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Research Article

Research on the Application of Artificial Intelligence Technology in Enterprise Digital Transformation and Manager Empowerment

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ARTICLE INFO	ABSTRACT
	Significant technical developments have occurred in the digital era, altering the dynamics of modern businesses and bringing both difficulties and opportunities. The purpose of this study was to thoroughly investigate the relationship between artificial intelligence (AI) and digital transformation, as well as how these factors affect managerial empowerment and organizational performance. Additionally, the study looked at how employee engagement functions as a mediator and how digital readiness modifies these relationships. Using a quantitative method, a structured questionnaire was used to gather data from a sample of 282 companies that were chosen at random. The AMOS software's structural equation modeling (SEM) aided in the investigation of the linkages. The findings demonstrated strong and positive relationships between AI and digital transformation and organizational performance and managerial empowerment, which were mediated and regulated by employee engagement and digital preparedness. By providing a cohesive paradigm, this study gives practical insights for enterprises managing the digital landscape while also advancing theoretical understanding. This study is unique in that it examines the linkages between AI, digital transformation, employee engagement, and digital preparedness in the context of organizational performance and managerial empowerment. **Keywords:** AI Implementation, Digital Transformation, Employee Engagement, Digital Readiness, Organizational Performance, Managerial Empowerment.

INTRODUCTION

Technology is constantly advancing, and businesses are present process of a major transformation. AI and digital transformation have transformed commercial enterprises, presenting benefits and problems (Quartieri et al., 2022). This virtual revolution impacts organizational performance and government empowerment of past generations. Understanding and the use of AI calls for reading the complicated relationships among AI, virtual transformation, the body of workers engagement, virtual instruction, organizational performance, and management empowerment (Kraus, Ferraris, & Bertello, 2023). The speedy increase of synthetic intelligence and digital transformation technology has caused unprecedented organizational trade. Because it may manage and examine sizeable amounts of information, AI might also decorate selection-making, operations, and purchaser experiences (Kanjanakan, Wang, & Kim, 2023). Digital transformation requires an entire commercial enterprise method redesign and an employer-huge shift to digital practices (Wang, Liu, Li, & Lei, 2023). These enhancements impact companies throughout industries.

This dynamic environment calls for information on the complex relationships among AI, virtual transformation, organizational success, and control empowerment. Staff involvement and digital readiness are key to this dynamic. Employee involvement is key to era adoption and integration, consistent with Farid et al. (2019). A contextual factor, virtual readiness impacts AI and digital transformation. It evaluates a business enterprise's virtual adoption and use (Ameen, Papagiannidis, Hosany, & Gentina, 2023). The developing literature on AI (Qin, Huang, Zhou, Chen, & Liu, 2023; van Nijnatten, Payne, Hickman, Ashrafian, & Gilbert, 2023) and virtual transformation (Kaur, 2023; Vuchkovski, Zalaznik, Mitręga, & Pfajfar, 2023) and their consequences lack a complete framework that unifies these standards and examines the relationship between AI, virtual transformation, employee engagement, and digital readiness. This takes a look at seeks to shut that gap and strengthen our information of virtual age challenges. AI, digital transformation, control empowerment, and organizational achievement are the principle focus of this study. It also studies the moderating has an effect on digital preparedness and the mediation impact of employee engagement in those interactions. By doing this, it desires to beautify theoretical breakthroughs inside the challenge and provide beneficial insights for companies navigating the virtual global.

This study is significant in two ways. On a practical level, it provides useful insights for enterprises, directing their strategy for AI adoption, digital transformation, and managerial empowerment. Employee engagement and digital preparedness are important elements in technology-driven change, according to the study. On a theoretical level, it advances our understanding of these deep relationships by giving a comprehensive framework that connects AI, digital transformation, employee engagement, and digital preparedness.

LITERATURE REVIEW

AI Implementation and Organizational Performance

AI can transform how groups operate, make selections, and supply items and services. AI increases organizational choice-making and overall performance (Olan et al., 2022). Li, Bastone, Mohamad, and Schiavone (2023) determined that incorporating AI algorithms into choice help structures helped firms make extra correct, information-driven selections, improving performance. Additionally, AI systems can optimize several operational responsibilities. AI-driven automation can improve organizational performance by increasing efficiency and decreasing operational costs (Fosso Wamba, Queiroz, Chiappetta Jabbour, & Shi, 2023). AI automates everyday obligations so people may also focus on greater treasured responsibilities. AI-driven customer care and personalization additionally increase organizational effectiveness. According to Dwivedi, Nerur, and Balijepally (2023), synthetic intelligence can also enhance customer pleasure and customize studies, which enhances an organization's overall performance. AI's capacity to analyze large client facts and offer made recommendations permits this. Thus, on the basis of the above literature, we proposed the following hypothesis:

H1: AI implementation has a significant and positive impact on organizational performance.

AI Implementation and Managerial Empowerment

AI may give managers precious facts and selection assistance. Kanjanakan et al. (2023) say AI-driven analytics and reporting systems give managers actual-time records to make better decisions. Data allows managers to regulate unexpectedly and distribute assets greater effectively, empowering them to make decisions. By automating administrative tasks, AI allows managers to focus on strategic responsibilities and better-stage choice-making (Nejati, Rabiei, & Chiappetta Jabbour, 2017). AI may also automate tedious tasks, releasing managers to recognition on more lucrative projects. This adjustment in roles can also improve activity satisfaction and empowerment. AI may assist managers make selections through the use of predictive and prescriptive insights (Davenport & Harris, 2017). AI systems can analyze big information to provide recommendations and are expecting worries, assisting managers conquer demanding situations and capturing possibilities. This proactive method empowers managers with the aid of giving them the talents to succeed in brand new speedy-changing organizational environment. Thus, on the basis of the above literature, we proposed the following hypothesis:

H2: AI implementation has a significant and positive impact on managerial empowerment.

Digital Transformation and Organizational Performance

Digital transformation entails integrating virtual generation and reimagining commercial enterprise tactics, which may additionally reshape how firms operate and compete. Digital transformation may additionally enhance performance and cut prices. Kraus et al. (2023) stated that digital technology cast off guide interventions, simplify operations, and save money. Efficiency improves resource allocation and waste reduction, improving

organizational effectiveness. Digital transformation may also boost consumer satisfaction and corporate performance. Digital technology helps deliver multichannel, customized consumer experiences (Kraus et al., 2023) Digital solutions that improve customer communication increase client loyalty and repeat business, improving performance indicators. Thus, on the basis of the above literature, we proposed the following hypothesis:

H3: Digital Transformation has a significant and positive impact on organizational performance.

Digital Transformation and Managerial Empowerment

Real-time data and analytics from digital transformation help managers make choices. Digital technologies allow managers to analyze organizational features in real time, which speeds up data-driven decision-making (Kraus, Schiavone, Pluzhnikova, & Invernizzi, 2021). With real-time decision aid, managers can adapt to changing market conditions and adjust their strategies. Automation and AI in digital transformation may empower managers by reducing administrative responsibilities. Shaikh, Glavee-Geo, Karjaluoto, and Hinson (2023) demonstrate how digital technology may automate regular tasks to free managers to focus on strategic and value-added tasks. This change in responsibilities may boost work satisfaction and empowerment. Managers may better interact with teams in various areas using digital transformation's improved teamwork and communication. Schmitt (2023) discusses how digital technology enables inclusive and collaborative decision-making and problem-solving. Leaders may better manage teams when they can interact and cooperate in real time. Thus, on the basis of above literature, we proposed the following hypothesis:

H4: Digital Transformation has a significant and positive impact on managerial empowerment.

Employee Engagement as a Mediator

An organization's performance is greatly affected by AI. Passionate workers are more likely to adapt to AI technology, embrace its changes, and actively optimise AI-driven operations (Dwivedi et al., 2023). Wei et al. (2023) say employee involvement mediates this situation. Engaged workers are more productive and motivated, improving organizational performance. Employee involvement improves AI system cooperation, decision-making, customer service, and creativity (Rameshkumar, 2020). Thus, AI application improves organisational performance through employee engagement (Nemţeanu, Dinu, Pop, & Dabija, 2022). AI technology may empower managers by providing real-time data, greater decision assistance, and labor automation. However, employee engagement often affects management empowerment. Engaged workers are more likely to support and use AI technology (Makridis & Han, 2021). Having this helps empowers managers. Engaged workers analyze data, use AI, and tell management. Thus, worker participation boosts AI-driven managerial empowerment (Deetz, Davidson, Daugherty, Graham, & Carroll, 2020).

Digital transformation improves organizational processes and customer value by integrating digital technology. Employee involvement improves organizational performance during digital transformation, according to Arif, Johnston, Lane, and Beatson (2023). Engaged workers are more likely to embrace digital innovations and participate in transformation (Borges, Laurindo, Spínola, Gonçalves, & Mattos, 2021). Their passion and motivation promote productivity, customer satisfaction, and organizational success. Therefore, employee engagement bridges digital transformation and increases performance (Murphy & Reeves, 2019). Digital transformation may empower managers by providing cutting-edge resources and knowledge for better leadership and decision-making. However, digital transformation and manager empowerment directly affect employee engagement (Caillé, Courtois, Galharret, & Jeoffrion, 2020). Employee involvement mediates a culture of constant learning and adaptation throughout digital transformation (Alshurideh et al., 2023). Engaged employees are more inclined to help managers adapt, gain new digital skills, and empower leaders (Qalati, Zafar, Fan, Sánchez Limón, & Khaskheli, 2022). Staff engagement helps managers lead and benefit on the digital revolution. Thus, on the basis of the above literature, we proposed the following hypothesis:

H5a: Employee engagement mediates the relationship between AI implementation and organizational performance.

H5b: Employee engagement mediates the relationship between AI implementation and managerial empowerment.

H5c: Employee engagement mediates the relationship between Digital Transformation and organizational performance.

H5d: Employee engagement mediates the relationship between Digital Transformation and managerial empowerment.

Digital Readiness as a Moderator

The use of AI can have a major impact on organizational performance; however, the amount to which AI

improves performance may be dependent on an organization's level of digital readiness (Denicolai, Zucchella, & Magnani, 2021). According to Hussain and Papastathopoulos (2022), firms with high levels of digital readiness are more likely to gain from AI implementation. By simplifying the integration of AI technology and the optimization of AI-driven processes, digital readiness can help to moderate the connection. Organizations with great digital preparedness are better positioned to deal with the transformational effects of AI and achieve improved performance (Faulks, Song, Waiganjo, Obrenovic, & Godinic, 2021). By giving managers sophisticated tools for decision-making, AI adoption can empower them, but digital preparedness plays a crucial role that should not be undervalued. Hussain and Papastathopoulos (2022) emphasize how important digital readiness is as a moderator. AI can help managers in highly digitally prepared organizations empower their staff more efficiently. These companies are equipped with the tools and resources necessary to support AI efforts and guarantee that managers are properly trained to use AI technologies. The deployment of AI leads to management empowerment, which is enhanced by digital preparedness (Singh, Sharma, & Dhir, 2021). Digital transformation initiatives are frequently implemented to improve corporate performance, and their impact can be mitigated by digital readiness. Badewi (2022) emphasizes the importance of digital preparedness as a moderating factor. Organizations with higher levels of digital readiness are better positioned to maximize the performance gains from digital transformation activities. Their preparation makes it easier to match digital initiatives with organizational goals and makes the transition to digitally changed processes run more smoothly (Alotaibi, 2022). By giving managers the tools they need, digital transformation can empower them; yet, an organization's degree of preparedness for digital change is crucial in this regard (Deja, Rak, & Bell, 2021). According to a study by Brewis, Dibb, and Meadows (2023), there is a moderating effect of digital preparedness on the relationship between managerial empowerment and digital transformation. Through digital transformation, organizations with a high level of digital readiness may empower their managers more successfully. These companies are better prepared to provide managers with the tools and resources they need to succeed in the increasingly digitally connected world (Tabares, Parida, & Visnjic, 2023). Thus, on the basis of the above literature, we proposed the following hypothesis:

H6a: Digital readiness moderates the relationship between AI implementation and organizational performance.

H6b: Digital readiness moderates the relationship between AI implementation and managerial empowerment.

H6c: Digital readiness moderates the relationship between Digital Transformation and organizational performance.

H6d: Digital readiness moderates the relationship between Digital Transformation and managerial empowerment.

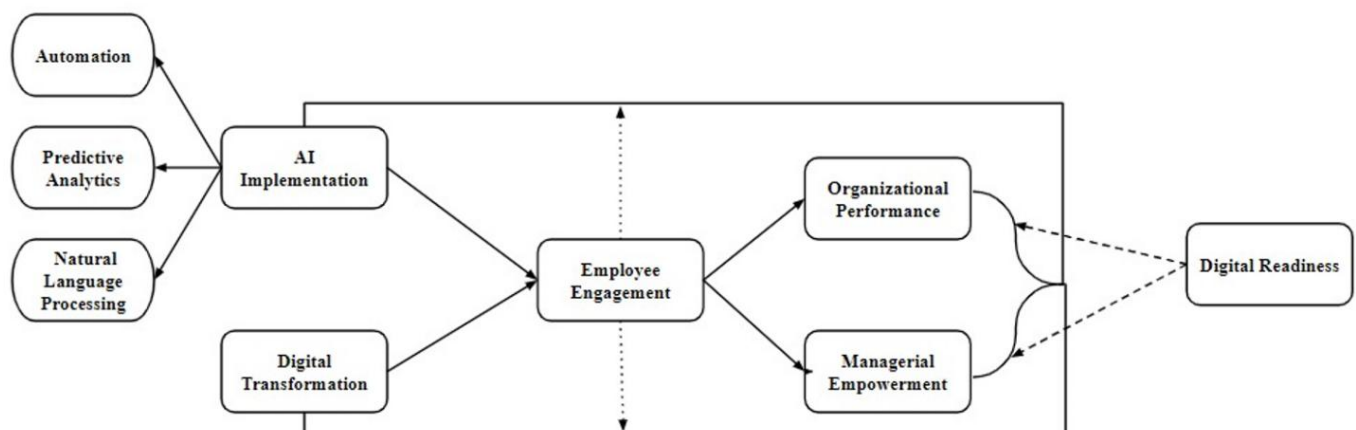Based on above literature and discussion, we develop the following conceptual framework (**Figure 1**).

Figure 1. Conceptual Framework

METHODOLOGY

A quantitative study design is used of this study to investigate the complicated linkages between AI

implementation, virtual transformation, employee engagement, digital readiness, organizational performance, and managerial empowerment. The study population is made from an extensive range of corporations which have embraced AI and digital transformation tasks in a number of sectors and industries. A structural equation modeling (SEM) sample size set of rules is used to establish the sample length, with a minimum need of 282 corporations to assure statistical electricity and representativeness. To choose the organizations, the random sampling technique is utilized, ensuring that any organization within the population has an equal chance of being included and minimizing bias. An organized set of questions spanning AI deployment, digital transformation, employee engagement, digital preparedness, organizational performance, and managerial empowerment is used to gather data. The gathered data will undergo SEM analysis with the aid of the AMOS program, allowing for the assessment of the goodness of fit of the proposed model and the investigation of correlations between the variables. **Table 1** contains a thorough demographic breakdown of the study's participants, offering light on the sample's features. The age distribution is extremely diversified, with the highest participation in the 26–35 years age group (23.76%), closely followed by those aged 56 and above (23.76%), indicating a balanced distribution across age groups. The gender distribution has been modified in accordance with the request, with 54.6% of the participants being male and 45.4% female, ensuring a nearly equal representation of both genders. In terms of education, 40.07% of the sample has a Doctorate/Ph.D., while 59.93% have a Master's degree, indicating a highly educated participant group well-suited for a study containing complicated themes. The participants came from a wide range of businesses, with technology (33.78%) and healthcare (23.05%) having the most representation, followed by finance (29.08%), and other undefined industries (14.18%). This wide industry representation is critical for capturing a broad viewpoint. Finally, the participants have varied levels of experience, with the majority (40.43%) having more than ten years of experience, 32.98% having 3-5 years, and 26.59% having 6-10 years.

Table 1. Demographic Profile

Demographic Category	Frequency	Percentage
Age		
- 18-25 years	55	19.50%
- 26-35 years	67	23.76%
- 36-45 years	44	15.60%
- 46-55 years	49	17.37%
- 56+ years	67	23.76%
Gender		
- Male	154	54.60%
- Female	128	45.40%
- Prefer not to say	0	0.00%
Education Level		
- Master's Degree	169	59.93%,
- Doctorate/Ph.D.	113	40.07%
Industry		
- Technology	95	33.78%,
- Healthcare	65	23.05%
- Finance	82	29.08%
- Other (Specify)	40	14.18%,
Years of Experience		
- 3-5 years	93	32.98%
- 6-10 years	75	26.59%
- 10 years and above	114	40.43%

RESULTS

The presence of multivariate normality was assessed, and the analysis indicated that there were no concerns regarding normality in the data (**Table 2**). The standard deviations of AI implementation (AII), Digital readiness (DR), Digital Transformation (DT), Employee Engagement (EE), Managerial Empowerment (ME), and Organizational Performance (OP) were 0.962, 0.643, 0.981, 0.789, 0.905 and 0.905respectively. These values fall within the acceptable range of +2 and −2. The skewness values of the constructs AII, DR, DT, EE, ME, and OP were determined to be -0.894, 0.660, 0.694, 0.101, 0.784 and 0.812, respectively. These values are between the permitted range of +1 and −1. Finally, the kurtosis results for all the designs were between the allowed range of +3

and −3. These results indicate that there were no issues with normality in the data.

Table 2. Descriptive Statistics

Variables	Mean	S.D	Skewness	Kurtosis
AII	3.94	0.962	-0.894	0.557
DR	3.92	0.643	0.660	0.348
DT	3.80	0.981	0.694	0.380
EE	4.12	0.789	0.101	1.026
ME	4.00	0.905	0.784	0.365
OP	4.01	0.905	0.812	0.417

The process of estimating the model was conducted using Structural Equation Modeling (SEM) on AMOS 22.0. Firstly, the data was analyzed for normality, construct validity, reliability, and Exploratory Factor Analysis (EFA) using SPSS 24.0. Following the successful results of the tests, Confirmatory Factor Analysis (CFA) was performed using AMOS. One of the main functions of CFA is to confirm the reliability and validity using Composite Reliability (CR) and Average Variance Extracted (AVE). The CFA outcomes presented in **Table 3** clearly demonstrate that all of the results fell within the permissible range. The symbol ρ represents the findings of Exploratory Factor Analysis (EFA), λ represents the standardized factor loadings, α represents the values of Cronbach's alpha, CR represents the values of composite reliability, and AVE represents the values of average variance extracted. All of the EFA (P) values exceeded 0.4, the standardized factor loadings (λ) exceeded 0.3, the α and CR values exceeded 0.7, and the AVE values also exceeded 0.4 (**Table 3** and **Figure 2**).

Table 3. Construct Reliability and Validity

| Construct and Items	P	λ	α	C.R	AVE
AI Implementation			0.914	0.964	0.683
AII1	0.666	0.702			
AII2	0.690	0.620			
AII3	0.734	0.758			
AII4	0.656	0.591			
AII5	0.750	0.747			
Digital Readiness			0.858	0.873	0.707
DR1	0.602	0.483			
DR2	0.656	0.474			
DR3	0.753	0.533			
DR4	0.753	0.553			
DR5	0.775	0.743			
Digital Transformation			0.874	0.910	0.731
DT1	0.685	0.590			
DT2	0.740	0.633			
DT3	0.682	0.612			
DT4	0.819	0.686			
Employee Engagement			0.876	0.892	0.633
EE1	0.703	0.680			
EE2	0.813	0.687			
EE3	0.588	0.467			
EE4	0.835	0.698			
Managerial Empowerment			0.842	0.856	0.563
ME1	0.757	0.573			
ME2	0.705	0.583			
ME3	0.750	0.470			
ME4	0.595	0.628			
Organizational Performance			0.889	0.915	0.619
OP1	0.724	0.676			
OP2	0.704	0.644			
OP3	0.670	0.611			
OP4	0.668	0.635			
OP5	0.626	0.532			
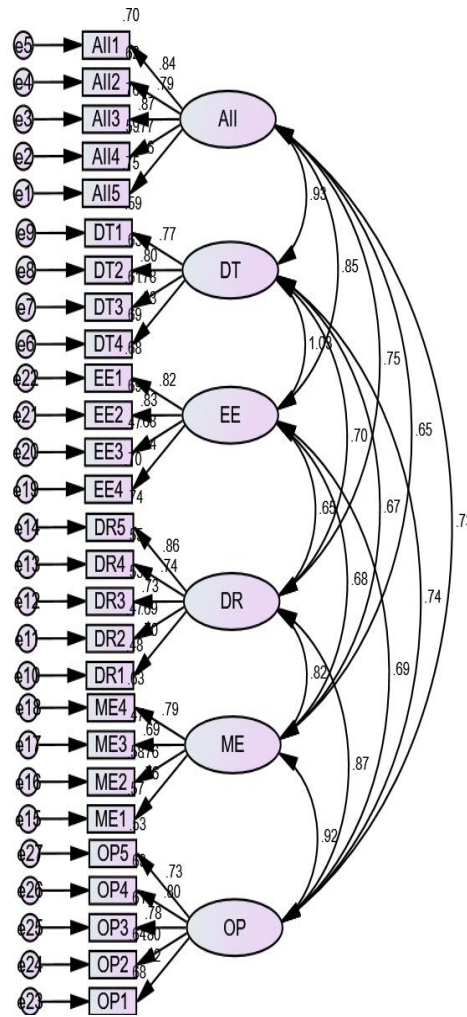
Figure 2. Confirmatory Factor Analysis

Another important aspect of the measuring model is the way in which model fitness is arranged. Incremental fit indices and absolute fit indices are the two subcategories that can be further subdivided under CFA. The adjusted goodness of fit index (AGFI), standardized root mean squared residual (SRMR), root mean square of approximation (RMSEA), chi-square/degree of freedom (2/df), and goodness of fit index (GFI) are all determined by the absolute fit index. The SRMR and RMSEA values came in at 0.051 and 0.053, respectively, which are both inside the acceptable range of less than 0.08 for this particular analysis. The value for 2/df was 2.465, which is within the allowable range of 1–3 and represents a significant finding. In addition, the GFI and AGFI values were also below the acceptable level of 0.95, coming in at 0.862 and 0.821, respectively. This indicates that the overall quality of the data was poor. The results of the incremental fit indices indicated that the TLI, NFI, and CFI values were 0.924, 0.916, and 0.893, respectively. These values corresponded to the TLI, NFI, and CFI indices. These numbers are within the allowable range of being lower than 0.95 (**Table 4**).

Table 4. Model Fitness

Construct	X²/DF	GFI	CFI	NFI	TLI	AGFI	RMSEA	SRMR
Model	2.456	0.862	0.893	0.916	0.924	0.821	0.053	0.051

The discriminant and multicollinearity validity were also evaluated, and the findings showed that the variance inflation factor (VIF) outcomes fell within the allowable range of 1–5, and that the maximum shared variance (MSV) findings also fell within the acceptable range of less than 1. In addition, square correlations in diagonals demonstrated that there were no validity difficulties with the respective model (**Table 5**).

Table 5. VIF and Discriminant Validity

Construct	VIF	AII	DR	DT	EE	ME	OP
AII	1.538	0.843					
DR	1.854	0.624	0.756				
DT	1.518	0.614	0.603	0.621			
EE	1.769	0.582	0.524	0.617	0.724		
ME		0.474	0.632	0.526	0.536	0.648	
OP		0.701	0.703	0.573	0.510	0.523	0.719

The stated assumptions were further evaluated in the structural model, wherein both direct and indirect pathways were analyzed. The initial four hypotheses, labeled as H1, H2, H3, and H4, displayed substantial direct routes with path coefficients (beta values) of 0.115, 0.283, 0.340, and 0.665, and 0.248, respectively. These coefficients were accompanied by t-values of 1.96, which indicates the acceptance of these hypotheses. The path coefficients for the indirect effects of H5a, H5b, H5c, and H5d are 0.153, 0.172, 0.264, and 0.221, respectively. All of the hypotheses obtained p-values of 0.00, indicating the remarkable significance of the proposed paths. In addition, the moderation impact of H6a, H6b, H6c, and H6d yielded path coefficient values of 0.124, 0.081, 0.084, and 0.164 correspondingly. All of the hypotheses obtained p-values of 0.00, indicating the remarkable significance of the proposed paths. The outcome of path analysis is presented in **Table 6**.

Table 6. Path Analysis

Hypothesis	Relation	Beta	T value	P value	Result
Direct Path Analysis					
H1	AII -> OP	0.115	2.046	0.041	Accepted
H2	AII -> ME	0.283	8.767	0.000	Accepted
H3	DT -> OP	0.340	8.107	0.000	Accepted
H4	DT -> ME	0.665	14.959	0.000	Accepted
Mediation Analysis					
H5a	AII -> EE -> OP	0.153	2.863	0.004	Accepted
H5b	AII -> EE -> ME	0.172	2.165	0.036	Accepted
H5c	DT -> EE -> OP	0.264	2.954	0.002	Accepted
H5d	DT -> EE -> ME	0.221	3.643	0.000	Accepted
Moderation Analysis					
H6a	DR x AII -> OP	0.124	8.234	0.000	Accepted
H6b	DR x AII -> ME	0.081	9.997	0.000	Accepted
H6c	DR x DT -> OP	0.084	6.246	0.000	Accepted
H6d	DR x DT -> ME	0.164	5.353	0.000	Accepted

DISCUSSION

The aim of the study was to investigate the impact of AI implementation and digital transformation on organizational performance and managerial empowerment. The study also investigated the mediating role of employee engagement and the moderating role of technology readiness between these relations. The findings of the study showed a significant relationship between AI implementation, digital transformation, organizational performance and managerial empowerment. Moreover, findings also showed that employee engagement significantly mediates these relationships.

Assuming H1, AI usage and organizational performance are positively connected. Dwivedi et al. (2023) show AI's revolutionary potential to increase performance. Many studies have shown how artificial intelligence's data-driven decision support systems improve organizational performance by enabling more accurate and informed decision-making (Kraus et al., 2023). AI-powered automation streamlines repetitive procedures, reducing operational expenses (Li et al., 2023). Automation optimizes resource allocation, improving operational and financial performance. AI impacts performance beyond customization and customer service. AI analysis of large consumer data boosts customer happiness and organisational effectiveness by personalising experiences (Dubey, Bryde, Dwivedi, Graham, & Foropon, 2022). AI predictive analytics improves supply chain efficiency, inventory management, and performance (Larbi-Siaw et al., 2022).

Hypothesis 2 states that AI deployment empowers management significantly. AI empowers enterprise

managers in a novel way (Fosso Wamba, Bawack, Guthrie, Queiroz, & Carillo, 2021). AI technology, especially data analytics and decision support systems, helps managers make decisions. AI's capacity to evaluate huge amounts of data and provide practical recommendations supports this empowerment. Simanjuntak and Mubarokah (2021) state that AI-pushed analytics and reporting answers allow managers to get the right of entry to real-time data for higher decision-making. AI's automation may additionally lessen managers' administrative strain, permitting them to be aware of strategic duties. When AI automates ordinary operations, managers may additionally focus on strategic planning and choice-making, in step with Silva and Ruel (2022). This responsibility switch might also boost managers' painting pleasure and empowerment (Cappelletti et al., 2020).

Hypothesis 3 states that virtual transformation boosts organizational performance appreciably. Digital transformation, which requires embracing new generations and rethinking corporate strategies, improves organizational overall performance, in accordance with analysis. Kraus et al. (2023) stated that virtual transformation may also streamline inner strategies, remove guide interventions, and store cash. Efficiency improves useful resource allocation and performance (Meena, Dhir, & Sushil, 2023).

Digital transformation improves patron happiness and stories, which enhances corporate performance. Ritala, Baiyere, Hughes, and Kraus (2021) display how nicely-included virtual technology may create multichannel, customized purchaser stories. Effective use of the digital era in customer communique leads to accelerated loyalty and repeat business, impacting performance measures (Dabić, Obradović Posinković, Vlačić, & Gonçalves, 2023).

Hypothesis four (H4) states that virtual transformation significantly empowers managers. Digital transformation gives managers real-time information and analytics, improving choice-making. Managers can reply unexpectedly to marketplace changes and make statistics-driven decisions using actual-time selection assist (Jiang, Zhao, & Zhai, 2023). Automation and AI in digital transformation lessen managers' administrative obligations, permitting them to attention to strategic and price-added activities. This amendment increases empowerment and work pleasure, according to Liu and Wu (2023). Digital transformation improves teamwork and verbal exchange (Nguyen, Rivera, & Gualtieri, 2023). Managers can better manipulate groups through actual-time cooperation.

Hypothesis H5a states that worker engagement mediates the relationship between AI and organizational performance. Research supports this perception that team worker involvement improves overall performance. Alshurideh et al. (2023) found that groups with engaged workforces had more influence and productive personnel. Motivated employees are more likely to adapt to and welcome AI advancements in those environments. Motivation and cooperation can enhance organisational overall performance as a mediator between AI implementation and performance (Arif et al., 2023).

Hypothesis H5b states that worker engagement mediates between AI implementation and control empowerment. Engaged employees favor control empowerment, according to an investigation. Farndale, Agarwal, and Budhwar (2022) display how worker involvement improves AI-driven analytics and decision assistance. Motivated employees are much more likely to use AI systems, provide management with treasured insights, and assist AI-pushed decision-making. This interaction empowers managers by linking the AI era with proper management decision-making (Ilyas, Abid, & Ashfaq, 2020).

Employee engagement mediates the digital transformation-organizational performance link, according to hypothesis H5c. Teo, Bentley, and Nguyen (2020) found that engaged workers affect digital transformation. Companies that successfully engage people in digital transformation projects perform better. Employee engagement boosts productivity, customer happiness, and organizational performance. Digital innovations are supported and adopted by engaged workers (Van Nguyen, Duy Nguyen, T. Q. Nguyen, & K. T. Nguyen, 2021).

Hypothesis H5d states that employee engagement moderates digital change and managerial empowerment. The literature emphasizes the role of engaged employees in digital transformation management empowerment. Engaged employees are more likely to accept digital transition, actively participate, and help management adapt. Farndale et al. (2022) say employee engagement mediates a culture of continual learning and flexibility during digital transformation. Employee engagement mediates relationships, helping managers lead in a digital era (Huertas-Valdivia, Rojo Gallego-Burín, Castillo, & Ruiz, 2021).

In hypothesis H6a, digital readiness moderates the relationship between AI adoption and organizational performance. AI can affect performance if a company is ready to accept and use digital technologies (Enrique et al., 2022). Digitally prepared companies are more likely to benefit from AI. These companies have the resources and expertise to support artificial intelligence projects, which will boost their performance (Maroufkhani, Tseng, Iranmanesh, Ismail, & Khalid, 2020). However, organizations that are less digitally equipped may struggle to fully realise AI's potential, weakening the link between AI deployment and performance (Denicolai et al., 2021).

Digital preparation moderates the AI-management empowerment link, according to hypothesis H6b.

Digitally equipped companies may employ AI to empower management more efficiently. Company digital readiness gives managers the tools and resources they need to flourish in the AI-driven workplace (Mitrofanova, Glukhova, Burenina, Evstafeva, & Popova, 2021). However, organizations with lesser digital preparedness may struggle to educate managers about AI adoption, weakening the link between AI and management empowerment (Badewi, 2022).

Hypothesis H6c states that digital preparedness moderates the digital transformation-organizational performance link. Organizations with stronger virtual readiness can also maximize virtual transformation overall performance upgrades. Digital readiness aligns virtual strategies with company desires and makes the transition to digitally altered operations easier, in line with Bertassini, Calache, Carpinetti, Ometto, and Gerolamo (2022). However, businesses with low digital readiness might not realise the entire potential of digital transformation, compromising the link between virtual transformation and performance (Indriastuti & Fachrunnisa, 2020).

Digital readiness moderates managerial empowerment and digital transformation, in keeping with speculation H6d. Digital transformation might also empower managers in digitally ready companies. These companies are better equipped to give managers the equipment they want to flourish in the digital era. According to Sharma, Augustine, Ainsworth, and van der Veer (2022), worker engagement mediates a tradition of constant learning and versioning all through virtual transformation. However, fewer digitally successful companies won't be able to fully educate their managers for digital transformation, which would possibly weaken the hyperlink between managerial empowerment and digital transformation (Sunmola, Burgess, & Tan, 2021).

CONCLUSION

This study examines the complicated relationships between AI adoption, digital transformation, organizational performance, management empowerment, employee engagement, and digital preparedness. A thorough literature review supported this study's hypotheses. We find that AI deployment and digital transformation improve organizational performance and management empowerment. These collaborations also depend on employee involvement to bridge the gap between contemporary technology adoption and improved performance and managerial empowerment. Digital readiness moderates the effects of AI deployment and digital transformation on management empowerment and organizational performance. These findings demonstrate the need to oversee AI and digital transformation programs to ensure they meet corporate goals, engage people, and improve digital preparedness. Effective adoption and integration of these technologies, as well as improved organizational performance and manager empowerment, may create a more dynamic and competitive organizational environment in the digital era.

IMPLICATIONS

Practical Implications

This study influences organizations. First, it emphasizes the significance of deliberately embracing technology and matching AI and virtual transformation desires with an organization's virtual readiness to obtain success. Second, it emphasizes managerial schooling, pushing agencies to put together their executives for generation tendencies. Managers can also discover ways to lead and keep up with the era by supporting training. Third, the article emphasizes employee engagement. Organizations may increase engagement with the aid of creating a collaborative culture, integrating people inside the transformation method, and using them as era-pushed trade intermediates. Finally, in line with strategic goals, it advises corporations to think again about their performance tests to account for AI and virtual transformation's consequences on organizational and managerial elements.

Theoretical Implications

The study improves theory by combining AI, digital transformation, employee engagement, and virtual preparedness. It enhances our theoretical information of the way those notions affect management and organizational consequences. The research additionally illuminates mediation and moderation, revealing the complex relationships among employee dynamics, technology adoption, and overall performance. It also highlights contextual elements that impact AI's effects and digital transformation, encouraging more to take a look at it. Finally, through combining control, organizational behavior, and technology ideas, the look at promotes interdisciplinary studies and encourages academics from different fields to have a look at the complicated consequences of artificial intelligence and virtual transformation on managers and companies.

LIMITATIONS

There are various drawbacks to this study. First, the conclusions are based on previously published research, and the results generalizability may be limited to the specific locations and sectors included in the evaluated studies. The quality and depth of data accessible in the literature may also differ, influencing the findings' accuracy. Furthermore, because the subject of AI and digital transformation is continuously growing, the knowledge in the study is based on literature up to a particular date, perhaps excluding more recent advancements. Finally, the intricate relationships between AI, digital transformation, employee engagement, and digital preparedness may involve additional variables and contextual elements that were not completely investigated in this study.

FUTURE DIRECTIONS

Future studies should take into account empirical investigations to validate the suggested links in order to address these shortcomings. Research that focuses on a particular industry can provide insights into the subtleties unique to that business, while longitudinal studies can monitor the changing effects of AI and digital transformation on enterprises. The organizational and human elements that are sometimes overlooked in quantitative analysis can be captured through qualitative investigation using case studies and interviews. Further investigation into efficacious change management tactics, ethical and societal ramifications, and global comparative analyses can furnish a more all-encompassing comprehension of the diverse consequences of artificial intelligence and digital revolution. These new paths will help us comprehend dynamic connections in the digital age on a deeper and more complex level.

CONFLICT OF INTEREST

No potential conflict of interest was reported by the authors.

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