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THE FINANCIAL IMPLICATIONS OF ARTIFICIAL INTELLIGENCE INTEGRATION IN HUMAN RESOURCE MANAGEMENT: A STUDY OF MALAYSIA'S MANUFACTURING SECTOR

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Abstract:

This research investigates the relationship between the financial implications of implementing Artificial Intelligence (AI) in Human Resource Management (HRM). As organisations' operational costs continue to increase with challenging workforce management, AI becomes a transformative solution to streamline HR processes, reduce dependency on manual processes, and enhance cost efficiency. This research aims to explore how AI technologies can be effectively utilised to automate key HR functions such as talent acquisition, payroll administration, performance management, learning and development, thereby enabling better resource allocation and productivity. Grounded in theoretical frameworks including the Technology Acceptance Model (TAM), Resource-Based View (RBV), and Cost-Benefit Analysis (CBA), this research evaluates the perceived usefulness, strategic value, and return on investment of AI in HR. A mixed-methods approach is adopted, combining quantitative surveys and secondary data analysis with qualitative interviews to provide a comprehensive perspective on AI adoption outcomes. The findings are expected to offer actionable insights into the implementation strategies, benefits, and challenges of using AI in HR, especially in the context of the Malaysian manufacturing sector. The study aims to support HR decision-makers in adopting data-driven, cost-effective solutions that promote strategic

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agility. Ultimately, this research contributes to the broader understanding of digital transformation in HR and underscores the potential of AI to improve financial performance, operational efficiency, and long-term organisational sustainability.

Keywords:

Artificial Intelligence, Talent Acquisition, Cost-Efficiency, Financial Performance

Introduction

The purpose of this study is to investigate the financial impact of implementing Artificial Intelligence in Human Resource Management, more specifically in the talent acquisition process within Malaysia. According to the Department of Statistics Malaysia (DOSM), the manufacturing sector employed more than 2.3 million workers through the year 2023. Employers face substantial challenges as a result of rising talent acquisition costs, which are anticipated to range between RM4,000 to RM6,000 per new hire (JobStreet, 2022; SME Corp Malaysia). The Malaysia National Artificial Intelligence Roadmap 2021–2025 presents a comprehensive national strategy that emphasises human resource management that aiming to enhance operational efficiency and reduce costs by automating HR processes such as talent acquisition and employee recruitment.

It is highlighted that more than 95% of Fortune 500 companies leverage an AI platform to track the application of the candidate for their hiring process (Fuller et al., 2021). This is supported by the survey conducted by the Society of Human Resource Management indicates that more than 75% of business owners make use of AI in sourcing talent (Friedman, 2023). Therefore, AI in HRM is used to reduce cost, save time, and expedite and simplify the talent acquisition process (McDonald et.al., 2017; Kumar, 2019).

Meanwhile, Huang et.al. (2002) acknowledge that talent acquisition is important and crucial, and HR is struggling to attract a suitable candidate to fill the vacant position. The wrong hiring process could lead to disappointment for the employer and employee and contribute to the high turnover. High turnover is a global issue faced by all businesses, and it costs organisations (Agrusa & Lema, 2007; Pietersen & Oni, 2014) and contributes to the productivity decline (Huffman, Casper, & Payne, 2014). Therefore, talent acquisition in HRM plays a vital role, involving significant investment to attract and select suitable candidates, and groom them for onboarding into the organisation (Singh, 2018). This study aims to investigate the influence and relationship between AI, HRM, and the financial performance of an organisation. By examining these variables, this study aims to gain a deeper understanding of the strength of the influence and relationship.

Research Question

Based on these, two research questions were identified as follows.

1: Does HRM influence the financial performance of organisations?
2: Does Artificial Intelligence moderate the relationship between Human Resources Management and the financial performance of an organisation?

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Research Objective

The study aimed to achieve two main objectives, as outlined below.

1: To examine the influence of Human Resources Management on the financial performance of an organisation.
2: To investigate the moderating role of Artificial Intelligence on the relationship between Human Resources Management and the financial performance of an organisational.

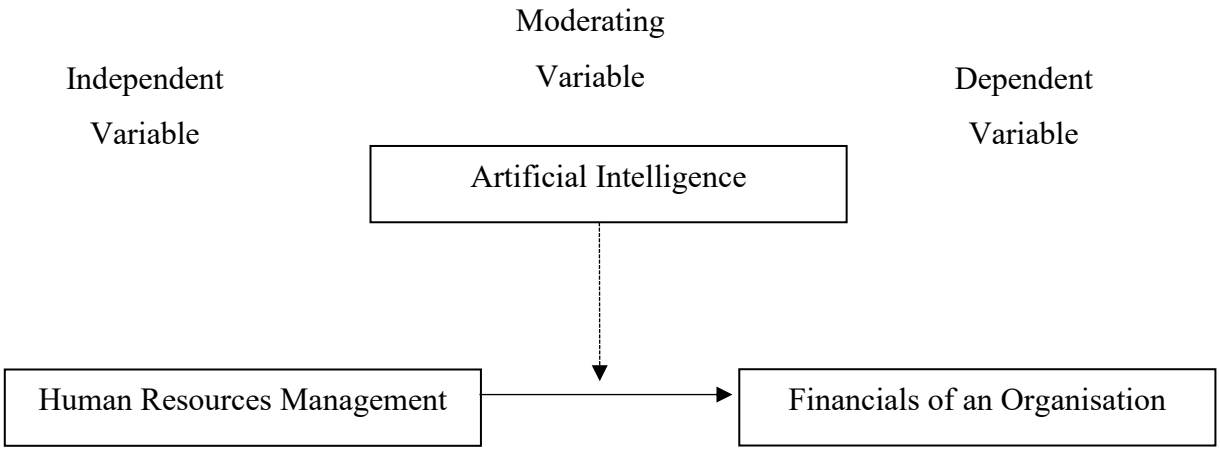

Figure 1: Conceptual Framework

Literature Review

Practising AI technology in a day-to-day business activity is important and frequently discussed in current business operations. The topic and subjects have become a must for all levels of employees, especially white-colored professionals. Technology based on AI were discussed and studied in several industry including Robot in tourism (Ivanov & Webster, 2017; Tussyadiah & Park, 2018: Tussyadiah & Miller, 2019), Intelligent personal assistant (Han & Yang, 2017), self-drive vehicle (Shaltoni, 2016), and implication of AI in recruitment (Upadhyay and Khandelwal, 2018).

Underpinning Theory

The manufacturing industry is one of the sectors that benefit from the development of technology, especially AI in human resources. It does help the industry to automate performance management, training and development, and talent acquisition by reducing its operational cost (Zaied Shouran & D. Ali, 2024). Transforming a conventional process in manufacturing to become a smart factory by leveraging AI indeed reduces downtime and minimises waste, which leads to profitability and improves cost efficiency (Kulasekhara Reddy Kotte, 2024). However, there is an obstacle for this, which is employee adaptation, initial cost investment, cybersecurity and the ability for humans to oversee the AI implementation capability (Zaied Shouran & D. Ali, 2024; Kulasekhara Reddy Kotte, 2024).

Technology adoption and productivity are somehow related (Abdallah, 2016). In the recent study by Emeka et. al (2015), the adoption of technology leads to productivity, is also depends on the organisational strength. De Vass et. al. (2018) indicated that organisational productivity improvement is eventually related to its affordability and resources. Therefore, the manufacturing industry may review the value of the technology implementation of its

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infrastructure, including investment in computers, networks, communications technologies and data accessibility. This results in the ability of manufacturing to achieve the expected outcome (Che & Zhang, 2016; de Vass et.al.,2018).

Technology Acceptance Model (TAM)

The underpinning theories is Technology Acceptance Model (TAM), which was the most widely applied theory to assess user acceptance of AI technologies, and it was introduced by Davis (1989). The model is still considered the most popular theoretical framework for research on technology adoption (Feng et al., 2021). The model suggests that when humans are exposed to a new technology, a number of factors influence their decision about how and when they will use it notably (Davis, 1985, 1989). When effectively implemented, the Technology Acceptance Model can assist the organization in enhancing its processes, so it benefits both the organization and user. Referring to Wyatt (2002), information technology is crucial in organizational as it does helps to achieve the objectives and goals in expected time bound and able to make simultaneously strategic business decisions. Nevertheless, there is a study that shows that the lack of user acceptance regarding technology has been identified as obstacles and challenges for the organization to move forwards (Gould, Boies, & Lewis, 2011).

Cost-Benefit Review (CBA)

CBA is the most well-known technique to identify differences between projects as it does provide comparisons of each and surfaces all costs and benefits (Williams, 2008). It is also able to provide information for decision making purposes whether to expand more in capital expenditure (CAPEX) or how much more to spend according to respective organization affordability. The organization is also able to choose between two or more items, product, material to purchase according to the length of usability hence, CBA would help an organization to make an informed decision in these situations (Mott Lin, 2010). According to AL-Obaidi and Salman (2019), the size of the company also needs to be taken into consideration, and it does influence cost benefit analysis outcome. For instance, small medium enterprises easily can apply CBA as is relatively easy and straight forward but as for large organization, it may face challenges depending on their level of complexity. From the review above, the following research hypothesis is proposed for further development.

Resource-Based View (RBV)

Another foundational theory is the Resource-Based View (RBV). It does offer a valuable concept to which the implementation of AI in HRM can be measured. Started by Wernerfelt (1984), RBV shows that the organisation can achieve sustainable competitive advantage via the effective practice of valuable, rare, inimitable, and non-substitutable resources (VRIN). The study does include both tangible and intangible assets such as knowledge and technologies. In the scope of HRM within Malaysia's organisation, a predictive hiring trend or algorithm and staffing analytics can be conceptualised as strategic HRM. This is because of the ability to streamline mass data for hiring and reduce the operational costs using the RBV. Understanding the nature of Malaysia's organisation environment with multi-labour background, the shortages of labour, changes of rules and regulations and technological disruption, it is necessary for the organisation not only to depend on HRM strategy but also to be able to mitigate and adjust the situation. In line with Kero and Bogale (2023), organisations must be able to show the ability to keep adapting and improvise their internal resources with the external changes such as executive level to work around AI facilities and familiarise themselves with the fastest technological changes.

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Hypotheses

Thus, two hypotheses developed for this study are as follows.

H1: HRM positively influences the financial performance of an organisation
H2: AI moderates the relationship between HRM and the financial performance of an organisation

Methodology

A mixed methods approach is adopted, combining quantitative surveys and secondary data analysis with qualitative data collection methods to provide a comprehensive perspective on AI adoption outcomes. Quantitative data will be collected through structured surveys distributed to HR practitioners in Malaysia's organisation, focusing on AI adoption, cost implications, and perceived effectiveness. The target population is the HR practitioner, especially those working in the manufacturing industry, with 350 sample size. The state of Selangor is one of the main job providers and contributors, supported by a long list of factories with multiple businesses across the state; therefore, the study uses stratified random sampling. This ensures statistically representative feedback from key subgroups, including managers, assistant managers, senior executives, executive officers or direct personnel responsible for the hiring. Proportional allocation within strata allows valid group comparisons and generalizable findings on overall satisfaction and concerns (Creswell & Plano Clark, 2017).

Qualitative insights, purposive sampling (criterion and maximum variation) is ideal. The sampling should have direct AI experience (criterion). Deliberately diverse roles, tech comfort, tenure, and location (maximum variation). This explains the reason behind quantitative data and contextual barriers (Palinkas et.al., 2015; Patton,2015). Secondary data will also be utilised from industry reports and academic literature to support the findings. The study will employ theoretical frameworks such as the Technology Acceptance Model, the Resource-Based View, and Cost-Benefit Analysis to examine the potential of artificial intelligence in enhancing human resource functions and promoting cost-effective operational strategies.

SmartPLS version 4.0 is a suitable analytical tool to assess validity, reliability, and test the study's hypotheses (Hair et al., 2017). The rationale for employing SmartPLS lies in its suitability for structural equation modelling (SEM) and its capacity to handle complicated interrelationships among variables, making it particularly effective for research designs that involve several constructs and convoluted pathways (Hair et al., 2017). SmartPLS is preferred when the goal is to predict latent constructions rather than clarify observable data. This aligns with the objectives of this research, which prioritise understanding the essential relationships. Additionally, SmartPLS is well-known for its effectiveness in handling small sample sizes, offering an advantage in scenarios where obtaining extensive data may pose challenges (Hair et al., 2017)

Discussion

This research emphasises the importance of aligning AI integration with organisational goals, supporting the process with robust theoretical frameworks, and ensuring employee readiness through appropriate training and change management. To support the AI integration with organisational goals research, there are leading companies have embarked on adopting technology for talent acquisition (Phillis-Wren *et.al.,* 2016). The implementation of artificial intelligence in human resource operations presents considerable financial and operational benefits for Malaysia's organisation. These benefits revolve mostly around the enhancement of

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efficiency, the reduction of costs, and the improvement of strategic decision-making. Despite the clear advantages, the plan's successful execution depends on overcoming challenges like investment costs, a lack of expertise, and organisational resistance. The research highlights how important it is to match the integration of artificial intelligence with the goals of the organisation, support it with proper frameworks, and ensure that employees are prepared. It is possible for businesses to improve their human resource capabilities, drive long-term sustainability, and maintain their competitive edge in an increasingly digital landscape if they adopt artificial intelligence with careful consideration.

Conclusion

This study significantly presents a detailed explanatory framework aimed at examining the relationship between AI, HRM, and the financial consequences for an organisation. The analysis conducted through SmartPLS will determine if AI serves as a significant moderator in the relationship between HRM and an organisation's financial performance. This study is among the first to explore the role of AI as a significant factor in organisations, particularly in HRM, and its potential to enhance the organisation's financial performance. By identifying key metrics and pathways through which AI influences HRM practices, the research aims to provide valuable insights for practitioners and scholars alike.

Ultimately, the findings could pave the way for more strategic implementations of AI technologies within human resource frameworks, fostering improved financial outcomes. This approach will also highlight the capabilities of AI and encourage organisations to utilise it to process and make informed decisions based on available data. As a result, businesses will be more efficient in navigating the complexities of the modern workforce while maximising their overall efficiency and effectiveness.

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References

Abdallah, A. H. (2016). Does credit market inefficiency affect technology adoption? Evidence from Sub-Saharan Africa. Agricultural Finance Review, 76(4), 494–511. https://doi.org/10.1108/AFR-05-2016-0052

Agrusa, J., & Lema, J. D. (2007). An examination of Mississippi gulf coast casino management styles with implications for employee turnover. UNLV Gaming Research & Review Journal, 11(1), 2.

AL-Obaidi, A. Q. H., & Salman, A. M. (2019). The adoption of cost-benefit analysis as an indicator for evaluate the accounting performance of business entities (the case study for Canadian railway). Academy of Accounting and Financial Studies Journal, 23(3), 118.

Che, Y., & Zhang, L. (2016). Human Capital, Technology Adoption and Firm Performance: Impacts of China's Higher Education Expansion in the Late 1990s (Human Capital, Technology, Firm Performance). The Economic Journal, 128(614), 2282–2320. https://doi.org/10.1111/ijlh.12426

Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and Conducting Mixed Methods Research.* Sage. (Quantitative representativeness)

International Journal of Innovation and Industrial Revolution
EISSN: 2637-0972 IJIREV
Volume 7 Issue 22 (September 2025) PP. 793-800
DOI 10.35631/IJIREV.722045
Davis, F. D., (1986). A Technology Acceptance Model for Empirically Testing New End-User Information Systems. Theory and results. Dissertation. Sloan School of Management, Massachusetts Institute of Technology.

Davis, F. D., (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 319-340

Department of Statistics Malaysia. (2023). *Labour force survey report, Malaysia, 2023*. https://www.dosm.gov.my

Feng, G. C., Su, X., Lin, Z., He, Y., Luo, N., & Zhang, Y., (2021). Determinants of technology acceptance: Two model-based metaanalytic reviews. Journalism & Mass Communication Quarterly, 98(1), 83-104

Fuller, J.B., Raman, M., Sage-Gavin, E. and Hines, K. (2021), "Hidden workers: untapped talent", *Harvard Business School and Accenture*, available at: https://www.hbs.edu/managing-the-futureof-work/research/Pages/hidden-workers-untapped-talent.aspx.

Fred D. Davis (1993). User Acceptance of Information Technology: System Characteristics, User Perceptions and Behavioral Impacts. University Michigan, Business School, Ann Arbor, USA, 38,475-485.

Friedman, G.D. (2023), *Artificial Intelligence Is Increasingly Being Used to Make Workplace Decisions–But Human Intelligence Remains Vital*, available at: https://fortune.com/2023/03/13/ artificial-intelligence-make-workplace-decisions-human-intelligence-remains-vital-careers-techgary-friedman.

Hair, J.F., Hult, G.T., Ringle, C. M., & Sarstedt, M. (2017). "A primer on partial least squares structural equation modelling (PLS SEM)". California: Sage Publication, Inc.

Huffman, A. H., Casper, W. J., & Payne, S. C. (2014). How does spouse career support relate to employee turnover? Work interfering with family and job satisfaction as mediators. Journal of Organizational Behavior, 35(2), 194-212. doi:10.1002/job.1862

JobStreet. (2022). *Hiring, compensation & benefits report: Malaysia*. SEEK Asia. https://www.jobstreet.com.my

Kero, C. A., & Bogale, A. T. (2023). A systematic review of resource-based view and dynamic capabilities of firms and future research avenues. *Open Journal of Business and Management, 11*(10), 3747–3766. https://doi.org/10.4236/ojbm.2023.1110207.

Kumar, S. (2019), "Artificial intelligence divulges effective tactics of top management institutes of India", Benchmarking: An International Journal, Vol. 26 No. 7, pp. 2188-2204.

McDonald, K., Fisher, S. and Connelly, C.E. (2017), E-HRM Systems in Support of "Smart" Workforce Management: An Exploratory Case Study of System Success, Emerald Publishing, doi: 10.1108/978-1-78714-315-920161004.

Ministry of Science, Technology and Innovation. (2021). *Malaysian Artificial Intelligence Roadmap 2021–2025 (MARI)*. https://www.mosti.gov.my

Palinkas, L. A., et al. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health, 42*(5), 533-544. (Qualitative criterion/max variation)

Patton, M. Q. (2015). *Qualitative Research & Evaluation Methods* (4th ed.). Sage. (Maximum variation sampling rationale)

Pietersen, C., & Oni, O. A. (2014). Employee turnover in a local government department. Mediterranean Journal of Social Sciences, 5(2), 141-153. doi:10.5901/mjss.2014.v5n2p141

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IJIREV
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DOI 10.35631/IJIREV.722045
Phillips-Wren, G., Doran, R. and Merrill, K. (2016), "*Creating a value proposition with a social media strategy for talent acquisition*", Journal of Decision Systems, Vol. 25, pp. 450-462.

Ranadheer Reddy Charabuddi. (2025). The Future of Human-AI Collaboration in Manufacturing Finance: Streamlining Cost Management and Vendor Payments. *Journal of Computer Science and Technology Studies*, *7*(3), 525-532

Singh, N. (2018), "*Strategic human resource practices for innovation performance: an empirical investigation*", Benchmarking: An International Journal, Vol. 25 No. 9, pp. 3459-3478.

SME Corporation Malaysia. (2021). *SME insights and HR best practices*. https://www.smecorp.gov.my

Shouran, Z., & Ali, D. A. (2024). *The implementation of artificial intelligence in human resources management*. Journal of International Conference Proceedings, 7(1), 244-258

Stathatos, E., Benardos, P. and Vosniakos, G.-C. (2024), "Ethical Challenges in the New Era of Intelligent Manufacturing Systems", Stelios, S. and Theologou, K. (Ed.) *The Ethics Gap in the Engineering of the Future*, Emerald Publishing Limited, Leeds, pp. 51-82

Upadhyay, A. and Khandelwal, K. (2018), "*Applying artificial intelligence: implications for recruitment*", Strategic HR Review, Vol. 17 No. 5, pp. 255-258.

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal, 5*(2), 171–180. https://doi.org/10.1002/smj.4250050207.

Williams, B. (2008). Cost-benefit analysis. Economic & Labour Market Review, 2(12), 67–70.