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Artificial intelligence applications and human resource management practices: the mediating role of digital transformation - evidence from Saudi Maaden company

Abstract

Research background and purpose: This study aims to identify the direct impact of artificial intelligence applications on human resource management practices and analyze the role of digital transformation as a mediating variable in this relationship, specifically focusing on the Saudi Maaden Company. The study contributes to the scientific understanding of how artificial intelligence applications can be integrated into core HR processes to achieve greater efficiency, improve decision-making accuracy, and provide innovative solutions to complex challenges in the modern work environment. Its scientific novelty lies in offering a deep understanding of the mediating role of digital transformation between artificial intelligence applications and human resource management practices, thereby contributing to the development of both theoretical and practical knowledge in this field.

Design/methodology/approach: The researcher relied on the descriptive analytical strategy in this study by collecting theoretical material and producing a questionnaire consisting of 43 statements, which was delivered to 160 employees in Saudi Maaden Company. The questionnaires valid for analysis were 127 with a response rate of 79%. The data were examined using the structural equation modelling method (PLS-SEM).

Findings: The study concluded that the success of artificial intelligence (AI) implementation is closely linked to the effectiveness of digital transformation processes within an organization. The findings indicated a direct positive impact of artificial intelligence applications on both human resource management practices and digital transformation, and a positive impact of digital transformation on human resource management practices. Additionally, there was an indirect positive impact of artificial intelligence applications on human resource management practices through digital transformation as an intermediary variable, and this mediation is complete.

Value added and limitations: This study contributes to deepening the scientific understanding of the impact of artificial intelligence applications and digital transformation on human resource management practices by highlighting their practical dimensions and their role in supporting organizational performance efficiency, through its application to Saudi Maaden Company as one of the industrial institutions operating in the mining sector. The results can also be generalized, opening avenues for future research by applying the study to various vital sectors, as well as incorporating additional managerial variables and concepts.

Keywords: *artificial intelligence, human resource management practices, digital transformation, mediating role, Saudi Maaden company*

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1. Introduction

The modern business environment has witnessed radical transformations driven by tremendous technological advancements. At the front of these transformations is artificial intelligence, which emerges as a driving force for reshaping various organizational functions (Nawaz et al., 2024). AI applications are no longer limited to purely technical sectors; rather, their impact has extended to include vital functions such as human resources management. AI tools are increasingly being used in the fields of recruitment, training, performance management, and even improving employee experience (Garg et al., 2022; Mahat & Kumar, 2024). This adoption aims to increase productivity, boost decision-making accuracy, and provide innovative solutions to the complex challenges facing human resources (HR) departments in the age of big data (Minbaeva, 2021).

Digital transformation (DT) is a comprehensive process that goes beyond simply adopting technology, encompassing restructuring operations, changing organizational culture, and developing new business models that leverage digital capabilities (Bindra et al., 2025). DT plays a pivotal role in enabling organizations to combine current technologies, such as artificial intelligence (AI), into the core of their operations, directly impacting the effectiveness of human resource management practices (HRMP) (Minbaeva, 2021). Effective HRMP are also a cornerstone of achieving competitive advantage for organizations, as they contributing to attracting talent, developing competencies, and motivating performance (Garg et al., 2022). With the increasing intricacy of the business setting, HR departments are striving to adopt technological solutions to enhance their efficiency and deliver greater strategic value (Mahat & Kumar, 2024). In this context, the question arises about how AI impacts these practices, and the role that DT plays as a mediating factor in enhancing this impact.

Although recent several research have looked into the impact of AI on HR (Nawaz et al., 2024), there is an evident research void regarding the mediating role of DT in this relationship, particularly in the context of large industrial companies in Saudi Arabia, such as Maaden, which is witnessing increasing use of AI technologies in a variety of processes, including HR management. Despite the promising potential of AI to improve the efficiency and effectiveness of HR practices, maximizing the benefits of these technologies are mostly dependent on the success of the overall DT process within the organization. There is limited understanding of how DT mediates the relationship between AI applications and HR practices in this specific context. Therefore, the problem of this study lies in the lack of clarity surrounding the mediating role of DT in enhancing the impact of AI applications on HR management practices at Maaden.

The objectives of the study are represented in determining the nature of the relationship between artificial intelligence AI applications and HRMP at Saudi

Maaden Company, exploring the role that DT plays in HRMP within the same company, and analyzing the mediating role of DT in the relationship between AI applications and HRM practices. The study also aims to reach scientific conclusions that would help decision-makers support the adoption of artificial intelligence and digital transformation and improve human resource management practices at Saudi Maaden Company.

The importance of the study lies in enriching the literature on AI, DT, and human resources, particularly in the context of major industrial companies in the Middle East, in addition to developing a conceptual framework linking AI, DT, and HRMP as a source for future researchers, and in providing practical recommendations for Maaden and similar companies to optimize artificial intelligence's advantages through effective DT. The study also highlights the role of HRMP as a key element linking AI and DT, AI and DT, participating in enhancing efficiency of the organization and supporting the achievement of sustainable organizational performance.

2. Literature review

2.1. Artificial intelligence

AI is defined as the capacity of computer systems to simulate the cognitive functions of humans, such as learning, problem-solving, decision-making, perception, and understanding (Gil de Zúñiga et al., 2023). AI aspires to develop machines capable of think and act intelligently, enabling them to perform tasks that typically require human intelligence (Xu et al., 2021). It is a multidisciplinary field that seeks to build systems capable of exhibiting human intelligence, including the ability to perceive, reason, learn, and interact (Sheikh et al., 2023). Elements of AI include intelligent recruitment, employee performance analysis, training and development, and forecasting future needs (Ncube et al., 2025). Furthermore, the Author notes the need to focus on the relationship between organizational factors and individual perceptions of AI in order to effectively accept and adopt AI (Assaf et al., 2024).

Several research have looked into the impact of AI applications on HRMP. Upadhyay and Khandelwal (2018) investigated how AI technologies, such as text and data analytics are capable of utilized to increase candidate recruitment processes more efficiently. They demonstrated that AI applications reduce human bias, speed up the selection process, and enhance hiring accuracy. Tursunbayeva (2019) examined AI applications in healthcare settings to improve employee scheduling, training, and operational efficiency. They concluded that these technologies improve employee allocation, reduce human errors, and contribute to improving the quality of healthcare services.

2.2. Digital transformation

DT is described as a process of fundamental change driven through the imaginative use of digital technologies, supported by strategically utilizing resources and possibilities, with the goal of fundamentally improving the entity in question (Gong & Ribiere, 2021). It is also defined as a process aimed at improving an entity by radically changing its characteristics. Information, computation, and communication are integrated, and networking technologies (Vial, 2019). The dimensions of DT include the strategic dimension, the technical dimension, the people dimension, processes, work and skills, governance. Others believe that the dimensions of DT necessary for an organization's success include digital infrastructure, digital systems adoption, employee digital competency, and the organization's digital culture (Verina & Titko, 2019; Baojing et al., 2025; Gobble, 2018; Fernandez-Vidal et al., 2022; Kao et al., 2024).

There are multiple studies that also addressed impact in AI applications on DT. Brock & Von Wangenheim (2019) revealed that leaders who are aware of the potential of AI achieve a deeper and faster DT. Warner & Wäger (2019) confirmed that companies that develop rapid learning skills using AI achieve a sustainable and renewable DT. Di Vaio et al. (2020) concluded that AI stimulates sustainable innovations that increase economic and environmental value. Enholm et al. (2022) reviewed economic value of AI within framework DT, indicating that AI increases innovative effectiveness in development and decision-making processes. Employees prefer smart environments that rely on AI to automate routine tasks, and that AI promotes an organizational culture based on innovation and digital adaptation. Kaczorowska et al. (2024) concluded that generative AI enhances collaboration and knowledge codification within DT processes. Alarefi et al. (2024) indicated that high-quality data can enhance the success of companies using AI.

2.3. Human resource management practices

Human resource management is described as the procedure of organizing and directing individual activities within an organization in a way that ensures the achievement of its strategic objectives. It therefore represents a coordinated and purposeful strategy to effectively lead and guide the organization's employees, contribute to gaining a competitive edge (Ojochona et al., 2022). HRM includes a variety of carefully planned activities implemented to guarantee the effectiveness and durability of individuals within the organization (Wright & McMahan, 1992). In addition to the above, it is not limited to traditional tasks; it also includes a proactive and strategic role in anticipating the organization's future needs and developing human competencies (Knies et al., 2024). The most important HRMP include recruitment and selection, development and training, incentives and rewards,

performance evaluation, and job design (Beltrán Martín & Bou Llusar, 2018; Wright & McMahan, 1992).

Votto et al. (2021) reviewed AI applications in HRMP such as recruitment, training, compensation, and emphasized that AI applications enhance process accuracy, lessen physical labor and encourage decision-making based on data. Pan & Froese (2023) provided a comprehensive review linking technology and human resource management and recommended the need for collaboration between academic disciplines and the adoption of hybrid methodologies to effectively leverage AI in HRM. Basu et al. (2023) concluded that the collective adoption of non-robotic AI results in positive results, while the individual use of robots may lead to adverse results. Singh (2025) explained that AI applications in HRM improve process accuracy, lessen manual labor and aid in decision-making. This also requires the adoption of a strong ethical framework to ensure integrity and acceptance.

Regarding the impact of DT on HRMP, Kirilmaz (2020) found that DT improves the efficiency of recruitment, training, and evaluation, and helps HR focus on strategic tasks rather than manual processes. Strohmeier (2020) confirmed that digitalization shifts HRM toward a data-driven initiative model, allowing for immediate and accurate decision-making. Zavyalova et al. (2022) concluded that widespread adoption of DT does not always guarantee success, but rather that focusing on quality implementation is more important for the success of the DT in HRM. Demir et al. (2023) explained that DT increases the quality of HR planning by enhancing innovation mechanisms within the organization. Ramachandaran et al. (2024) showed that DT is positively and strongly associated with improving the effectiveness of HRM practices.

3. Methodology

3.1. Research methods

The Author used a descriptive analytical approach to analyze the relationship between artificial intelligence applications and HRMP mediated by DT at Maaden Company. The use of the descriptive analytical approach in conjunction with partial least squares structural equation modeling (PLS-SEM) was based on its capacity to analyze intricate causal linkages and mediation effects in organizational research. This method, which enables reliable estimate of path linkages and indirect effects, is especially suitable in situations with exploratory goals and comparatively small sample sizes.

A questionnaire was used to gather data designed for this purpose. The sample size was calculated using the approach of the inverse square root according to Kock et al. (2018), the statistical methods used included descriptive analysis and Cronbach's alpha coefficient

to evaluate the legitimacy and dependability of the construct. Structural equation modelling PLS-SEM was also used to test hypotheses and analyze the relationships of influence between the study variables using the SmartPLS. A path weighting scheme was applied, and the significance of the path coefficients was assessed using a bootstrapping procedure. Model evaluation followed established PLS-SEM guidelines, including assessments of internal consistency reliability, convergent validity, discriminant validity, and collinearity diagnostics.

To ensure adequate representation of employees in the various departments and management levels at Saudi Arabian Mining Company, over the course of three months, data were gathered from September to November 2025. Drawing from the study's factors and hypotheses, the researcher created a questionnaire that included 43 items distributed to a sample from the staff of the Saudi Maaden. Three sections made up the questionnaire's structure, distributed among the study variables. 16 statements for artificial intelligence, 14 statements for HRMP, and 13 statements for DT. The relative importance of the statements on the questionnaire was calculated from strongly disagree (1) to strongly agree (5) on a Likert scale.

Hair et al. (2021) using that the PLS SEM technique is most appropriate when working with small sample sizes in small communities. In this study, the researcher relied on the method of inverse square root (Kock et al., 2018) to calculate the minimum sample size. This method is characterized by its simplicity and effectiveness and is particularly suitable when aiming to achieve a statistical power of 80% within significance levels of 1%, 5%, and 10%. Therefore, the appropriate sample size, according to the path coefficient (0.20), should be no less than 155 employees and managers of a mining company in the Northern Borders Region of the Kingdom of Saudi Arabia. A total of 160 surveys were sent out, of which 127 appropriate surveys were returned for analysis, representing 79%.

The following study hypotheses assumptions were made:

H1. Applications of artificial intelligence have a statistically significant favorable effect on Saudi Maaden Company's HRM practices.

H2. Artificial intelligence applications have a statistically significant positive impact on the digital transformation of Saudi Maaden.

H3. The digital transformation has a statistically significant favorable effect on Saudi Maaden Company's HRM practices.

H4. Digital transformation mediates the relationship between artificial intelligence applications and HRM practices at Saudi Maaden.

3.2. Study model

Figure 1 illustrates the study model, including the current research variables. AI was based on Ncube et al. (2025), HRMP on Beltrán Martín and Bou Llusar (2018), and DT on Kao et al. (2024).

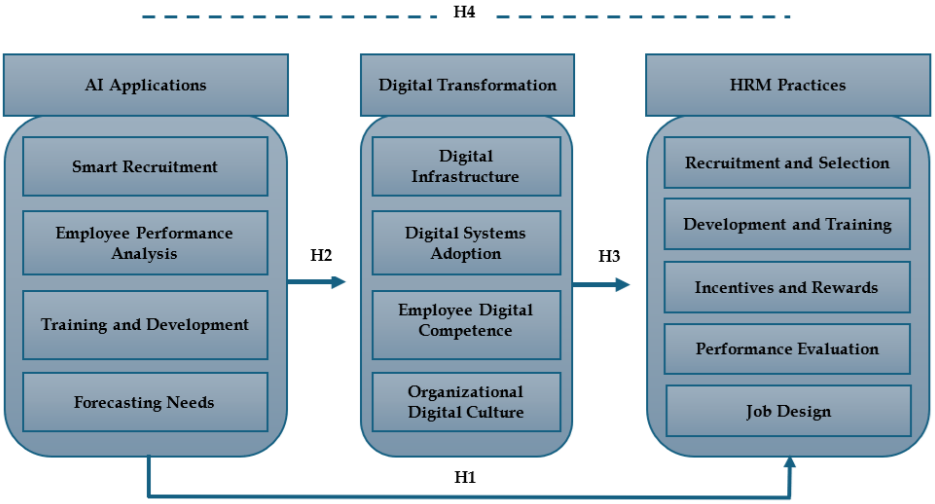

Figure 1. **Study model**

Source: own study

The validity of the data was confirmed based on loading coefficients exceeding 0.50, as advised by Hair et al. (2021), ranging from 0.661 to 0.936. Reliability results also revealed that the range of Cronbach's alpha values was 0.718 to 0.935, and that composite reliability (CR) values exceeded 0.50 for all variables, indicating good internal consistency. Furthermore, the average variance extracted (AVE) for all variables surpassed 0.50, confirming the strong convergence between the study's dimensions and variables.

Table 1. **Evaluation of internal consistency and confirmatory factors**

Var.	Dim.	Code	Loadings	Cronbach's Alpha	CR	AVE
Artificial Intelligence (AI)	Smart recruitment	SR1	0.831	0.826	0.808	0.685
		SR2	0.723			
		SR3	0.864			
	Employee performance analysis	EP1	0.748	0.916	0.831	0.711
		EP2	0.777			
		EP3	0.912			
	Training and development	TD1	0.829	0.853	0.837	0.793
		TD2	0.713			
		TD3	0.915			
	Forecasting needs	FN1	0.691	0.718	0.652	0.629
		FN2	0.802			
Digital Transformation (DT)	Digital infrastructure	DI1	0.871	0.887	0.820	0.749
		DI2	0.924			
		DI3	0.719			
	Digital systems adoption	DS1	0.857	0.823	0.929	0.839
		DS2	0.884			
		DS3	0.931			
	Employee digital competence	ED1	0.792	0.731	0.663	0.605
		ED2	0.933			
	Organizational digital culture	OD1	0.821	0.915	0.910	0.810
		OD2	0.919			
		OD3	0.726			

Human Resource Management Practices (HRMP)	Recruitment and selection	RS1	0.675	0.809	0.718	0.654
		RS2	0.741			
		RS3	0.899			
	Development and training	DT1	0.869	0.935	0.872	0.779
		DT2	0.936			
		DT3	0.827			
	Incentives and rewards	IR1	0.661	0.848	0.787	0.621
		IR2	0.886			
		IR3	0.909			
	Performance evaluation	PE1	0.642	0.763	0.638	0.583
		PE2	0.754			
	Job design	JD1	0.838	0.897	0.777	0.726
		JD2	0.794			
		JD3	0.912			

Source: own study

In order to evaluate the measurement model's validity, the square validity of convergence (AVE) is calculated. Outcomes of Table 3 show that AVE more than its association with other variables, indicating the variables are internally consistent and do not interfere with each other.

Table 2. **Correlation coefficients between study variables (discriminant validity)**

Var.	SR	EP	TD	FN	DI	DS	ED	OD	RS	DT	IR	PE	JD
SR	0.699												
EP	0.551	0.773											
TD	0.623	0.182	0.813										

FN	0.313	0.505	0.167	0.718									
DI	0.359	0.260	0.502	0.345	0.814								
DS	0.222	0.361	0.238	0.518	0.584	0.856							
ED	0.737	0.236	0.438	0.318	0.682	0.654	0.866						
OD	0.532	0.209	0.517	0.551	0.411	0.444	0.621	0.836					
RS	0.194	0.372	0.420	0.665	0.643	0.562	0.283	0.336	0.693				
DT	0.543	0.625	0.176	0.137	0.782	0.649	0.438	0.528	0.594	0.825			
IR	0.705	0.406	0.514	0.369	0.489	0.349	0.595	0.639	0.261	0.704	0.743		
PE	0.348	0.295	0.483	0.663	0.268	0.199	0.392	0.249	0.560	0.537	0.601	0.706	
JD	0.118	0.443	0.449	0.739	0.385	0.297	0.238	0.677	0.333	0.672	0.458	0.822	0.844

Source: own study

Note: SR = Smart Recruitment; EP = Employee Performance Analysis; TD = Training and Development; FN = Forecasting Needs; DI = Digital Infrastructure; DS = Digital Systems Adoption; ED = Employee Digital Competence; OD = Organizational Digital Culture; RS = Recruitment and Selection; DT = Development and Training; IR = Incentives and Rewards; PE = Performance Evaluation; JD = Job Design.

Table 3 findings demonstrated that the average path coefficients (APC) were statistically significant $p < 0.05$ and 0.324, suggesting existence of fairly strong correlations between the variables, the model's high capacity to explain the variance in the dependent variables was shown by the average coefficient of determination (ARS), which was 0.461, the model's statistical soundness was confirmed by the average inflation factor (AVIF), which was 3.004, which is below the permissible limit (5).

Table 3. **Quality indicators for measurement models**

Indicator	Value	P-Value	Approval
APC	0.324	P <0.001	P <0.05
ARS	0.461	P <0.001	P <0.05
AVIF	3.004		acceptable if ≤ 5, ideally ≤ 3.3

Source: own study

4. Results

The PLS-SEM methodology was employed, and the study hypotheses were analyzed using Warp PLS 7 software based on the following measurement model:

H1. Applications of artificial intelligence have a statistically significant favorable effect on Saudi Maaden Company's HRM practices.

This hypothesis is further subdivided into the following:

H_{1A}. *HRM practices on Saudi Maaden are significantly influenced by smart recruitment.*
H_{1B}. *HRM practices on Saudi Maaden are significantly influenced by employee performance analysis.*
H_{1C}. *HRM practices on Saudi Maaden are significantly influenced by training and development.*
H_{1D}. *HRM practices on Saudi Maaden are significantly influenced by forecasting needs.*

Table 4. **AI's direct effect on HRMP**

Hypothesis supported	R^2	T	P-Value	Direct path coefficient	Hypothesis	Path
SR HRMP	H_{1A}	0.197	0.000	2.099	0.416	Supported
EP HRMP	H_{1B}	0.212	0.000	3.137		Supported
TD HRMP	H_{1C}	0.308	0.000	4.549		Supported
FN HRMP	H_{1D}	0.247	0.000	3.304		Supported

Source: own study

Table 4 demonstrates a direct impact of AI applications on HRMP. The results showed a substantial influence of SR on HRMP, with a path coefficient of 0.19. This was important statistically at the 0.000 level. EP also had a favorable effect on HRMP, with a path coefficient of 0.212. This was important statistically at the 0.000 level. Regarding training and development, outcomes revealed a good effect of TD on HRMP, having a path coefficient of 0.308. This was important statistically at the 0.000 level. The results also revealed a direct positive impact of FN on HRMP, with a path coefficient of 0.247. This was important statistically at the 0.000 level, the t-test confirmed these results, as its values reached 2.099, 3.137, 4.549, 3.304 respectively, all of which are higher than 1.96. The R^2 equivalent 0.416. This indicates that all axes of AI explain about 41.6% of

the difference in HRMP, which confirms the validity of the first hypothesis "Artificial intelligence applications have a statistically significant favorable effect on human resources management practices in Saudi Maaden Company".

H2. Artificial intelligence applications have a statistically significant positive impact on the digital transformation of Saudi Maaden.

This hypothesis is further subdivided into the following:

H_{2A}. *Digital transformation is significantly influenced by smart hiring at Saudi Maaden.*
H_{2B}. *Digital transformation is significantly influenced by employee performance analysis at Saudi Maaden.*
H_{2C}. *Digital transformation is significantly influenced by training and development at Saudi Maaden.*
H_{2D}. *Digital transformation is significantly influenced by demand forecasting at Saudi Maaden.*

Table 5. **AI's direct effect on DT**

Hypothesis supported	R^2	T	P-Value	Direct path coefficient	Hypothesis	Path
SR DT	H_{2A}	0.238	0.000	1.884	0.405	Supported
EP DT	H_{2B}	0.198	0.000	4.093		Supported
TD DT	H_{2C}	0.311	0.000	2.228		Supported
FN DT	H_{2D}	0.267	0.000	2.874		Supported

Source: own study

Table 5 demonstrates a direct impact of AI applications on DT. The results showed a substantial influence of SR on DT. The path coefficient was at 0.238. This was important statistically at the 0.000 level. EP also had a positive impact on DT. The path coefficient was at (0.198). This was important statistically at the 0.000 level, regarding training and development, there is an effect of TD on DT. The path coefficient was at 0.311. This was important statistically at the 0.000 level. The results also revealed a positive impact of FN on DT. The path coefficient was at 0.267. This was important statistically at the 0.000 level. The t-test confirmed these results, with values reaching 1.884, 4.093, 2.228, and 2.874, respectively, all of which are higher than 1.96. The R^2 equivalent 0.405, this indicates that all axes of AI explain about 40.5% of the difference in DT, which confirms the validity of

the second hypothesis "Artificial intelligence applications have a statistically significant positive impact on the DT of Saudi Maaden".

H3. The digital transformation has a statistically significant favorable effect on Saudi Maaden Company's HRM practices.

This hypothesis is divided into the following:

***H_{3A}**. HRMP are significantly influenced by the digital infrastructure at Saudi Maaden.*
***H_{3B}**. HRMP are significantly influenced by digital systems adoption at Saudi Maaden.*
***H_{3C}**. HRMP are significantly influenced by employee digital competency at Saudi Maaden.*
***H_{3D}**. (HRMP are significantly influenced by organizational digital culture at Saudi Maaden.*

Table 6. **DT's direct effect on HRMP**

Hypothesis supported	R^2	T	P-Value	Direct path coefficient	Hypothesis	Path
DI HRMP	H_{3A}	0.249	0.000	1.962	0.294	Supported
DS HRMP	H_{3B}	0.277	0.000	2.443		Supported
ED HRMP	H_{3C}	0.355	0.000	2.761		Supported
OD HRMP	H_{3D}	0.224	0.000	3.006		Supported

Source: own study

Table 6 demonstrates a direct impact of DT on HRMP. The results showed a substantial influence of DI on HRMP. The path coefficient was at 0.249. This was important statistically at the 0.000 level. (DS) also had a favorable effect on HRMP, with a path coefficient of 0.27. This was important statistically at the 0.000 level. Outcomes also revealed a good effect of ED on HRMP, with a path coefficient of 0.355. This was important statistically at the 0.000 level. The results also revealed a favorable effect of OD on HRMP, with a path coefficient of 0.224. This was important statistically at the 0.000 level. The t-test confirmed these results, as the values reached 1.962, 2.443, 2.761, and 3.006 respectively, all of which are higher than 1.96. The R^2 equivalent 0.294, this indicates that all axes of DT explain about 29.4% of the difference in HRMP, which confirms the validity of the third hypothesis "The digital transformation has a statistically significant favorable effect on Saudi Maaden Company's HRM practices".

H4. Digital transformation mediates the relationship between (AI) applications and HRM practices at Saudi Maaden.

Table 7. **Direct, indirect and total effects of the independent variable on the dependent variable.**

Ind. variable	Int. variable	Dep. variable	Direct Path	Indirect path	Total path	P-Value	R^2
SR	DT	HRMP	0.209	0.053	0.262	0.000	0.392
EP			0.084	0.062	0.146	0.000	
TD			0.110	0.080	0.190	0.000	
FN			0.186	0.046	0.232	0.000	

Source: own study

The following steps are used to examine the mediating role of the relationship between independent and dependent variables (Baron & Kenny, 1986):

- the independent and mediating variables have a meaningful link with one another,
- the significant influence linkages between independent and dependent variables,
- when the independent variable is present, there is a strong correlation between the mediating and dependent variables.

According to the mediation framework introduced by Baron and Kenny (1986), the type of mediation - partial or complete - can be determined based on the behavior of the independent variable's effect on the dependent variable before and after the introduction of the mediating variable. If the effect of the independent variable on the dependent variable is statistically significant before entry the mediating variable and then decreases in strength after the introduction of the mediator while remaining significant, this indicates partial mediation. This means that the mediating variable explains only part of the relationship between the independent and dependent variables, while the independent variable retains a direct, independent effect.

From Table 7, where DT represents the mediating variable in the interaction between AI and its axes (smart recruitment, employee performance analysis, training and development, and needs forecasting) and HRMP, the statistical data showed an indirect effect of smart recruitment on HRMP mediated by DT, with an indirect path coefficient of 0.053. There was also a positive indirect effect of employee performance analysis on HRMP mediated by DT, with an indirect path coefficient of 0.062, which was statistically significant at the 0.000 level. Furthermore, there was a favorable outcome of training and development on HRMP mediated by DT, with an

indirect path coefficient of 0.080, which was statistically significant at the 0.000 level. Finally, there was a positive indirect effect of future needs forecasting on HRMP mediated by DT, with an indirect path coefficient of 0.046, which was statistically significant at the 0.00 level. The coefficient of determination R^2 resulting from the indirect relationship between AI and HRMP was 39.2%, while the coefficient of determination R^2 resulting from the direct relationship between AI and HRMP was 41.6%. This indicates that introducing the mediating variable DT reduced the coefficient determination, reflecting its role as a mediating variable that partially contributes to the relationship between AI applications and HRMP. Considering the above, the Author concludes that the fourth hypothesis is correct, confirming that the mediating variable DT contributes to the relationship between AI applications and HRMP at Saudi Maaden.

5. Discussion

Smart recruitment, employee performance analysis, training and development, and forecasting needs have been shown to positively impact HRMP. Although the degree of influence each has on those practices varies, the four sub-hypotheses (H_{1A}, H_{1B}, H_{1C}, and H_{1D}) of the first main hypothesis (H1) are accepted, implying that the first main hypothesis is correct, as all AI dimensions have a direct impact on HRMP. Additionally, R^2 equals 0.316, meaning that all AI dimensions together account for 31.6% of the difference in HRMP. The results of this study are in line with numerous research that confirmed the significant influence of AI on HRMP, such as Bangura et al. (2025); Gong et al. (2025); Ghedabna et al. (2024); Radonjić et al. (2024); Qamar et al. (2021); Chowdhury et al. (2023). This conclusion makes a lot of sense because AI has several aspects that improve HRM, including training and development and performance review. It is also essential to the transition of human resource operations into the digital era (Singh & Shaurya, 2021). By using robots to handle hiring, data collection, analysis, and recruitment, AI can also help businesses reduce workloads and improve worker and work efficiency. Additionally, the aforementioned, AI contributes a major function in increasing work competences, personalizing training procedures, and enhancing operational efficiency (Orhan & Kurnaz, 2025).

By assisting with self-service transactions, hiring, payroll, benefits, and reporting, AI presents a number of chances to enhance HRMP. It saves time and money, enhances the employee experience, and offers more precise data for tracking and assessing the performance of human resources (Chaube, 2025). Thus, it contributes to the beneficial transformation of all HRMP, including performance management, compensation management, training and development, recruitment and selection, and human resource planning (Alsaif & Aksoy, 2023).

All AI dimensions directly influence DT, as confirmed by the acceptance of the four sub-hypotheses (H_{2A}, H_{2B}, H_{2C}, and H_{2D}). This implies the acceptance of the second main hypothesis (H2), R^2 value is 0.405, which means that all AI dimensions collectively account for 40.5% of the variation in DT, whereas the remainder percentage is ascribed to many issues unrelated to the present model. The results of this study are in line with many studies that have confirmed the positive impact of AI applications on DT (Kitsios & Kamariotou, 2021; Oyekunle & Boohene, 2024; Khoa, 2024; Djamin, 2024; Krupa et al., 2024; Lytras et al., 2024; Altin & Uysal, 2025).

AI is a key component of DT, enhancing business sustainability by cutting expenses and increasing operational effectiveness. It also enhances the application of AI in many areas, such as data analytics and strategic planning (Calp, 2020). AI is commonly applied and utilized in conjunction utilizing sophisticated digital technology, and (DT) projects that deploy AI achieve high levels of sophistication and outperform their rivals (Brock & Von Wangenheim, 2019).

There is a direct impact of all DT dimensions on HRMP, as evidenced by the acceptance of sub-hypotheses (H_{3A}, H_{3B}, H_{3C}, H_{3D}), which implicitly confirms the validity of the third main hypothesis (H3). R^2 is equal to 0.294. This indicates that all the DT axes explain 29.4% of the variance in HRMP. The results of this study are in line with much earlier research, such as Strohmeier (2020); Barišićet al. (2021); Nicolás-Agustín et al. (2022); Purwanto et al. (2023); Zhang and Chen (2024).

DT in HRMP is driven by five key factors: internal customer digital needs, industrial digital innovation, competitor challenges, digital innovation governance, and digital age needs (Zhang & Chen, 2024). Strategic planning for human resources management in the era of digital technology necessitates deep integration of technology, effective stakeholder engagement, and improving employee efficiency of employee leadership skills (Hidayat & Basuil, 2024). DT in human resources management also enhances job satisfaction and operational effectiveness (Bratamanggala, 2023).

The results of this study are in line with earlier research that has shown the effective effects of artificial intelligence applications on HRMP, particularly in the domains of recruitment, training and performance management. Additionally, the findings validate the notion that digital transformation of an organization is directly related to the effects of artificial intelligence. This study contributes context-specific data to enriching knowledge related to AI-assisted human resource management, by analyzing these correlations in a large industrial company in the mining field in Saudi Arabia.

6. Conclusions

From the above, the Author concludes that it is necessary to work on creating a talent development environment that is centered around the digital element and based on sustainable learning. This is achieved by organizing training courses and workshops

to acquire modern technical skills and maintain pace with the latest advancements in the area of AI and DT. This can be achieved through establishing partnerships with advanced technical institutes both domestically and globally in the field of AI and DT. This helps keep pace with modern technological developments. This will achieve the continuous development of HRMP by integrating smart digital solutions that contribute to improving the efficiency of administrative processes, in addition to facilitating procedures and services by advanced technologies that reduce time and effort and enhance employee experience.

The present research addressed the function of mediation DT between AI and HRMP. The Author suggests conducting this study by introducing other dependent variables such as organizational change, productivity, innovative work behavior and transformational leadership. The study can also be conducted by applying it to other sectors such as the communications sector, the health sector, the banking and financial industry, and transportation sector.

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Declaration of Generative AI and AI-assisted technologies in the writing process

The author did not use generative artificial intelligence or AI-assisted writing tools in preparing this work.

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