, particularly in imbalanced data sets; the effects are evident and require better techniques of optimization (Lei et al., 2024). For better balance of fairness and other performance metrics, newer techniques such as Pareto-optimal based methods have been suggested to improve applicability of models to diverse live-use situations (Nagpal et al., 2024). Nevertheless, the established conception of fairness can be incomplete, ignoring intersectional effects and not consider domain expertise, which has led to the development of more specific methods that go beyond DP and take distributional characteristics into account (Hu et al., 2023). Although the fairness has its importance in ethical AI, its application has the negative impact in the model performance – these reasons, similar to proposed algorithms, indicate the need for further studies on refining these metrics and their use.

Transparency and accountability of such artificial intelligence system is relevant in creating trust and encouraging the right use. The regulatory mechanisms and industry code have a crucial role in the accomplishment of these goals. Legal requirements regarding activity and accountability, for example, the GDPR, thus suggest accountability. This way the users also get the understanding of AI decision making which is a plus according to Chaudhary (2024). Also, AI auditing provides the framework for organizations to evaluate compliance and accountability, as is done in financial auditing (Lam et al., 2024). In industrial field, Explainable AI (XAI) on blocking black box problem makes AI decisions more understandable while fairness on blocking discrimination makes sure the decision is ethical. The above facts were supported by some authors such as Pappachan et al. (2024) as well as Kumar and Dadhich (2024). The application of these frameworks and standards has remained somewhat inconsistent, especially across industries, but calls for further improvement and engagement of stakeholders because of continuing advancements in AI technologies remains.

Workforce Transformation and AI

By incorporating automation technology in the financial industry, the demand of skills has greatly received a facelift. Thus, the need for analytical, interpersonal and IT competencies is growing alongside with traditional financial ones (Siemon & Kedziora, 2023). Tasks which were repetitive are now done by machines hence basic emotional skills for example flexibility and technological competence are becoming mandatory. However, a critical skills shortage area is evident, and 69% of professionals are aware of the necessity of launching new skills training (Olaniyi et al., 2024). These entry point training and learning have to be complemented with new and continuous learning to equip employees to perform ‘smart’ work in an automated work setting (Hussain,

2024). Moreover, it can be concluded that automation policy changes are required for addressing automation issues, particularly for the issue of job displacement through innovation, job creation (Du, 2024). Automation also points out that there is a need to put efforts towards the formulation and development of proactive measures for managing the work force with a goal of ensuring that no party is rendered jobless due to a fast-changing market.

AI can be applied in developing technical skills, enhancing adaptability of organizations and employees through the implementation of developmental programs that respond to change in job demands for skills through training, tailored suggestions, and a proper approach towards technology integration. Changes in skills can be expected because introducing and using AI presumes new competencies among the personnel. Foresight analysis may be conducted in order to address future skills requirements (Bobitan et al., 2024), thus this is a technical and emotional skills problem that organisations can try to solve. Artificial intelligence encompasses individual learning and development applications. One should train their employees in whatever method suits and provide a learning environment to the staff for life-long training (Selvi, 2024). There is a need for organizations to adopt policies that encourages ad hoc training and competency mapping for supporting adaptability (Swami et al., 2024). Moreover, it is crucial to integrate cooperation between the employees and AI and AI-aware managers to enhance the efficient results and employees' growth mindset (Indrasari & Pamuji, 2023). However, that sort of opportunities should be exercised with due consideration to ethical issues concerning data privacy in order to achieve a more responsible workforce development.

AI and Market Stability

HFT is capable of causing adverse effects on the market fluctuation and these horns on it can be eliminated or minimized via the following steps Modification on the current practices of trading. Some of the policies that can be related to the scope of marketing include issues to do with bidding policies and orders and cancellations policies. It can enhance the turnover and promote the stability of the markets and its fluctuations, especially at the time of variability (Ekinci & Ersan, 2022; Nahar et al., 2024). The use of low latency technology has enabled the HFT companies to timely respond to fluctuations within the market; or in other words, fluctuation of trading frequency in accordance to the market (Hossain, 2022). On the regulation front, concepts like transaction taxes and time-bound cancellation of orders have been made but their efficacy to make a model completely fair has not been fully established (Khadelwal & Jain, 2022). However, achieving HFT optimization heavily depends on the achieved trading strategies as well as other factors. High-tech and sufficiently tuned regulatory system to keep the economic relations stable and fairly balanced.

The application of Artificial Intelligence in the risk management environment has considerably enhanced the quality of risk assessment online in the financial industry by exploiting more complex machine learning algorithms and (real-time) data analyses. It is common knowledge that AI-driven organisations rely on the capabilities of the big data to enhance credit and market risks forecasting, including the non-conventional data points. This makes it more accurate than other conventional approaches to the identification of the condition (Murugan et al., 2024). Moreover, AI offers a mechanism to constantly evaluate risks and learn as a result, on the conditions that data is updated. This means that they can effectively counterbalance the instability prevalent in the market to ensure that operations continue to remain efficient, according to Shen (2024). Nevertheless, there are still some issues which are Data privacy Model bias and Compliance. This presupposes actions that consider a proper use of AI (Agu et al., 2024; Daiya, 2024). Thus, further development of the combined approach using an AI forecast combined with human intelligence is necessary to prevent overreliance on the model while evaluating risks.

Regulatory Responses to AI in Finance

This paper identifies how compliance with global regulatory frameworks affecting the financial sector affects the adoption of AI in these organisations regarding compliance concerns, innovation, and ethics. Legal issues affecting the use of data protection and ethical AI involve compliance and thus need a strong compliance model since different jurisdictions and jurisdictions apply different regulations ranging from the EU to US to China (Deshpande, 2024). Though necessary for safeguards and truth in advertising, overregulation can hamper the development of new solutions best stated in the Bletchley Declaration, which also fights for a coherent global regulatory framework to support cross-country uses of AI. The ethical concerns of bias and accountability for AI bring focus to the area that has been labelled a governance gap of AI (Ridzuan et al., 2024). However, the protraction of the utilisation of AI in the financial regulation shows that there is a prospect to a better decision and efficient operation using AI (Danielsson & Uthemann, 2023).

Thai legal system is still pivotal in Governances of driven financial services. As in other countries under Thailand 4.0, the government has deployed legal frameworks on fintech development (Jenweeranon, 2020). But there are so many complexities inherent in regulation governing financial institutions. This needs advanced compliance solutions to mitigate the different drivers of risk regarding the adoption of artificial intelligence (Liu & Wongsosaputro, 2024). The fact that AI technology has to be anchored in and supplemented by law effective for financial services makes implementation a challenge if it has to meet with policy goals including, for instance, market safety and consumer protection (Lee, 2020). Furthermore, a component of human supervision is expedient when considering AI automated decision-making and the ‘black box problem’ (Buckley et al., 2021). This paper finds that while the Thai regulatory system supports

innovation, the core pillars of compliance act as a thorn in the side of a rising financial services industry. It also emerged that AI must meet the dual goal of driving innovation and meeting industry standards.

Methodology

The research methods implemented for the present study involved survey and secondary data analysis of quantitative nature. The target audience has been identified as financial professionals in Thailand comprising of traders, portfolio managers, financial analysts, Regulatory officials, companies and financial institutions. Questionnaire was distributed to the respondents through purposive sampling method where 200 respondents were chosen to boost the reliability of the results because of the diverse sectors and roles of respondents working in the financial industries. Data was collected from an online survey in which participants completed a structured questionnaire that included questions about perceived ethical issues, effects on labor, and relative stability of the market for the application of AI in financial trading. However, secondary data is also collected by assessing the market performance of the books. For instance, it will watch and assess artificial-intelligence-driven trading actions and related fluctuations in market instability. Self-developed questionnaires at the Likert level apply the following questions: Questions regarding ethical issues and questions about the effect of the development of labor and market data, such as volatility indices and transaction volumes, aiming at exploring the effect of AI on market stability. Comparative analysis involves calculating the means and standard deviations for the assessment of general trends in the data on the other hand Regression analysis assist determine whether adoption of AI affects ethical concerns. Mentioned methods include t-tests to compare the mean of certain variables, as well as analysis of variance known as ANOVA to locate significant differences or interconnections between variables.

Results

The descriptive statistics described in this section (Table 1) gives an insight into the respondents' demographic data – gender, age, education level, occupation, years of experience at workplace, and size of the company where they worked or are working – size of company. Each variable was completed and attained 200 valid responses with no instances of missing values. Respondent's age of the study was in mean average of 2.54 signifying that major respondents were in age group of 25-34. In gender the participants mean was 1.59, median and mode both were 2; suggesting that, there was good representation of both the gender. This figure equals closer to 2.27 and refers mainly to the participants with the bachelor or master degree. The median and the mode are both 2 which show that the studies show a large percentage of undergraduate graduates. Occupational variable is fairly equitably distributed with the mean of 2.42 suggesting the distribution across

trader, portfolio manager and financial analyst; the median is also 3 slightly skewing the mode in favour of the financial analysts. The sum of the responses supports these findings, on different levels of experience among the participants. The mean for company size was 2.21, /n/ the median of the number of employees working in the organization was 2 while the mode was 1, /n/ this suggest that, a large number of the participants worked in organizations with employee size of less than 50. These statistics give a good picture of the demography of the respondents the survey and for the respondents there is variation in age, sex education employment and experience. There are senior workers and all kinds of middle-age personnel in the small and medium organizations.

Table 1: Respondent's Demographic Analysis

		Age	Gender	EDU	OCC	EXPE	COMs
N	Valid	200	200	200	200	200	200
	Missing	0	0	0	0	0	0
Mean		2.54	1.59	2.27	2.42	3.44	2.21
Median		2.00	2.00	2.00	3.00	3.00	2.00
Mode		2	2	2	3	3	1
Sum		508	318	454	484	687	441

Comparing against the null hypothesis in Table 2 the ANOVA analysis used in this study measures differences in four areas of AI adoption in financial trading in Thailand: ethical issues, job losses or gains, instability of markets and perceived and actual regulatory stance. Using responses to Likert-level questions on these topics the analysis investigated if there are any trend by age. All ethical challenges of AI in the financial trading were equal and showed no significant differences in the groups ($F(4, 195) = 1.879, p = 0.116$). There were no significant differences between the groups in terms of the labor effect of AI uptake $F(4, 195) = 1.700, p = 0.152$. Further analysis of response patterns regarding consequences of AI on market stability which might increase volatility or improve liquidity, that was available to compare the groups and answer Q2; did not yield any substantial differences between the groups; $F(4, 195) = 1.170, p = 0.325$. Lastly, in the light of regulatory and governance framework, as revealed by the ANOVA analysis there were no significances differences found ($F(4, 195) = 1.286, p = 0.277$) and the majority of the participants agreed with the regulatory issues of AI along with the adequacy and necessity of regulations and the better governance standards needed for the industry.

The 3rd Comparative Table compared the analysis of age difference in the ethical issues, the impacts of labor, and regulatory views of the respondents on the possibility of adopting AI in the financial trading sector in Thailand. The analysis was conducted through the LSD (Least Significant Difference) method with substantial differences pointed in various ages in these factors. The study revealed that the participant's having age of 55 years and above had a higher

level of self-esteem, than other younger age groups such as 18 up to 34 years, 35 up to 44 years and 45 up to 54 years. For instance, respondents in the 18–24 age group considered the ethical issues of AI-based financial trading, such as the risk of bias in decision-making, reduced transparency, and accountability issues, as less serious than the respondents in the 55+ age group, with the mean difference of 0.82880, and a p -value of 0.010. In the same way, the other other age groups of 25–34 years, 35–44 years, 45–54 years specified significantly lower concerns about the ethical challenges than the 55+ group with p values of less than 0.05. Comparing 25–34 and 45–54 age groups, a statistically significant difference was determined for the regulatory and governance perspectives: $M = -0.32093$; $p = 0.033$. This result pointed to the fact that the 25–34 age group provided a lower mean score for concern on the inadequacy of the present regulation and the need for defining a higher level of ethical application of AI in financial trading than the 45–54 age group.

Table 2: The ethical challenges, workforce impacts, and market stability associated with AI adoption in financial trading in Thailand (ANOVA)

		SS	df	MS	F	Sig.
Ethical Challenges of AI in Financial Trading	Between Groups	2.610	4	0.652	1.879	0.116
	Within Groups	67.725	195	0.347		
	Total	70.335	199			
Workforce Impact of AI Adoption	Between Groups	1.847	4	0.462	1.700	0.152
	Within Groups	52.991	195	0.272		
	Total	54.839	199			
AI's Impact on Market Stability	Between Groups	2.893	4	0.723	1.170	0.325
	Within Groups	120.537	195	0.618		
	Total	123.430	199			
Regulatory and Governance Perspectives	Between Groups	3.154	4	0.789	1.286	0.277
	Within Groups	119.609	195	0.613		
	Total	122.764	199			

The research study pointed out that the more advanced age group (55+) perceived relative ethical dilemmas associated with application of AI based solutions in organizational structures than the younger participants. This might have meant that the older individuals were more inclined to the possibility of more risks connected with the AI technology or they have wider experience in the financial market than the younger subjects. Speaking of the regulatory concern, the mid-career

professionals (45–54) show more concern in present regulation and governance mechanisms than early-career professionals (25–34). This implied that better qualified personnel could have been more aware of legal coupled with regulatory threats in the AI industry and hence could have understood the necessity of increased regulation in the sector.

The results provided evidence to Hypothesis 1 (H1), that using AI is associated with ethical issues, including bias in decisions made. The results also indicated that mid-career individuals aged 45–54 declare more concern of adequacy of current regulations, thus partially supporting H3, which posits a correlation for AI trading and self-reported concern of market/regulatory oversight.

The findings revealed that gender and education level had no effect on the extent to which participants perceived ethical challenges, the effects on the workforce, the stability of markets, and regulatory point of views that concern AI implementation in financial trading in Thailand. All the gender groups and the educational levels were in agreement on these important issues according to the responses received. This implies that the perception and attitude towards AI in financial trading was not determined by gender, nor educational qualification but the practitioners' practice and trainings using the AI technologies.

Table 3: The ethical challenges, workforce impacts, and market stability associated with AI adoption in financial trading in Thailand (Multiple Comparisons)

LSD							
Dependent Variable	(I) Age	(J) Age	MD (I-J)	Std. E	P	95% Confidence Interval	
						LB	UB
Ethical Challenges of AI in Financial Trading	18-24	55>	0.82880*	0.31926	0.010	0.1992	1.4585
	25–34	55>	0.69288*	0.30093	0.022	0.0994	1.2864
	35–44	55>	0.73018*	0.30870	0.019	0.1214	1.3390
	45–54	55>	0.79006*	0.30941	0.011	0.1799	1.4003
	55>	18-24	-0.82880*	0.31926	0.010	-1.4585	-0.1992
		25–34	-0.69288*	0.30093	0.022	-1.2864	-0.0994
		35–44	-0.73018*	0.30870	0.019	-1.3390	-0.1214
		45–54	-0.79006*	0.30941	0.011	-1.4003	-0.1799
Regulatory and Governance Perspectives	25–34	45–54	-0.32093*	0.14941	0.033	-0.6156	-0.0263
	45–54	25–34	0.32093*	0.14941	0.033	0.0263	0.6156

*. The mean difference is significant at the 0.05 level.

Regarding the perception of ethical issues, market fluctuations, and regulatory views of AI use in financial trading of Thai companies, there was no statistically significant difference between

occupations of participants. The findings were also insignificant regarding these aspects with no variations noted between the various occupational types such as traders, portfolio managers, financial analysts and regulatory officers. Nonetheless, the Multiple Comparisons by Occupation (LSD) revealed a significant difference in the perception of the impact of AI on workforce in trader and financial analyst groups, whereby the latter posed higher concerns about the impacts of AI to workforce roles and job loss in Table 4 with the Mean Difference = -0.17061, $p = 0.036$. Further, though non-significant the regulatory personnel responded differently than traders with regards to governance (Mean Difference = 0.51776, $p = 0.079$). In summary, the results underlined the similarities of observation across occupations but in their variation; this called for the variation to inform the need for occupation-specific considerations when planning and deploying AI within the financial industry. These papers support the second hypothesis (H2), which state that the implementation of AI and ML will result in concerns on massive job switch in the financial industry. Other hypotheses comprise those that can be classified as ethical issues and market volatility.

The findings received from the ANOVA test of the study which tests the effects of working experience on ethical issues, workforce, market, and regulation concerning the AI in the financial trading in Thailand. A striking feature of the results is the difference in the levels between the evaluated areas totalling for all the studies. The findings also show that there was significant difference between different levels of experience when it comes to ethical dilemmas ($F_{4,195} = 4.078$, $p=0.003$). This means that respondents across the different job experience levels perceive matters such as bias in decision-making and the use of AI algorithms differently. To test the research question about the differential effects of AI adoption by the workforce, the study found the result to be highly significant, $F(4, 195) = 28.391$, $p < 0.001$.

Table 4: The ethical challenges, workforce impacts, and market stability associated with AI adoption in financial trading in Thailand (Multiple Comparisons by Occupation)

LSD			MD (I-J)	Std. E	Sig.	95% Confidence Interval	
Dependent Variable						LB	UB
Workforce Impact of AI Adoption	Trader	Financial Analyst	.17061*	0.08076	0.036	0.0113	0.3299
	Financial Analyst	Trader	-.17061*	0.08076	0.036	-0.3299	-0.0113

*. The mean difference is significant at the 0.05 level.

Therefore, the findings in Table 5 confirmed very high significance on the opinion held by respondents with varied working experience on how the trading by the use of AI affects the market stability ($F(4, 195) = 66.000, p < 0.001$). Finally, the comparison of the regulatory and governance viewpoints also revealed a statistically significant difference ($F(4, 195) = 3.947, p = 0.004$); it emerged that the respondents' perceptions of the sufficiency of current rules and the necessity of the more accurate KPIs depend on their working experience. These results highlighted the need to involve experienced practitioners of various levels in decision-making on ethical, workforce, market stability, and regulatory issues to adapt AI in financial trading.

The multiple comparisons analysis (LSD) tested working experience on the ethics, workforce effect, market prospects, and regulations relative to AI use in financial trading among the respondents. The results based on experience level indicate that there are statistically significant differences for all the four areas being studied. Responsible for ethical challenges, new employees were less critical than employees with 4-6 EFAs, (Mean Difference = 0.50791, $p = 0.039$) show that more experienced employees pay better attention to such biases and transparency in AI algorithms. Similarly, mid-level experience groups were more critical of ethical issues in AI, for instance, ANOVA table 2 showed that respondents with 1-3 years of experience significantly differed from those with 4-6 years (Mean Difference = 0.31712, $p = 0.033$).

There were also similar differences across almost all experience groups in the workforce implication of implementing AI. Cook's test for unequal variance showed the significance of differences in the perception of the workforce impact for professionals with day of prior experience of less than one year compared with professionals with 4–6 years of prior experience ($t = -2.075, p = 0.038$); and high significant for respondents with more than 10 years of prior experience compared to respondents with fewer years of prior experience ($t = 4.988, p < 0.001$). Regarding the effect of AI on market stability, qualification level of 'less than 1 year' was found to be considerably higher and significantly different from all other qualification level. For example, concern for how market volatility affects the portfolio was ranked lower for those with 1 year working experience or less when compared with 4-6 years of experience (Mean Difference = -1.52162, $p < 0.001$) and more than 10 years of experience (Mean Difference = -2.71970, $p < 0.001$). From this proposed relationship, it meant that senior users were more sensitive to the effect of AI on market characteristics such as volatility and liquidity. Finally, keeping in mind the regulatory and governance related factors, statistical evidence was discovered between the two groups: first between the respondents with 4-6 years of organized working experience and of the second group involving 7-10 years' experience (Mean Difference = -0.44640, $p = 0.000$) and with the third group having more than 10 years of experience (Mean Difference = -0.47507, $p = 0.000$). Meanwhile, more experienced respondents discussed deficiencies of the current regulations and the necessity for more visible management frameworks for AI.

Table 5: The ethical challenges, workforce impacts, and market stability associated with AI adoption in financial trading in Thailand (ANOVA by Working experience)

		SS	df	MS	F	Sig.
Ethical Challenges of AI in Financial Trading	Between Groups	5.429	4	1.357	4.078	0.003
	Within Groups	64.905	195	0.333		
	Total	70.335	199			
Workforce Impact of AI Adoption	Between Groups	20.183	4	5.046	28.391	0.000
	Within Groups	34.656	195	0.178		
	Total	54.839	199			
AI's Impact on Market Stability	Between Groups	70.992	4	17.748	66.000	0.000
	Within Groups	52.437	195	0.269		
	Total	123.430	199			
Regulatory and Governance Perspectives	Between Groups	9.194	4	2.299	3.947	0.004
	Within Groups	113.569	195	0.582		
	Total	122.764	199			

From these results, it was clear that working experience predicted overconfidence in the key ethical, workforce, and regulatory concerns arising from AI use in the financial trading and its implication for market stability. This was due to the fact that they were more frequently engaging with the risks and challenges associated with the AI in finance. The results provided evidence for Hypothesis 1, assuming that adoption of AI generated ethical issues. They also supported the Hypothesis 2 that embraces the notion that use of AI in organizations has a potential of causing high job displacement. In addition, the results support Hypothesis 3, which indicated that there was a significant effect of AI trading on the volatility configuration of the financial markets.

Based on the results, company dimensions did not exert a direct impact on respondents' perceptions of ethical issues, the employment aspect, market volatility or regulators' perspectives about the AI deployment in Thai financial trading. Both large, midsize, and small firms had similar perceptions on the potential biases, the level of disclosure of trades, employment loss, fluctuations in the market and adequacy of laws associated with the use of AI trading. These results suggest that both barriers and impacts of AI application were observed within companies of every scale,

which means that the firm size was not significantly determinative for the attitudes of the respondents regarding the AI application in the financial sector.

Main effects analysis of variance evaluated the effect of demographic variables—age, gender, education, occupation, working experience, and company sizes—on the following independent variables: ethical challenges of AI for financial trading, the impact of AI on the workforce, the impact of AI on market stability, and regulatory and governance perspectives.

For age, the model yielded an R-square of 0.021, that was not a strength since the independent variables did not account for a reliable percentage of the variance in age, and the overall regression equation was not significant at $F(4, 195) = 1.024$, $p = 0.396$. Loosely, the ethical challenges failed to reach significance, $B = -0.126$, $p = 0.314$, as did the regulatory perspectives, $B = 0.165$, $p = 0.071$. Likewise, the regression for gender yielded R-square of 0.016 meaning that only 1.6 percent of the variation in gender was accounted for by the predictors. The overall model also was nonsignificant $F(4, 195) = 0.804$, $p = 0.524$ and of the predictors such as ethical challenges, $F(1, 195) = 0.038$, $p = 0.611$, workforce impact $F(1, 195) = -0.078$, $p = 0.342$, the results were relatively equal across the board.

Regarding the education regression, it produced an R-squared of 0.022 hence the predictors contributed to only 2.2% of the variation in education. No overall significance was found in the model the $F(4, 195) = 1.115$, $p = 0.351$ nor individual predictors like workforce impact ($B = 0.090$, $p = 0.233$) and AI's impact on market stability ($B = -0.082$, $p = 0.121$). For occupation, the model R-squared value was 0.032, while the total model was not significant at 1.605 *, $p = 0.174$. Nonetheless, there was a confirmed significant influence ($B = -0.212$, $p = 0.017$) of the regulatory and governance perspectives on occupational differences. Other predictors were non-significant, including ethical dilemma ($B = 0.086$, $p = 0.475$) and on workforce ($B = -0.067$, $p = 0.619$).

On the other hand, the regression for working experience was showing a solid model; R-squared value is at 0.711 meaning 71.1% of variance for working experience is explained by the predictors. The model was considerably different and statistically significant, $F(4, 195) = 119.728$, $p < 0.001$; the influence of AI on market stability ($B = 0.792$, $p < 0.001$) and workforce effect of AI adoption ($B = 0.354$, $p < 0.001$) were subsequently identified as beneficial. Nevertheless, ethical issues were found to be insignificant ($\beta = 0.088$, $p > 0.05$) as well as the regulatory views ($\beta = 0.051$, $p > 0.05$). Last, for company sizes, the model accounted for only 1% of the total variation (R-squared = 0.010) and was non-significant with the value $F(4, 195) = 0.492$, $p = 0.742$. Similarly, none of the predictors; ethical challenges ($B = -0.194$, $p = 0.178$) or regulatory perspectives ($B = 0.066$, $p = 0.528$) had a significant correlation with company sizes.

Consequently, as most of the main variables of interest are either not significantly or only weakly correlated to the dependent variables, the working experience was marked by AI's concern with market steadiness and shifts in employment. Regulation point of views were also used in order to distinguish the respondents based on their jobs. Nevertheless, the selected factors did not have much forecasting capability for the age, gender, education, as well as the size of the company.

Discussion and conclusion

The findings of this study, which was aimed at examining the Thailand's AI adoption in the trading environment of financial products, supported the propositions and added to the knowledge the extant literature provided. The insights revealed important domains of ethical issues, harnessing human workforce potential, stable markets, and regulation which have often been at the center of the discussions on AI and financial systems.

Ethical Challenges in AI-driven Financial Systems

Some of the recent works have stressed the conflicts of interest involved in applying AI in financial trading, specifically, in decision-making for fairly or unfairly discriminating between buyers and sellers. Kumar (2024) and Mishra et al. (2024) have pointed out that the usage of AI algorithms has an inherent problem of transparency and thus generates trust deficit among the users. This study also supported such feelings among Thai financial professionals especially those with long practicing experience in the industry. The study also found that current staff was more cognizant of the bias and the absence of an accurate description of how AI operates, which is what the literature also highlighted about how AI reinforces existing systemic bias in decision-making as highlighted by Thakur & Sharma (2024) & Qureshi et al. (2024). Additionally, Miller (2024) has pointed out the need to make direction of AI developments conform to the societal benefit to mitigate on adversities, a point echoed in this study observing that experienced traders who were engaged expressed concern on need for greater accountability as well as fairness that comes with use of AI in financial trading. This goes a long way to create the needed discourse on enhancing the performance of AI as well as making sure that the AI developed adhere to the Ethics of AI as envisaged by Nagpal et al., 2024.

Workforce Transformation

Automation through advanced AI in the financial sector has led to lots of changes in the employment landscape: affecting positions that entail repetitive analytical work. In fact, the literature indicates that AI takes over repetitive roles and generates new needs for technical and emotional competencies (Siemon & Kedziora, 2023; Olaniyi et al., 2024). Concerning the limited

fit of some workers into newly emerging AI work profiles, these findings confirm the views of Hussain (2024) and Du (2024), who underscore the necessity of reskilling programs for preparing workers for AI-enhanced positions. While the work experience of respondents increased their concern with regard to job displacement and the necessity to retrain, which, according to the literature, are critical issues related to the automation of tasks and the subsequent need to adapt the workforce (Selvi, 2024). Further, it is in support of Bobitan et al. (2024) who established that promoting a learning culture as a continuous process in organizations is crucial. Among the specific occupational groups, financial analysts and professionals attached greater relevance to job responsibilities disrupted by AI, which as the literature also suggests, requires firm-level strategies for lifelong learning and embracing AI.

AI and Market Stability

The literature often uses the term AI especially on the impact it has for bringing out the prospect as well as the threats in the finance market. For instance, Nahar et al., while doing analysis in 2024 and Hossain in 2022, pointed out that the HFT algorithms may increase the market volatility in case of inadequate regulation. Similarly, this research supported these conclusions, given that some of the participants with more experience showed a lot of concern regarding the impact of AI on stock fluctuations. The study finding supports this notion with Murugan et al. (2024) and Shen (2024) who all pointed that this type of artificial intelligence can both act as an anchor and create volatility in the financial markets depending on the way algorithms are deployed.

Regulatory and Governance Frameworks

From this literature, it is now clear that there is a call, and indeed a need to enhance the regulation systems to address the risk and the ethical use of AI in finance. For instance, Buckley et al. (2021) and Ridzuan et al. (2024) stressed the need to enhance governance systems so as to deliver; fairness, accountability, and transparency. This study responds to their concern as respondents, especially those with more years in the working field, advocated for the enhanced governance structures. They also noted the need for the regulatory authorities to engage financial institution for ethics in deployment of those system as explained by Ahmed (2022) and Lee (2020) in their works about AI regulation. Furthermore, in line with Verma et al. (2024) and Liu and Wongsosaputro (2024), this study shows that while Thailand has a favourable legal framework to support fintech development, it has yet to develop the complex compliance measures needed to contend with AI. The respondents in this study supported the need for improved procedures and enhanced substantial regulations to address the emergence of AI's ethical, workforce, and market concerns.

Primarily, the discussion of the results in relation to the literature enables a generalization of the findings of this research to the existing debate on the application of AI in financial trading. The ethical issues, workforce consequences, and market risk questions; as well as the demand for better regulations, reveal a set of probing questions still associated with AI in the financial sector. To advance the understanding of the current research, this work stressed the role of work experience, along with the fact that all firms face significant concerns regarding the implementation of AI technologies.

It was also found that working experience played a positive contribution in respondents' attitude for all the four aspects. Many senior personnel had stated higher levels of concern about ethical risk factors including bias in AI based decision making, information disclosure, and data protection. Further, the workforce-negative expectations of AI had been considered more seriously by the experienced professionals particularly, displacing effect and reskilling. They also expressed apprehensions about causing high volatility in the financial market due to the use of AI. For regulatory points of view, working experience was again influential, with older officials calling for comprehensive and public approaches to governing the utilization of artificial intelligence at their organizations. These perceptions specifically the perception regarding workforce impacts, had occupation related bias. The study also established that financial analyst were more concerned than trades about impact of AI on jobs and workforce adaptability. Nevertheless, respondents' attitudes towards ethical issues, market volatilities and regulatory requirements were generally similar regardless of the occupation.

On the other hand, respondents' views on the ethical, workforce, market and regulatory effects of AI adoption was same for companies of small, medium and large sizes. What this implied was that the perceived hurdles of AI in financial trading were not issues of scale; they affected small firms in the same way they affected the large ones. The research confirmed all three hypotheses:

- H1: The study provided credibility basis for the ethical issues regarding bias of the AI decision making systems.
- H2: The research established that workforce consequences were apparent, such as job loss and the need for workers to adjust new roles to AI integration.
- H3: Another viable concern was identified concerning the AI application and that was market volatility.

Thus, this study highlighted a need for governance frameworks to be made more apparent, AI systems to be explained further and that there should be active steps made towards preparing the workforce for the specificity of AI within financial trading. Only the participants with more work experience were deemed to be the keys stakeholders that could help design and implement effective AI policies and standards within the financial industry.

To capture the opportunities regarding responsible AI, the financial institutions could incorporate reskilling programs and new roles that enhance the use of new AI capacities. Some of the occupations that could have been displaced can be overcome by training institutions by providing training on data science AI management as well as algorithm oversight. Also, organizations could have implemented human on a loop, a model of practice whereby AI supports the decision-making process of organizations but does not make decisions on its own while keeping both the efficiency of artificial intelligence and the control of experts in mind.

Instead of that, the governments and regulatory bodies could have worked on creating clear guidelines for AI management that will imply accountability of AI, its non-bias usage, data protection and the like. This would have comprised of making permanent and explainable AI systems and also making a legal requirement for ethical use of AI. They could also have encouraged inter-disciplinary working between technologists, the finance sector professionals, and policy makers to counter any emerging threats associated with the advanced developments in the use of Artificial Intelligence.

A third, and clearly related, reason is that the AI solutions implemented by mid-size or smaller financial institutions could have been adopted incrementally, firstly with cost-efficient forms of AI that perform basic clerical duties. These institutions could have, for instance, devoted their efforts on alliances with AI suppliers or on outsourcing certain AI-based processes to other dedicated firms. They have missed a great opportunity for subsequent ethical uses of AI technologies; had they trained their workforce to respond to such technologies early and complied with the several policies that regulate AI technology, they would have accommodated the technologies at fairly affordable costs.

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