

ARTIFICIAL INTELLIGENCE ADOPTION ACROSS EMPLOYMENT SECTORS: A COMPARATIVE STUDY

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Abstract. Artificial intelligence has become a central component in organizational operations due to its rapid technological advancement. The increasing demand for digital competencies in the workplace has made artificial intelligence become more significant in Industrial Revolution (IR) 4.0. This study aimed to examine the differences in artificial intelligence adoption across employment sector among UiTM sports graduates. A quantitative cross sectional research design was selected involving 369 employed UiTM sports graduates. Respondents were selected using a stratified random sampling. Data were collected using a structured questionnaire that consisting of seven items on artificial intelligence adoption adapted from previous research. An independent sample t-test was used to determine the differences of artificial intelligence adoption between public and private organizations. The findings indicate a non-significant difference in artificial intelligence adoption across employment sector ($p = 0.11 > 0.05$). The result suggests that both sectors have increasingly adopting artificial intelligence into workplace, resulting in similar utilization of digital technologies in completing task efficiently. This finding also emphasizes that organizational initiatives like upskilling and reskilling program contributed to the comparable integration of artificial intelligence. Additionally, the growing national emphasis on digital transformation and inclusive artificial intelligence development further supports balance technological adoption across public and private organization. With that, this study contributes empirical evidence to the existing body of literature on artificial intelligence and graduate employability within the Malaysian context. Practically, this study may assist organizations, educational institutions, and policymakers in promoting effective artificial intelligence adoption and digital competency development in the organization. Future studies are recommended to include broader graduate population and other variables in examining the adoption of artificial intelligence within a workplace.

Keywords: *artificial intelligence, working sector, higher education, sports graduates, Malaysia*

Introduction

The capacity to facilitate the completion of tasks or product output, including electronic devices or robots (Marquardt and Kearsley, 2024), and information and multimedia systems, such as computers, the Internet, networks, and social media, are recognized as technology (Vesić et al., 2023). Different aspects of life are influenced and could be fundamentally altered by technological advancements. Harnessing technology is especially pivotal for public and private organizations to ensure efficiency in completing tasks and maintaining a competitive edge. Artificial intelligence has

become an increasingly vital part of organizational operations due to rapid technological advancements during the Fourth Industrial Revolution (IR 4.0). Organizations have attained advanced innovation levels from the broad implementation of artificial intelligence, including operational efficiency, as time requirements and accuracy of processes have been significantly improved. The flexibility of artificial intelligence also permits continuous learning and enhancement, crucial parameters for stimulating the work environment, further emphasizing the necessity for adopting artificial intelligence to boost individual and organizational growth to unprecedented levels. Applied to most daily human activities, including guidance, data acquisition, and sorting, artificial intelligence refers to the utilization of advanced technological mechanisms, such as machine learning, robotics, and natural language processing (NLP), to stimulate human cognitive functions and navigate potential constraints (Wijayati et al., 2022). Artificial intelligence also offers the capacity to improve task efficiency and reveal latent trends and patterns. Therefore, proficiency in this technology is crucial for employees to effectively oversee tasks of varying complexities (Morandini et al., 2023). Individuals equipped with these skills also have a substantial edge in the workplace due to their ability to execute tasks rapidly and efficiently.

Organizations have been driven by the digital revolution to adopt modern operational methods to improve employee efficiency. The effective adoption of artificial intelligence would improve employees' skills and capabilities, potentially leading to higher job performance (Safwan and Ahmad, 2024). Implementing artificial intelligence in the workplace is also a primary factor in enhancing and sustaining employability and job performance, effectively reshaping the job landscape and graduate employability (Johnson et al., 2021). However, private organizations typically adopt artificial intelligence more aggressively than the public sector (Danielsson and Uthemann, 2023). Mellouli et al. (2024) argued that the public sector trails the private sector primarily due to the limited practical implications of adopting artificial intelligence. Van Noordt and Tangi (2023) also suggested that insufficient technical expertise in managing artificial intelligence has prevented the public sector from leveraging its technological competency. Conversely, Jimenez-Gomez et al. (2020) revealed that the public sector has been utilizing artificial intelligence at a higher rate than its private counterpart, arising from the significant implications of the advancement on the development of governance. However, Hickok (2024) and Guedes and Oliveira Júnior (2024) reported no significant variations in artificial intelligence adoption between the public and private sectors. Both organizations have been utilizing artificial intelligence for operational advancement to elevate organizational efficiency. These findings underscore that the public sector invested in artificial intelligence development due to its significant benefits for employees' development. Investing in artificial intelligence technology might considerably elevate proficiency in the private sector in Saudi Arabia (Al-Ayed, 2024), as it could enable employees to proactively manage their responsibilities to achieve organizational goals. Artificial intelligence adoption within the private sector in the Kingdom of Saudi Arabia was swifter than in the public sector (Bakr et al., 2023) due to its potential in influencing decision-making. The observation aligned with the findings in previous studies, suggesting the tendency of private organizations to adopt artificial intelligence to enhance decision-making (Rajagopal et al., 2022). Meanwhile, the private sector in India utilizes artificial intelligence to ensure that the services offered are tailored to customer satisfaction (Sahoo and Chauhan, 2023) and enhance

risk management and operational efficiency compared to the public sector (Singh, 2022).

Previous scholars predicted the displacement of 85 million jobs by 2025 due to the reallocation of tasks between humans and machines (Schwab and Zahidi, 2020). As artificial intelligence is among the top 10 essential skills for the future workforce (World Economic Forum, 2023), competency in understanding and exploiting artificial intelligence technologies provides a competitive advantage by providing an upper hand in navigating the evolving demands of the labor market (Shokran et al., 2025). Graduates with inadequate technological proficiency face a greater risk of short job tenure and reduced employability. Marr (2022) also revealed that individuals failing to acquire or adapt to artificial intelligence are increasingly disadvantaged in the labor market. The skill gap directly impacts job performance when these individuals fail to meet the requirements of the industry, posing a challenge in maintaining the notable performance of the organization. The organizational settings across the public and private sectors are considerably affected by the implementation of artificial intelligence. Integrating artificial intelligence not only enhances organizational efficiency but also fosters a positive perception among employees regarding the technology. As artificial intelligence becomes increasingly integrated into workplace settings, differences in Human Resource Management (HRM) practices between public and private organizations may influence how employees utilize the technology in today modern workforce (Ahmad et al., 2022). In this study, the variations in artificial intelligence adoption across public and private sectors were discussed. Therefore, this study aimed to assess differences in artificial intelligence adoption across employment sectors among UiTM sports graduates, simultaneously addressing a critical empirical gap in the graduate and educational management literature in Malaysia.

Materials and Methods

This study employed a quantitative cross-sectional research design to examine differences in artificial intelligence adoption between UiTM sports graduates employed in public and private organizations. A total of 369 employed graduates from five UiTM campuses participated in the study. Respondents were selected using stratified random sampling to ensure adequate representation across employment sectors. Data were collected using a self-administered questionnaire. The artificial intelligence adoption construct consisted of seven items adapted from Paschen et al. (2019) and Wijayati et al. (2022). All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Prior to the main data collection, a pilot study was conducted to assess the reliability of the research instrument. The findings confirmed that the instrument was suitable for the main study. The artificial intelligence adoption scale demonstrated acceptable internal consistency, with a Cronbach's alpha coefficient of 0.78, exceeding the recommended threshold for reliability. The measurement of artificial intelligence adoption was structured to capture respondents' engagement with artificial intelligence within contemporary organizational environments. The selection of the artificial intelligence adoption items was informed by previous research examining the role and implications of artificial intelligence in organizational and employee-related contexts. In particular, the instrument incorporated items adapted from research addressing artificial intelligence and its implications for organizational knowledge and employee performance (Wijayati et al., 2022; Paschen et

al., 2019). This approach provided an appropriate basis for examining artificial intelligence adoption among employed UiTM sports graduates working across different employment sectors. The questionnaire format also enabled the same measurement structure to be administered consistently to respondents from both public and private organizations, thereby supporting direct comparison between the two groups.

This sector-based comparison is particularly relevant because previous studies have examined artificial intelligence within both public organizational settings and broader organizational contexts, highlighting the increasing importance of understanding how artificial intelligence is incorporated into different working environments (Guedes and Oliveira Júnior, 2024; Mellouli et al., 2024; Van Noordt and Tangi, 2023). In addition, research concerning artificial intelligence and employee performance provides an important conceptual basis for considering adoption from the perspective of individuals operating within organizations (Wijayati et al., 2022). The use of a standardized five-point Likert scale across the seven artificial intelligence adoption items ensured that all participants responded using a common measurement framework. Consequently, the resulting scores provided a consistent quantitative representation of artificial intelligence adoption that could be used to assess differences between graduates employed in public and private organizations while maintaining alignment between the study's measurement approach and its primary comparative objective. Following data collection, responses from the 369 participants were organized according to employment sector to facilitate comparison between UiTM sports graduates working in public and private organizations. The analytical approach was aligned with the primary objective of determining whether artificial intelligence adoption differed according to employment sector. This comparison is relevant to the broader literature because artificial intelligence has been examined in relation to public-sector capabilities, organizational decision-making, employee performance, and the development of technologically responsive workplaces (Guedes and Oliveira Júnior, 2024; Mellouli et al., 2024; Van Noordt and Tangi, 2023; Bakr et al., 2023; Wijayati et al., 2022). The public-sector literature emphasizes the organizational implications associated with artificial intelligence implementation and the development of capabilities required to generate value from the technology (Mellouli et al., 2024; Van Noordt and Tangi, 2023). Research focusing on organizational and employee contexts similarly demonstrates the relevance of artificial intelligence to decision-making and employee-related outcomes (Bakr et al., 2023; Wijayati et al., 2022). These perspectives provided a contextual basis for separating respondents according to their public or private employment status and subsequently examining their artificial intelligence adoption scores. The use of the same seven-item scale and response categories for both groups was important to ensure that differences identified between employment sectors reflected responses obtained through an equivalent measurement procedure. The pilot study conducted before the main survey additionally enabled the internal consistency of the artificial intelligence adoption construct to be evaluated before administration to the complete study sample. Collectively, the sampling procedure, standardized questionnaire administration, sector classification, and preliminary reliability assessment established a systematic quantitative framework through which artificial intelligence adoption among employed UiTM sports graduates could be examined and compared across public and private organizational settings.

Results and Discussion

As presented in *Table 1*, the study involved 369 UiTM sports graduates, comprising 204 (55.3%) male respondents and 165 (44.7%) female respondents. This indicates that males accounted for a slightly higher proportion of the respondents. Based on *Table 2*, an independent samples t-test was conducted to examine differences in artificial intelligence adoption between graduates employed in the public and private sectors. The results shows that no statistically significant difference was found in artificial intelligence adoption between UiTM sports graduates employed in the public and private sectors, $t(367) = 1.62$, $p = 0.11 > 0.05$. The evolving demands of the modern work environment have prompted private and public organizations to integrate artificial intelligence as a fundamental operational tool that could enhance organizational effectiveness (Joshi and Masih, 2023). As employees, the graduates were expected to utilize digital tools, including artificial intelligence, to enhance work efficiency in achieving organizational goals.

Table 1. Demographic profile of respondents.

Gender	Frequency	Percentage
Female	165	44.7
Male	204	55.3
Total	369	100

Table 2. Independent sample T-test analysis of employment sector differences in artificial intelligence adoption.

Employment sector	N	Mean	Std. Dev.	t	df	p-value (significant)
Public Sector	100	4.20	0.59	1.62	367	0.11
Private Sector	269	4.09	0.58			

Note: Significance Level: 0.05 (2-Tailed).

The descriptive findings further indicate that artificial intelligence adoption was relatively high among respondents from both employment sectors, as demonstrated by the mean scores of 4.20 for public-sector graduates and 4.09 for private-sector graduates. Although public-sector respondents recorded a numerically higher mean score, the independent samples t-test demonstrates that the observed difference of 0.11 between the two groups was not statistically significant at the 0.05 level. Consequently, the results indicate that artificial intelligence adoption among the UiTM sports graduates in this sample was broadly comparable across public and private employment settings. This finding is particularly relevant given the increasing integration of artificial intelligence into organizational processes and the growing emphasis on technological competencies in contemporary workplaces. Existing research has examined artificial intelligence as a mechanism for strengthening human resource systems, organizational decision-making, employee efficiency, and performance, illustrating its relevance across different organizational environments (Al-Ayed, 2024; Joshi and Masih, 2023; Bakr et al., 2023; Wijayati et al., 2022). The similarity observed between the two employment sectors in the present study may therefore be considered within a broader organizational environment in which employees increasingly encounter digital technologies regardless of whether they work in public or private organizations. The result is also relevant to the Malaysian employment context because differences in human resource management practices between public and private organizations have previously been examined among sports graduates (Ahmad et al., 2022). Nevertheless, the present statistical result

specifically concerns artificial intelligence adoption and indicates that employment sector alone did not correspond to a statistically significant difference among the respondents examined. Accordingly, the findings suggest that the participating UiTM sports graduates demonstrated broadly similar levels of artificial intelligence adoption despite operating within different organizational sectors.

The absence of a statistically significant sector difference can also be interpreted in relation to the increasingly widespread organizational relevance of artificial intelligence and digital competency. Artificial intelligence is no longer confined to a narrow range of specialized technical functions but has become relevant to decision-making, employee development, organizational processes, and the transformation of workplace skills. Recent studies have highlighted the role of artificial intelligence adoption in strengthening workforce capabilities and supporting intelligent decision-making, while research on employee skills has emphasized the increasing importance of upskilling and reskilling as artificial intelligence becomes integrated into organizational activities (Shokran et al., 2025; Morandini et al., 2023). Research focusing specifically on public organizations similarly demonstrates that artificial intelligence adoption has become an important consideration for organizational operations and public value creation (Guedes and Oliveira Júnior, 2024; Mellouli et al., 2024; Van Noordt and Tangi, 2023). Within private-sector settings, artificial intelligence has also been investigated in connection with organizational decision-making and operational improvement (Bakr et al., 2023). Taken together, these studies provide useful context for the high mean adoption scores recorded by both groups in the present study. However, they do not independently establish that the two sectors should have identical levels of adoption. Rather, the empirical evidence generated in the present study demonstrates that the difference between the public-sector mean of 4.20 and private-sector mean of 4.09 was insufficient to reach statistical significance. The finding therefore highlights the importance of distinguishing between descriptive differences and statistically supported differences. While the public-sector group recorded a slightly higher numerical mean, the p-value of 0.11 indicates that the study did not obtain sufficient statistical evidence to establish a sector-based difference at the predetermined 0.05 significance level. This interpretation maintains consistency with the statistical findings while situating the result within the broader development of artificial intelligence across contemporary organizations.

From the perspective of graduate development, the findings also highlight the relevance of artificial intelligence competencies across employment settings rather than limiting technological preparation to graduates entering a particular sector. The comparable adoption levels observed among public- and private-sector respondents indicate that artificial intelligence has relevance to UiTM sports graduates working in both organizational environments. This observation is particularly important as technological developments continue to transform the skills expected of employees. Research on artificial intelligence and workforce development emphasizes that technological transformation creates requirements for employees to develop new competencies, adapt existing capabilities, and engage in continuous upskilling and reskilling (Shokran et al., 2025; Morandini et al., 2023; World Economic Forum, 2023). Artificial intelligence has also been associated with employee performance and work engagement, further demonstrating that its organizational relevance extends beyond purely technical occupations (Wijayati et al., 2022). The findings of the present study therefore provide empirical information concerning how graduates from a sports-related educational background are engaging with artificial intelligence after entering

employment. The lack of a statistically significant difference according to employment sector does not indicate that organizational context is unimportant; rather, it demonstrates that the sector classification examined in this analysis did not produce a significant difference in artificial intelligence adoption among this particular sample. Other organizational or individual factors may potentially contribute to variations in adoption, although such factors would require separate empirical examination. The present results consequently reinforce the relevance of preparing graduates to operate in increasingly technology-oriented workplaces across both public and private organizations. As artificial intelligence becomes more closely associated with workplace skills, decision-making, and organizational processes, graduates may benefit from competencies that enable them to understand and utilize these technologies effectively irrespective of the employment sector in which they subsequently develop their careers (Shokran et al., 2025; Joshi and Masih, 2023; World Economic Forum, 2023).

The notable shift toward digital transformation across public and private organizations resulted in a broadly consistent baseline expectation for UiTM sports graduates to engage with artificial intelligence. Furthermore, the progressive investment in upskilling and reskilling programs structured by organizations contributed to the no notable variation of artificial intelligence adoption among UiTM sports graduates across employment sectors. The equitable employer investment in human capital development to support balanced artificial intelligence adoption across public and private organizations could explain this outcome. Organizations significantly prioritize employee development to ensure employees are well-equipped with the current technologies to fulfill their professional responsibilities (Bajraliu and Qorraj, 2023). In Malaysia, the establishment of the National Artificial Intelligence Office (NAIO) on December 12th, 2024, reflects the commitment of the government to promote inclusive artificial intelligence adoption, aiming to ensure its sustained success across all sectors (Ministry of Digital Malaysia, 2024). The strategy also demonstrates that the nation is committed to minimizing disparities by promoting more equal integration of artificial intelligence in both organizations. Addressing the private and public sectors might effectively accelerate the pace of digital technology adoption among employees in Malaysia. The initiative also exposes UiTM sports graduates working in public and private organizations to comparable learning opportunities that enable them to develop and sustain similar levels of artificial intelligence adoption. Hickok (2024) reported similar outcomes, documenting that artificial intelligence adoption did not significantly differ between the public and private sectors. Both sectors also exhibited similar employment of artificial intelligence in elevating organizational efficiency and service delivery. According to Guedes and Oliveira Júnior (2024), artificial intelligence adoption in the public and private sectors in Brazil was broadly similar. Both sectors valued societal insights and profitability. The outcome highlighted the growing need for employers in the public and private organizations to continue optimizing their technological strategies in the Industrial Revolution (IR) 4.0 era. Conclusively, strategic implementation and organizational support could empower employees to effectively leverage artificial intelligence in performing their responsibilities.

The comparable level of artificial intelligence adoption across employment sectors may also be understood in relation to the growing importance of digital competencies in contemporary organizations. As artificial intelligence becomes increasingly integrated into organizational processes, employees are expected to continuously strengthen their

technological knowledge and develop competencies that enable them to operate effectively within digitally transformed workplaces. The importance of this continuous development is reflected in recent literature emphasizing workforce transformation, intelligent decision-making, and skill development in response to artificial intelligence adoption (Shokran et al., 2025; Morandini et al., 2023). Digital transformation has also increased the importance of sustainable human resource management practices that facilitate skill development across organizational settings (Bajraliu and Qorraj, 2023). Consequently, employees in both public and private organizations may encounter increasingly similar expectations regarding their ability to utilize digital technologies as part of their professional responsibilities. This development is particularly relevant to UiTM sports graduates because their employment opportunities may extend across organizational sectors while technological competency remains relevant regardless of sector classification. Research concerning artificial intelligence and employee performance further demonstrates that the effective integration of artificial intelligence can be associated with employee-related outcomes and changing organizational requirements (Wijayati et al., 2022). Similarly, broader workforce research has emphasized the growing significance of technological and digital competencies as employment requirements continue to evolve (World Economic Forum, 2023; Johnson et al., 2021). Therefore, the absence of a significant difference in artificial intelligence adoption between the two employment sectors may be considered within an environment in which technological competency is increasingly expected across organizational boundaries. Rather than artificial intelligence being relevant exclusively to one employment sector, the findings indicate that both groups of UiTM sports graduates demonstrated similarly high levels of adoption, highlighting the broader relevance of technological preparedness in contemporary employment environments.

Organizational support and institutional initiatives may further provide an important context for understanding the similar artificial intelligence adoption levels observed between the two groups. Within the Malaysian context, the establishment of the National Artificial Intelligence Office reflects a national-level emphasis on strengthening the development and implementation of artificial intelligence (Ministry of Digital Malaysia, 2024). At the organizational level, artificial intelligence has similarly attracted attention because of its potential relevance to human resource systems, employee capabilities, organizational decision-making, and public-sector operations (Al-Ayed, 2024; Guedes and Oliveira Júnior, 2024; Mellouli et al., 2024; Bakr et al., 2023). These developments illustrate that artificial intelligence adoption occurs within a wider institutional and organizational environment rather than solely through individual employee initiatives. For public organizations, the development of artificial intelligence capabilities has been associated with the creation of public value and the broader integration of technology within public administration (Van Noordt and Tangi, 2023). Within organizational and workforce contexts more generally, artificial intelligence has also been linked with changes in employee skills and the need for upskilling and reskilling (Morandini et al., 2023). Such developments provide a relevant context for interpreting the present finding that employment sector did not produce a statistically significant difference in artificial intelligence adoption among UiTM sports graduates. Nevertheless, the absence of a significant sector difference should not be interpreted as evidence that all public and private organizations provide identical technological environments, training opportunities, or artificial intelligence resources. Instead, the present results specifically demonstrate that the respondents in the two employment-

sector groups reported comparable artificial intelligence adoption levels. Continued organizational investment in technology-related learning, workforce development, and appropriate artificial intelligence implementation may therefore remain relevant for graduates across both sectors as artificial intelligence becomes increasingly incorporated into contemporary organizational practices (Shokran et al., 2025; Al-Ayed, 2024; Morandini et al., 2023).

Conclusion

This study examined differences in artificial intelligence adoption between UiTM sports graduates employed in public and private organizations and found that no significant difference existed between the two employment sectors. The findings suggest that graduates across both sectors demonstrate relatively similar levels of artificial intelligence adoption, reflecting the increasing integration of digital technologies within contemporary workplace environments (Mellouli et al., 2024; Guedes and Oliveira Júnior, 2024; Bajraliu and Qorraj, 2023). The discussion highlights that organizational support, technological exposure, and national digital transformation initiatives may contribute to balanced artificial intelligence adoption regardless of employment sector (Ministry of Digital Malaysia, 2024; Al-Ayed, 2024; Van Noordt and Tangi, 2023). This study contributes to the existing literature by providing empirical evidence on artificial intelligence adoption among sports graduates within the Malaysian context (Ahmad et al., 2022). From a practical perspective, the findings may assist organizations, higher education institutions, and policymakers in strengthening digital competency development and promoting inclusive artificial intelligence integration strategies in the workforce (Shokran et al., 2025; Morandini et al., 2023; World Economic Forum, 2023). Nevertheless, this study was limited to the generalization of UiTM sports graduates. Therefore, future research is recommended to include broader graduate populations and additional organizational variables to further understand artificial intelligence adoption across different industries and employment settings.

The findings of this study further emphasize the importance of developing artificial intelligence competency as a transferable workforce capability that is relevant across organizational boundaries. As artificial intelligence continues to influence contemporary working environments, graduates entering either public or private organizations may increasingly be expected to possess the knowledge and skills required to interact effectively with emerging technologies. Recent literature emphasizes the importance of artificial intelligence adoption, intelligent decision-making, and skill transformation in supporting workforce development and organizational competitiveness (Shokran et al., 2025). At the same time, organizations have an important role in providing appropriate opportunities for employees to develop and update the competencies required in technology-oriented workplaces. Research on artificial intelligence and human resource systems highlights the relevance of technological competency to employee and organizational development, while studies concerning workforce skills emphasize the importance of continuous upskilling and reskilling as artificial intelligence transforms existing occupational requirements (Al-Ayed, 2024; Morandini et al., 2023). These developments are also consistent with broader changes in future workforce requirements associated with technological transformation (World Economic Forum, 2023). Within the public sector, the development of artificial intelligence capabilities has additionally

been considered in relation to public value creation and the capacity of public organizations to utilize emerging technologies effectively (Mellouli et al., 2024; Guedes and Oliveira Júnior, 2024; Van Noordt and Tangi, 2023). Therefore, the comparable artificial intelligence adoption identified among the UiTM sports graduates in the present study provides a useful foundation for further investigation rather than indicating that sector-related organizational characteristics are irrelevant. Future studies could extend the present research by examining organizational support, artificial intelligence training, digital competency, technological infrastructure, leadership, and employee attitudes as additional variables. Expanding the population beyond UiTM sports graduates would also provide a broader understanding of whether similar patterns of artificial intelligence adoption occur among graduates from different academic disciplines, occupational categories, industries, and institutional backgrounds in Malaysia.

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Conflict of interest

The authors confirm that there is no conflict of interest involve with any parties in this research study.

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