ISSN 2063-5346

ANALYSING THE USE OF AI IN IDENTIFYING FINANCIAL RISKS FOR SUCCESSFUL STOCK INVESTMENTS

Yuyang Li[1], Norriza Hussin[2]

[1]Faculty of Engineering, Built Environment & IT, SEGi University Malaysia, SUKD1901378@segi4u.my

[2]Faculty of Engineering, Built Environment & IT, SEGi University Malaysia, norriza@segi.edu.my

Article History: Received: 12.06.2023 **Revised:** 28.06.2023 **Accepted:** 25.07.2023

Abstract

The employees of the trading companies of Malaysia were targeted to extract the key informational data relevant to the usage of AI in examining financial risk in unbeaten stock investments. There were 167 employees of the trading companies of Malaysia selected to draw the informational data related to the usage of AI in identifying the financial risk of stock investments. Primary quantitative method involved and 10 open-ended survey questionnaires and provided links to the emails of the employees. The usage of AI has increased in the field of trading companies due to the big data analytical features that help traders to make better and most effective decisions while investing in the stock market.

Keywords: *Artificial intelligence Technological integration, stock market, Stock investments, trading companies*

DOI:10.48047/ecb/2023.12.si5.355

Introduction

In the growing world full of emerging toll and technology, one of the innovative technologies is artificial intelligence, which is booming due to its characteristic features, which perfectly fit the finance world. In the case of Malaysian trading companies, this technological implication has played a positive impact on stock market investments (Shanmuganathan, 2020).

Aim

The aim of the research study is to analyse the application of AI in identifying financial risks for successful stock investments in Malaysia.

Objectives

The objective of the study is to explore the usage of artificial intelligence in stock investments and to highlight the impact of AI in financial risk identification for the improvement of stock investments as well as to represent the challenges of introduction of AI in stock investments

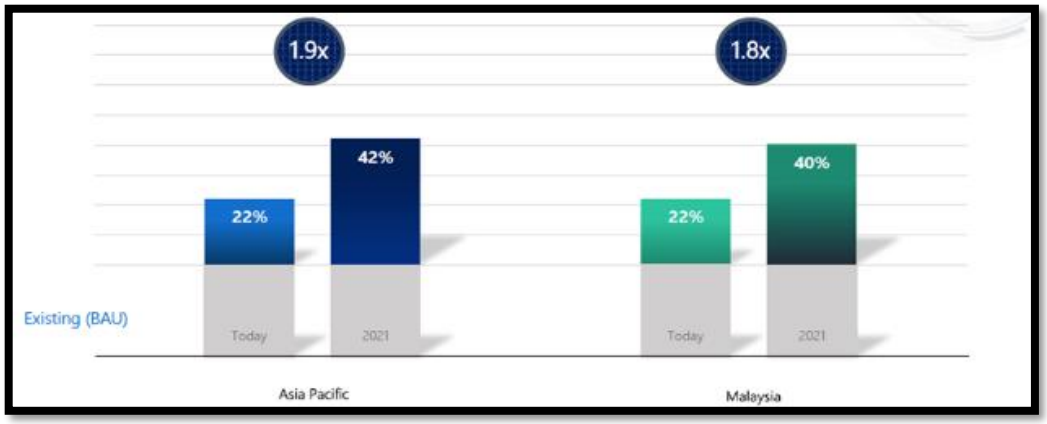
Research questions

The main research questions of the study is-What is the usage of artificial intelligence in stock investments? What is the impact of AI in financial risk identification for the improvement of stock investments? and What are the challenges of the introduction of AI in stock investments?

Background

Artificial intelligence (AI) has come-up as one of the influential digital transformational technology and has a great effect on every recognizable domain such as trading in stock market. This technological integration has resulted in immense and strong trading signals, which has positively affected stock investments (Umer et al. 2019). In addition to this, the trading signals are developed by the AI big data analytical features which assist to provide available suggestions for intuitive decision-making in relation to stock investments. As per the notion of Königstorfer & Thalmannb (2020), the factors of the financial risk such as best entry price, stop loss, and profit margins are the major players in stock investments, which can be improved with the help of Artificial intelligence. These highlights the observation and thus let much enhanced asset risk management with the inclusion of preventing traders from going too far beneath the loss fringe in the anticipation of a price recovery (Debrah et al. 2022).

Figure 1: Rate of increase of AI in Malaysian trading companies: Source-Influenced by Emerson et al. 2019



The implication of AI in stock investments has helped business executives to identify the financial risk associated with stock investments in Malaysia. This technological integration has helped in the proper decision-making, market analysis, financial risk management, and trading schemes. As per the view of Strader et al. (2020), AI has almost increased double times than the adjustment of AI in trading businesses by 60% in the year 2021. This technological tool has been considered an effective tool for recognizing financial risks for successful stock investments in Malaysia. There are 26% of trading companies, which has embarked on the AI technological journey to hence their productivity and successes full stock investments (Bingler et al. 2022).

In addition to this, trading companies that have embarked on AI are more likely to find out the financial risk associated with the process of stock investing and help in successful stock market investments.AI has certainly impacted the data examination ability related to the traders of stock marketers. It has been seen that traders in Malaysian trading companies have adopted algorithm trading to enhance stock market investment. According to the analysis of Bingler (2021), traders use AI algorithms to access and analyze massive data information in numbers with strong signaling systems, which help them to make effective decisions for successful stock investments. This technological introduction helps in big data analysis and improves business decisions.AI technological advancements have the ability to evaluate the data more conveniently as compared to humans, which results in high frequency trading (Naeem et al. 2023). AI is utilized in investing sectors of Malaysia for sentiment analysis of people on which factors the sentiments depend. There are major issues in trading such as macroeconomic data, geopolitical problems, and interest rates. The feeling of the investors is significantly influential which helps them to direct properly. As per the comment of Kaur et al. (2020), AI has a positive effect on the risk management of financial factors which helps trading officials and traders to manage their stock investments.

Methodology

In this research study, primary quantitative reach methodology has been performed and a survey research design has been implicated to add authentic and reliable data from first-hand resources. There were 317 respondents participated in the online survey. In this research study, purposive sampling has been done to improve the reliability of the research outcome and 167 employees of the trading companies of Malaysia have been selected. The data has been gathered from the responses of the participants and the obtained data were analysed by IBM-SPSS. The researcher has made 10 open-ended survey questionnaires and provided links to the emails of the employees.

Data analysis

Descriptive Analysis

Gender

Table 1: Gender

What is your gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
		150	47.3	47.3	47.3
	Female	101	31.9	31.9	79.2
Valid	Male	40	12.6	12.6	91.8
	Prefer not to say	26	8.2	8.2	100.0
	Total	317	100.0	100.0	

The above shown table highlights one of the demographic factors genders, which signifies the participation of every gender group high has resulted in reliable research outcomes. Moreover, there were 31.9% females, 12.6% males and 8.2% another gender group who has not exposed their gender identity. This group of genders has revealed that there is a huge impact of AI integration in trading companies to identify the risk of finance in successful stock investments.

Age

Table 2: Age

What is your age					
		Frequency	Percent	Valid Percent	Cumulative Percent
		150	47.3	47.3	47.3
	18 to 25 years	25	7.9	7.9	55.2
Valid	26 to 32 years	13	4.1	4.1	59.3
	33 to 37 years	103	32.5	32.5	91.8
	More than 37 years	26	8.2	8.2	100.0
	Total	317	100.0	100.0	

As per the analysis of the demographic factor, it has been seen that there were different age groups of individuals who participated in the survey ranging from the age of 18 to more than 37. The broad range of age groups was targeted to lower the age-based research outcomes. There were 167 individuals and individual of the age group of 33 to 37 were 103 in numbers and 32.5 % present in the survey. The least number of individuals were in the age group of 26 to 32 having a percentage of only 4.1.

Income range

Table 3: Income range

What is your income range					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		150	47.3	47.3	47.3
	10,000 to 20,000	13	4.1	4.1	51.4
	21,000 to 31,000	116	36.6	36.6	88.0
	Less than 10,000	13	4.1	4.1	92.1
	More than 31,000	25	7.9	7.9	100.0
	Total	317	100.0	100.0	

The above-highlighted tables highlight the income levels of the respondents who participated in the online survey. The employee of trading companies in Malaysia was involved in the survey analysis, which supported the real research outcomes exaction from the first-hand sources. Moreover, there were 36.6% of individuals had an income of 21,000 to 31,000 and this group of individuals were the most frequent. On the other hand, the individual has an income range of 10,000 to 20,000 and less than 10,000 were 4.1% and 4.1% respectively.

Regression Analysis

Research hypothesis

Null hypothesis: There is no positive role in using AI in recognizing financial risks for a successful stock market in Malaysia

Alternative hypothesis: There is a positive role in using AI in recognizing financial risks for a successful stock market in Malaysia

Table 4: Regression analysis

Model Summary[b]										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.811[a]	.169	.164	.99727	.169	33.580	1	165	.000	1.517
a. Predictors: (Constant), Financial risks										
b. Dependent Variable: AI										

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.397	1	33.397	33.580	.000[b]
	Residual	164.100	165	.995		
	Total	197.497	166			
a. Dependent Variable: Financial risks						
b. Predictors: (Constant), AI						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.320	.670		16.885	.000
	IV	-.198	.034	-.411	-5.795	.000
a. Dependent Variable: Financial risks						

The above-depicted tables highlight the score values of different analytical measures in context with the independent and dependent variable. The score vales of R and R square are 0.411 and 0.169 respectively, which is near the value of one, which represents the great influence of variables on each other. In addition to this, the score value of significance is 0.00 which is less than the value of 0.05 the normal distributional value representing the correlation between variables. The value of F is 33.5 and it is more than p value 0.05, which highlights the rejection of null hypothesis and acceptance of alternative hypothesis (Babbie et al. 2020). There were three demographic questions and seven descriptive questions involving a five-point Likert scale in each question. It has been seen that there are various factors, which influence the success rates of stock investments such as macroeconomic indicators, financial stability, regulatory transformations and market stability.

The regression equation as can be formed from the result is:

- *y (AI usage) = -0.198 * x (financial risk recognition) + 11.320*

These factors can be handled by the implication of AI in the trading business origination to active a successes stock investments (Roni & Djajadikerta ,2021).Moreover, it enhances the rates of automation in the investing processes, which is faster than the normal traditional methods of stock market investments. AI has the potential to count huge informational numbers and analyse big mass data, which helps to make potential decisions. The responses of the employees of the trading companies of Malaysia concluded that Ai helps to track the alteration of the stock market to influence the sentiments of the trader to trade only in the good stock (Soni et al. 2020). Therefore, it can be said that there is a positive influence of the usage of AI in recognizing the financial risk in successful stock investments.

Discussion

AI can keep on tracking, assessing and quantifying the massive data into comprehensible and measurable forms, which helps to make quick and effective decisions. Investors can analysis the nature of stock and their impact on the results which help them to review and compare the financial risks in the stock investment opportunities.As said by Fotheringham & Wiles (2023), in the traditional techniques of investments, there are more risks as compared to the AI algorithm methods. This helps to develop the correlation between the financial risk factors and other associated variables. As per the comment of Mou (2019), AI implication has resulted in reduced human labor and human inaccuracy by data signaling processes. AI usage has increased in trading companies due to the big data analytical features that help traders to make better and most effective decisions while investing in the stock market. As per the thought of Kaur et al. (2020), AI has a positive impact on the risk management of financial factors, which has helped trading officials and

traders manage their stock investments. It has been seen that there is a higher rate of adopted of AI in the trading business to enhance the success rates of stock market investments.

Conclusion

Through the above evaluation of the usage of AI in the identification of financial risk in successful stock investments, it can be concluded that the research study has properly depicted the statistical data related to the research topic. The analytical measures have helped the researcher to access the usage of AI in trading by the traders in successful stock investments in Malaysian trading companies. There were different analytical measures involved such as regression and demographic analysis, which has helped in interpreting the research outcomes. The data has been gathered from the responses of the participants and the obtained data were analysed by IBM-SPSS.

References List

Babbie, E., Wagner III, W. E., & Zaino, J. (2022). *Adventures in social research: Data analysis using IBM SPSS statistics*. Sage Publications. https://books.google.com/books?hl=en&lr=&id=amdjEAAAQBAJ&oi=fnd&pg=PT22&dq=SPSS+suvvey+analysis&ots=jUVRPdrgUu&sig=gWiL_ovMhUF8h-k3k37V3DF0d_g

Bingler, J. A., Kraus, M., Leippold, M., & Webersinke, N. (2022). Cheap talk and cherry-picking: What ClimateBert has to say on corporate climate risk disclosures. *Finance Research Letters*, *47*, 102776. https://www.sciencedirect.com/science/article/pii/S1544612322000897

Debrah, C., Chan, A. P. C., & Darko, A. (2022). Green finance gap in green buildings: A scoping review and future research needs. *Building and Environment*, *207*, 108443. https://www.sciencedirect.com/science/article/pii/S0360132321008398

Emerson, S., Kennedy, R., O'Shea, L., & O'Brien, J. (2019, May). Trends and applications of machine learning in quantitative finance. In *8th international conference on economics and finance research (ICEFR 2019)*. https://link.springer.com/article/10.1007/s10479-021-04287-7

Fotheringham, D., & Wiles, M. A. (2023). The effect of implementing chatbot customer service on stock returns: an event study analysis. *Journal of the Academy of Marketing Science*, *51*(4), 802-822. https://link.springer.com/article/10.1007/s11747-022-00841-2

Kaur, D. N., Sahdev, S. L., Sharma, D. M., & Siddiqui, L. (2020). Banking 4.0:'the influence of artificial intelligence on the banking industry & how ai is changing the face of modern day banks'. *International Journal of Management*, *11*(6). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3661469

Königstorfer, F., & Thalmann, S. (2020). Applications of Artificial Intelligence in commercial banks–A research agenda for behavioral finance. *Journal of behavioral and experimental finance*, *27*, 100352. https://www.sciencedirect.com/science/article/pii/S2214635019302503

Mhlanga, D. (2021). Financial inclusion in emerging economies: The

application of machine learning and artificial intelligence in credit risk assessment. *International journal of financial studies*, *9*(3), 39. https://www.mdpi.com/2227-7072/9/3/39

Mou, X. (2019). Artificial intelligence: Investment trends and selected industry uses. *International Finance Corporation*, *8*. https://documents1.worldbank.org/curated/ar/617511573040599056/pdf/Artificial-Intelligence-Investment-Trends-and-Selected-Industry-Uses.pdf

Naeem, M. A., Raza Rabbani, M., Karim, S., & Billah, S. M. (2023). Religion vs ethics: hedge and safe haven properties of Sukuk and green bonds for stock markets pre- and during COVID-19. *International Journal of Islamic and Middle Eastern Finance and Management*, *16*(2), 234-252. https://www.emerald.com/insight/content/doi/10.1108/IMEFM-06-2021-0252/full/html

Roni, S. M., & Djajadikerta, H. G. (2021). *Data analysis with SPSS for survey-based research*. Singapore: Springer. https://link.springer.com/content/pdf/10.1007/978-981-16-0193-4.pdf

Shanmuganathan, M. (2020). Behavioural finance in an era of artificial intelligence: Longitudinal case study of robo-advisors in investment decisions. *Journal of Behavioral and Experimental Finance*, *27*, 100297. https://www.sciencedirect.com/science/article/pii/S221463501930214X

Soni, N., Sharma, E. K., Singh, N., & Kapoor, A. (2020). Artificial intelligence in business: from research and innovation to market deployment. *Procedia Computer Science*, *167*, 2200-2210. Soni, N., Sharma, E. K., Singh, N., & Kapoor, A. (2020). Artificial intelligence in business: from research and innovation to market deployment. *Procedia Computer Science*, *167*, 2200-2210.

Strader, T. J., Rozycki, J. J., Root, T. H., & Huang, Y. H. J. (2020). Machine learning stock market prediction studies: review and research directions. *Journal of International Technology and Information Management*, *28*(4), 63-83. https://scholarworks.lib.csusb.edu/jitim/vol28/iss4/3/

Umer, M., Awais, M., & Muzammul, M. (2019). Stock market prediction using machine learning (ML) algorithms. *ADCAIJ: Advances in Distributed Computing and Artificial Intelligence Journal*, *8*(4), 97-116. https://revistas.usal.es/index.php/2255-2863/article/view/21366

Yoon, B., Jeong, Y., & Kim, S. (2020). Detecting a risk signal in stock investment through opinion mining and graph-based semi-supervised learning. *IEEE Access*, *8*, 161943-161957. https://ieeexplore.ieee.org/abstract/document/9184877/