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The Role of Artificial Intelligence Applications in Improving Financial Productivity of Private Placements Firms

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ABSTRACT

This research aims to examine the role of artificial intelligence applications (AI) in enhancing and improving the financial productivity of private equity firms. The study tested 118 private placement firms in Malaysia from 2019 to 2024, by using secondary data and annual reports. The research results indicate that AI is positively associated with improving the financial productivity of private placement firms. AI has become an effective instrument in managing and enhancing operational processes; its advanced analytical capabilities, automation of prediction of market trends, repetitive tasks, and decision-making depend on large amounts of data. A range of AI applications were analyzed, and the AI has become a critical factor in enhancing financial productivity in companies and institutions, with multiple impacts spanning operational, analytical, and strategic aspects.

Keywords: artificial intelligence, financial productivity, private placement firms.

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INTRODUCTION

In recent years, there has been a tremendous improvement in the field of artificial intelligence (AI), making it one of the primary drivers of digital transformation across various economic sectors. Private placement firms are those looking to adopt these advanced technologies to enhance their competitiveness in a rapidly changing and increasingly challenging business environment (Makarov, 2020).

AI offers unprecedented opportunities to enhance operational efficiency by predicting future trends, providing intelligent decision-making support, facilitating large-scale data analysis, and automating processes. Assuming their investment operational flexibility and nature, which distinguishes them from listed firms, PPF can effectively leverage these applications to reduce risks, achieve higher returns, and enhance resource administration.

Issues in Asia are linked to weak financial inclusion and financial productivity. A large proportion of the population in some Asian countries remains outside the formal financial system (for example, banks) (Milana & Ashta, 2021). This leads to poor access to financial services and raised reliance on the informal economy; additionally, a weak digital structure in some regions (Al Naqbi et al., 2024; Al-Saedi & Abbas, 2023). Despite progress in some nations, other nations suffer from weak financial technology, which hinders financial effectiveness. Corruption influences the efficient allocation of resources and hinders the business environment, particularly in small and medium-sized enterprises (SMEs) (Zhong et al., 2024 & Abbas et al., 2023). Weak financial education means that several employees in institutions and individuals decreased enough understanding of how to accomplish money, which negatively influences disparities in economic growth and financial decision-making. Unbalanced economies make a gap in financial productivity among rural and urban areas. Some of Malaysia's specific issues consist a high financial dependence on certain sectors, for example oil and gas, which creates the economy exposed to international market variations. This can put force on productive growth and financial if not managed sustainably (Abdullah et al., 2021). Productivity differences among sectors also found and some sectors (for example financial services and technology) experience high productivity, while others (foe example small businesses and agriculture) suffer from weak performance (Al Naqbi et al., 2024). The absence of financially trained human resources remains a barrier (Abdullah et al., 2021). The need for human resources particular in risk management, financial analysis, and finance remains a barrier, as does little reliance on financial innovation. Underinvestment in

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current financial technologies in some associations is limiting the growth of financial productivity. Modern experiments (post-COVID-19): Slowdowns in supply chains have disturbed capital flows in some sectors. Increasing interest rates and inflation have effected financing decisions and investment.

This research purposes to shed light on how AI adds to enhancing the productivity of private equity companies by analyzing its most strong applied requests, reviewing present studies, models, and evaluating the actual effect of these helps on the quality and productivity of the management decisions (Abbas et al., 2023). The study too provides practical approvals that can support these companies create optimal use of AI capabilities in affecting investment environment. Some of the theories employs in the study is innovation theory, which situations that innovation is a key driver of growth and productivity. Significance, the AI is viewed as an innovation instrument that growths the efficiency of reduces costs and financial operations. Socio-technical systems theory highlights that the success of technology based on its integration with the human systems and social within an organization. Relevance, it shows how AI influences the administrative structure and human resources, and how this interaction influences productivity (Makarov, 2020). One of the challenges facing AI is the absence of experts who association practical knowledge of AI with financial skill. This hinders the application of explanations that directly serve to enhance financial performance (Shiyyab et al., 2023).

LITERATURE REVIEW

Financial productivity means to the efficiency with which financial resources are utilized to attain optimal economic findings. It measures the capability to change financial costs or investments into tangible returns and profitability over a particular period of time. In other words, financial productivity is the return created by every unit of money invested or utilized in investment processes and operational. AI is a part of computer science that purposes to design systems and software accomplished of performing responsibilities typically requiring human intelligence, for example learning, decision-making, and understanding, interacting, analysis, with the environment. Financial productivity is likewise defined as an organization's capability to utilize its financial resources effectively to attain the highest potential return at the while maintaining sustainability, lowest possible cost, and financial growth (Al-Mashhad et al., 2016 & Abbas et al., 2022).

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AI purposes to design systems capable of performing responsibilities that need human intelligence, for example learning, analysis, prediction, language understanding, and decision-making. In the company context, AI means to the utilize of these systems to enhance operational performance, support, increase efficiency, reduce costs customer experience, and analyze data. Between the purposes of AI in businesses is enhancing decision-making. AI utilizes data analysis procedures to consumer behavior and predicts market trends. It assistances managers make strategic decisions depend on accurate data. Raising the efficiency, automating routine tasks, reducing costs (for example customer service or accounting) decreases the need for human resources in repetitive work. Human mistakes are decreased, and the speed of operations is enhancing the customer skill. AI is utilize in the growth of chatbots and digital assistants, providing fast, modified service about the clock. Product development and innovation and, the AI technologies assist improve smart services and products tailored to market requirements. For instance, examining customer behavior to deliver more appropriate products, AI systems are utilized to fast detect security analyze and threats suspicious patterns.

Studies for example McKinsey (2020) and Brynjolfsson et al. (2021) have present that AI assists the firms automate repetitive responsibilities, decreasing the operational costs by up to 30%. The accuracy of the financial transaction improves by the intelligent automation. McKinsey (2022) study the sample of big international firms through different the findings and sectors of AI integration enhanced profitability by 5% to 10% for firms that approved AI tools in supply chains and financial operations. The findings of AI provide forecasting analytics that assist sort more faster strategic decisions and accurate. The Studies of Harvard business evaluation study found that directors who utilize AI-powered data analytics instruments create decisions with an advanced profit influence. PwC research (2020) showed that AI can enhance sales predicting accuracy by up to 50%. The operations management and supply chain, the AI can forecast demand, optimize transportation and distribution, and manage inventory.

In e-commerce corporations similar Amazon, AI is utilized to recommend products to customers. In banks, it is utilized to analyze loan risks and detect in manufacturing. AI is joined into robotics to enhance reduce downtime and manufacturing. AI is a vital factor of firm’s transformation to innovation, digitalization and increasing their capability to compete in current markets. Assuming it is no longer a selection; it has become a requirement to

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ensure sustainable and survival development in a fast-paced business environment. There are few prior studies, therefore this paper examination the association among the AI requests and financial productivity of private placement firms.

RESEARCH METHODS

This research utilized the data was composed from “Datastream” from 2019 to end the 2024. This study selected the dated up to 2019 due to various productive activities in the 2019 annual reports recorded in “Bursa Malaysia.

Measurements of variables

The reporting year in 118 firms in Bursa Malaysia was a selection of" as ending sample "cover the period from the 2019-2024. This study utilizing the return on assets (ROA) to measure the financial production. The AI is used for the“measure by “index with a scale of 0 to 1, where a score of 1” is for information disclosure, and 0 for the “non-disclosure”. “To the profitability measured by utilizing the return on equity (ROE). The leverage measured by the percentage of total debts to total assets”. The company age measured by the corporate age is investigated by utilizing the log of the number for the years since the establishment. The figure 1 presents the AI and financial productivity percentage. Furthermore the Table 1 shows the variables measures.

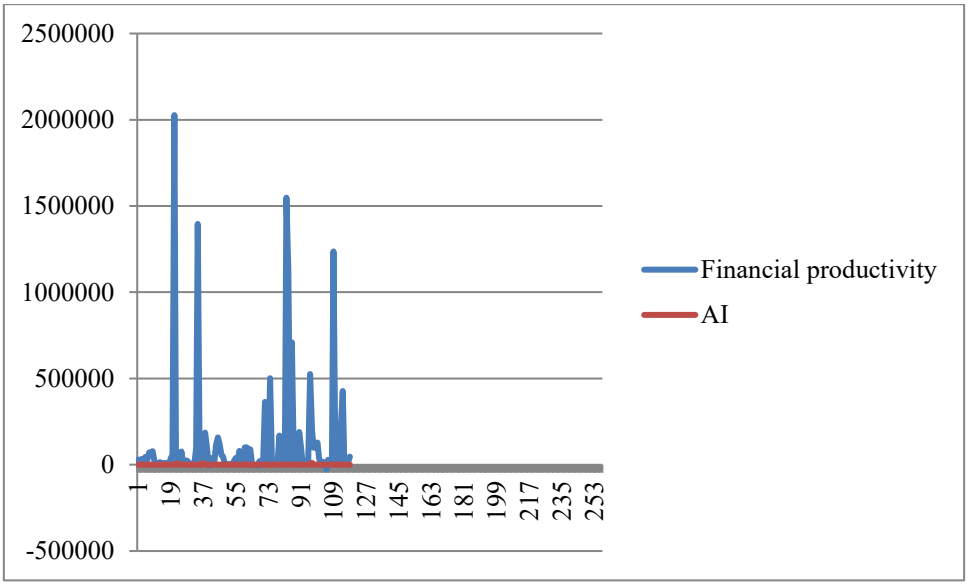

Figure 1: Presents the AI and financial productivity percentage

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Table 1: *Measurements of Variables*

Name	Measurement
"Dependent Variable"	
Financial Productivity	Measured by using the return on assets (ROA).
"Independent Variable"	
Artificial Intelligence	AI is "measured by using an "index with a scale of 0 to 1, where a score of 1" is for information disclosure, and 0 for "non-disclosure".
Control Variables	
Profitability	"Return on equity (ROE) = net Income/shareholders' equity".
Leverage	The percentage of total debts to total assets.
Company age	The company age is tested by employing the log of the number for the years since the establishment.

The model is examination the connection among the AI and financial productivity in private placement firms. This study employed an "ordinary least squares" (OLS) as a regression examination. "This research assumed the results by employing this model to enhance their comparability to that of additional evaluations. The model under explains the connection".

$$FP_{it} = \beta 0 + \beta 1\, AI_{it} + \beta 2\, PRO_{it} + \beta 3\, LEV_{it} + \beta 4\, CAGE_{it} + \varepsilon$$

RESULTS

Descriptive analysis

The "descriptive statistics" shows the study variables in the Table 2 in the sample of 118 in private placement firms in "annual reports" and DataStream data from 2019 to 2024. The financial productivity shows a mean with 0.082 and while AI shows 4.995.

Table 2: *Descriptive Statistics*

Variables	Obs	Mean	Std. Dev.	Min	Max
Financial Productivity	118	0.082	0.148	0.000	0.700
AI	118	4.995	1.680	0.970	11.437
Profitability	118	0.346	2.152	-0.702	23.165
Leverage	118	0.152	0.160	0.000	0.887
Company age	118	16.948	13.583	1.000	88.000

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The statistical software Stata 2014 is utilized for variables analysis. The mean profitability is 0.346. The mean of leverage was presents as 0.152. The company age with mean 16.948. “From the descriptive statistics, the range for financial productivity is wide, with the min 0.000 and the max being 0.700. The AI with min of 0.970 and a max of 11.437.

Correlation analysis

Table 3 shows that “Multicollinearity” was not an issue in all variables in this research; all variable values are under 0.80 (“Hair et al., 2010”). Table 3 presents that AI is positively and strongly correlated with financial productivity. But the profitability, leverage, and company age are negatively correlated with financial productivity.

Table 3: *Correlation Test*

variables	Financial Productivity	AI	Profitability	Leverage	Company age
Financial Productivity	1.000				
AI	0.184*	1.000			
Profitability	-0.043	-0.024	1.000		
Leverage	-0.022	0.019	-0.099	1.000	
Company age	-0.017	-0.062	-0.100	0.189	1.000

AI decreases the time and cost of financial processes for instance auditing, financial analysis, and reporting. This saves financial resources, human, and attains best financial performance. Creating faster decisions and accurate of AI instruments utilize large and analyze and it at a quickness exceeding human abilities. Providing enhances the reduces investment risks and quality of financial decisions. Intelligent financial predicting and the AI assists predict demand, cash flows, and market trends, allowing financial management to plan strategically and enhance the profitability. AI-depend on systems furthermore decrease human errors in data access and enhancing, analysis, confidence in financial findings and enhancing the financial management efficiency.

Regression test

The findings described for the model show a positive and strong link among AI and financial productivity (t=1.080, p-value=0.028). The profitability and leverage shows a positive and strong link with financial productivity. However the company age is negativilly linked with financial productivity.

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Table 3: *Regression Test*

variables	t.stat	sig
AI	1.080	0.028*
Profitability	4.601	0.064*
leverage	2.801	0.078*
company age	-1.001	0.091*
constants	7.481	0.261
Sample	118	
R-squred	13.4%	
Adjusted- R-squred	22.5%	
f-value	0.8279	

The Consequences presented that the request of AI adds to decreasing operating costs by enhanced resource management and automation. This leads to improved profit margins and net profit. Improved productivity, the AI has added to increasing the employee productivity by decreasing time wasted on routine responsibilities. Organizations utilizing AI have seen an important development in overall financial performance. AI adds to enhanced decision-making and the utilize of AI approaches in its analysis and financial data has helped the companies create earlier and better decisions. This has reduced financial mistakes and enhanced the probabilities of successful the investments. As well as the contributes to enhanced the returns and revenues. Many studies have showed that firms utilizing the AI have knowledgeable more income growth related to traditional firms. This is due to enhanced smart marketing, customer experience, and a long-run strategic shift. AI is no longer just a practical instrument; it has become an essential part of the financial strategy of important organizations. AI is a crucial factor in enhancing achieving financial sustainability and competitiveness it also improves high ROI in the long run. Though the initial investment in AI might costly, its financial revenues are clearly evident in the long term and medium. AI is a key driver of enhancing financial productivity by increasing revenue, decision-making efficiency, reducing costs, and supporting operational. Firms that approve these tools early attain a clear financial advantage over their competitors (Abbas et al., 2022).

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CONCLUSION AND RECOMMENDATIONS

The results described for the model indicate a strong and positive link between AI and financial productivity. The profitability and leverage present a positive and strong link with financial productivity. However, the company age is negatively associated with financial productivity.

AI enhances operations, reducing time and resource waste and resulting in lower costs and increased financial productivity. It also adds to enhancing reducing costs, operational efficiency, and supporting the quality of financial decision-making. Concluded large data analysis, AI assists proactive analyses and accurate financial forecasts and that enhance administration decisions. Supporting profits in the long term and medium by smart investments in AI tools makes positive financial revenues over time, particularly in the service sectors and industrial. Attaining the companies that rely and competitive advantage, on AI attain financial superiority associated to traditional firms, principally in digital markets. The influence differs based on the type of the size and industry of the organization. Human abilities are a complementary component. Maximizing the assistances of AI cannot be attained without the human resources accomplished of analyzing their results and operating the systems.

This study recommends continued investment in AI technologies in firms that are emerging a strategic plan to add AI into financial operations, as portion of a sustainable digital transformation. Advancing human resources, qualification programs, and the organizing training for employees on AI instruments and financial analytics to support human-machine interaction. Implementing data analysis instruments, adopting smart financial administration systems and smart accounting systems to correctly track financial performance. Building technical companies and collaborating with technology firms and research centers to improve customized AI results that enhance the financial institutions' efficiency. Showing institutions should monitor and forecast investment profit assessments and influence of AI tools on their financial performance by clear financial indicators. Encouraging the universities and limited research and studies, should support research that targets the association among AI and financial productivity in business environments.

Additional significant recommendations for financial productivity contain supporting capital administration efficiency, carefully choosing investments by the utilize of developed financial analysis instruments, supporting the financing structure to decrease capital costs by

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a kind mix of equity and debt, and wisely using leverage to maximize revenues while reducing the risks linked with unnecessary debt. These approvals also contain digital transformation, utilizing technology, and automating administrative and financial processes to decrease lower operating costs and waste. Examining large data to enhance anticipate trends and investment decisions. Adopting AI to predict financial performance and analyze risk. Enhancing the performance of investee firms, working to raising the operational efficiency of portfolio firms by optimizing the reducing costs and supply chain. Reform the managerial and financial structures of weak firms to create them more profitable before exiting. Providing the strategic enhance to these firms, supporting exit strategies, advancing an exit plan from the outset, enhancing timing for exits when the market value is at its top, and making firms for exits by enhancing the regulatory compliance and financial performance. Supporting corporate governance, and transparency, and risk management creating a strong internal control system. Adherence to global governance, standards accounting and providing accurate and clear forecast financial reports to investors. Interesting investors and enhancing the links with them. Emerging a clear marketing strategy to interest new investors and providing clear and well-thought-out performance reports that focus the value of revenues and successes. Maintaining strong, trust-based relationships with existing investors and expanding sources of investments to avoid relying on a single sector and income, but rather allocating investments through many attractive sectors (healthcare, sustainable industries, and technology, etc.). Growing the scope of investment geographically to attain the revenues from diverse markets.

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