

## Integrating artificial intelligence into human resource practices: A study of the ITES sector Using a TAM–TOE–Trust Framework

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### ABSTRACT

The rapid advancement of Artificial Intelligence (AI) is transforming Human Resource Management (HRM) from a primarily administrative function into a data-driven strategic partner. In the post-pandemic environment, organizations in the Information Technology Enabled Services (ITeS) sector have accelerated the adoption of AI-based systems to enhance workforce planning, decision-making quality, and operational efficiency. However, despite this growing adoption, the determinants of AI acceptance in HRM remain insufficiently understood, particularly in emerging economies. This study examines AI adoption in HRM using an integrated framework that combines the Technology Acceptance Model (TAM) and the Technology–

Organization–Environment (TOE) model, with trust as a mediating factor. Primary data were collected from 421 HR managers working in ITeS organizations in the Delhi National Capital Region (NCR) through a structured questionnaire. The data were analyzed using Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that technological factors (relative advantage, complexity, security, and cost effectiveness), organizational factors (top management support and readiness), environmental factors (competitive pressure), and trust dimensions (reliability and credibility) significantly influence perceived usefulness and perceived ease of use of AI systems. Furthermore, AI capabilities including

machine learning, natural language processing, predictive analytics, automation, augmentation, and bias detection have a significant positive impact on HRM practices. Bias detection and predictive analytics demonstrate the strongest effects on HR outcomes. The study contributes to the literature by providing an empirically validated TAM–TOE–Trust framework for understanding AI adoption in HRM. It

## **INTRODUCTION**

Artificial Intelligence (AI) has emerged as a transformative force reshaping organizational operations, decision-making processes, and competitive strategies across industries [1,2]. The COVID-19 pandemic accelerated digital transformation worldwide, compelling organizations to adopt intelligent technologies to maintain business continuity and operational efficiency [3]. In India, the Information Technology Enabled Services (ITeS) sector has been at the forefront of this transformation due to its technology-intensive operations and large workforce. Human Resource Management (HRM) has traditionally relied on manual processes, human judgment, and experience-based decision-making. However, contemporary HRM is evolving into a data-driven strategic function supported by advanced digital technologies. AI-enabled systems now support a wide range of HR activities, including talent acquisition, resume screening, candidate matching, workforce planning, employee engagement, learning and development, performance evaluation, compensation analysis, and attrition prediction. These technologies enable HR professionals to automate repetitive administrative tasks, reduce human bias, enhance decision accuracy, and focus on strategic initiatives that contribute to organizational performance [4,5]. One of the most significant applications of AI in HRM is recruitment and selection. AI-driven tools can analyze thousands of applications within seconds, identify suitable

also offers practical implications for HR leaders, technology developers, and policymakers to support responsible and effective integration of AI in the ITeS sector.

**Keywords:** Artificial Intelligence, Human Resource Management, AI Adoption, ITeS Sector, TAM–TOE Framework, Trust, HR Analytics

candidates using predictive algorithms, and conduct automated interviews through chatbots or video analytics. Similarly, AI-based workforce analytics enables organizations to forecast staffing needs, identify skill gaps, and design targeted training programs. Research suggests that AI adoption in HRM can improve operational efficiency, reduce costs, enhance employee experience, and support evidence based decision-making [5]. Despite these advantages, AI adoption in HRM remains uneven across organizations. Implementing AI systems requires substantial financial investment, technical expertise, organizational readiness, and cultural change. Concerns regarding data privacy, algorithmic bias, transparency, and ethical implications also influence adoption decisions. In HR contexts where decisions directly affect employee careers and perceptions of fairness trust in AI systems becomes particularly critical. Users must perceive AI tools as reliable, secure, and unbiased before relying on them for decision-making. Technology adoption theories provide useful frameworks for understanding these dynamics. The Technology Acceptance Model (TAM) proposes that perceived usefulness and perceived ease of use determine user acceptance of new technologies [6]. When HR professionals believe that AI systems enhance job performance and are easy to operate, the likelihood of adoption increases. However, TAM primarily focuses on individual perceptions and does not fully capture organizational and environmental influences. To address these limitations, the Technology–Organization–Environment (TOE) framework considers broader

contextual factors

affecting technology adoption. The TOE framework emphasizes technological characteristics such as compatibility and complexity, organizational readiness including resources and leadership support, and environmental pressures such as competition and industry trends as key determinants of adoption decisions [7]. Integrating TAM and TOE therefore provides a more comprehensive explanation of AI adoption at both individual and organizational levels. In addition to technological and organizational factors, trust has emerged as a crucial determinant of AI acceptance. AI systems often function as “black boxes,” producing decisions that may be difficult for users to interpret. Lack of transparency can lead to skepticism and resistance, particularly in HR contexts involving hiring, promotion, and performance evaluation. Studies indicate that perceptions of reliability, credibility, fairness, and data security significantly influence willingness to adopt AI technologies [8]. Trust therefore acts as a mediating factor between system characteristics and user acceptance. The ITeS sector in India provides a particularly relevant context for studying AI adoption in HRM. The sector employs millions of professionals and faces challenges such as high attrition rates, skill shortages, and the need

## **OBJECTIVES OF THE STUDY**

The primary objective of this study is to examine the integration of Artificial Intelligence (AI) into Human Resource (HR) practices within the ITES (Information Technology Enabled Services) sector.

1. To examine the role of AI in recruitment and talent acquisition, including résumé screening, candidate matching, and interview automation.
2. To evaluate the impact of AI on employee performance management and overall productivity.
3. To analyze the use of AI in employee engagement, training, and development through personalized learning systems.

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for continuous workforce optimization. AI tools can help address these challenges by enabling predictive talent management, automated employee support systems, and real-time performance analytics. However, empirical research examining how technological, organizational, environmental, and trust-related factors jointly influence AI adoption in HRM within this sector remains limited. This study aims to bridge this gap by investigating AI adoption in HRM practices using an integrated TAM–TOE framework with trust as a mediating variable. Specifically, the research seeks to identify the key drivers of AI adoption, analyze implementation challenges, and evaluate the impact of AI capabilities on HRM effectiveness in ITeS organizations. By providing empirical evidence from HR professionals, the study contributes to both academic literature and managerial practice. Understanding AI adoption in HRM is essential not only for improving organizational performance but also for ensuring the ethical, fair, and responsible use of intelligent technologies in managing human capital. As AI continues to evolve, organizations must balance technological efficiency with human values, transparency, and trust to achieve sustainable competitive advantage.

4. To identify the benefits of AI-driven HR practices, such as improved efficiency, cost reduction, and enhanced decision-making accuracy.
5. To explore the challenges and risks associated with AI implementation in HR, including ethical concerns, algorithmic bias, and data privacy issues.
6. To assess employees’ perceptions, attitudes, and acceptance of AI-based HR systems in the ITES sector.
7. To provide recommendations for the effective and sustainable integration of AI into HR practices.

## REVIEW OF LITERATURE

Artificial Intelligence (AI) has emerged as a transformative technology reshaping organizational processes across industries, particularly in Human Resource Management (HRM). With increasing digitalization and data-driven decision-making, AI applications enable organizations to automate routine tasks, enhance strategic workforce planning, and improve employee experience. Scholars have examined AI adoption in HRM from technological, organizational, behavioral, and strategic perspectives.

**AI and Organizational Transformation:** AI refers to computational systems capable of performing tasks that typically require human intelligence, including learning, reasoning, problem-solving, and decision-making. Foundational concepts introduced by John McCarthy and Alan Turing laid the groundwork for modern AI research [9,10]. Recent studies identify AI as a major driver of digital transformation and competitive advantage. Intelligent systems allow organizations to analyse large datasets, optimize processes, and respond rapidly to changing market conditions. Empirical evidence suggests that AI adoption enhances operational efficiency, innovation capacity, and strategic decision-making, particularly in knowledge-intensive sectors such as IT and ITeS.

**Evolution of Human Resource Management:** Human Resource Management has evolved from a transactional administrative function to a strategic partner contributing to organizational performance [11,12]. Human capital is widely recognized as a key source of sustainable competitive advantage. Contemporary HRM emphasizes talent acquisition, employee engagement, performance management, and organizational development. While early HR technologies focused on payroll processing, attendance tracking, and record management, modern HR systems integrate analytics, workforce planning, and employee experience management,

enabling HR departments to play a strategic role in organizations.

**AI Applications in HRM Practices:** AI technologies are increasingly embedded across a wide range of HR functions, transforming how organizations manage their workforce. In recruitment and selection, automated résumé screening and intelligent candidate-matching systems streamline hiring by quickly identifying suitable applicants. Chatbots are widely used for candidate communication and ongoing employee support, providing instant responses and improving engagement. Predictive analytics enables more effective workforce planning and attrition forecasting by analyzing historical and real-time data. Organizations also employ data-driven performance management systems to evaluate employee productivity and outcomes more objectively. In addition, sentiment mining techniques help assess employee engagement by analyzing feedback, surveys, and internal communications. Personalized learning and development platforms further enhance HR effectiveness by delivering tailored training programs that align with individual employee needs and career goals.

Research indicates that AI reduces time-to-hire, improves decision accuracy, and enhances employee satisfaction. Automation of repetitive tasks enables HR professionals to focus on strategic activities such as leadership development and organizational culture [5,13]. A growing body of research documents the expanding integration of AI across core HRM functions. Arora (2018) and Jain (2017) report that AI significantly improves HR efficiency by reducing time, operational costs, and human error in recruitment, training, and employee engagement activities [14,15]. Kapoor (2021) similarly observes that automation of low-value administrative tasks allows HR professionals to concentrate on strategic responsibilities such as talent development and workforce planning [5]. Kumari and Hemalatha (2019) identify key AI-driven technologies

transforming HR practices, including machine learning algorithms, Natural Language Processing (NLP), predictive analytics, biometric systems, chatbots, and intelligent decision-support tools. These technologies support objective, data-driven decision-making in areas such as candidate screening, performance prediction, and sentiment analysis [16].

Industry reports corroborate these findings. Deloitte (2020) notes a rapid global increase in AI adoption in recruitment automation, talent analytics, and workforce planning [13]. Srivastava (2019) highlights that while AI automates routine HR tasks, it also creates new technology-oriented roles requiring advanced digital skills, particularly in IT and ITeS sectors [17]. Overall, the literature indicates that AI is transforming HRM into a strategic, analytics-driven function that enhances efficiency, accuracy, and employee experience.

#### **Technology Adoption Models in AI Research:**

Technology adoption has been extensively studied using theoretical frameworks such as the Technology Acceptance Model (TAM) and the Technology–Organization–Environment (TOE) framework. These models provide complementary perspectives for understanding organizational and individual adoption of emerging technologies. The Technology Acceptance Model proposed by Davis (1989) explains adoption through two key determinants: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) [6]. Perceived usefulness reflects the extent to which a system enhances job performance, while perceived ease of use relates to the effort required to use the system. Empirical studies indicate that HR professionals are more likely to adopt AI tools when they perceive them as beneficial, reliable, and easy to use. The Technology–Organization–Environment framework developed by Tornatzky and Fleischer (1990) expands adoption analysis by incorporating organizational and environmental contexts [7]. It includes three dimensions:

1. Technological factors: relative advantage, compatibility, and complexity
2. Organizational factors: leadership support, readiness, resources, and organizational size
3. Environmental factors: competitive pressure, industry conditions, and regulatory influences

Research shows that AI adoption in HRM is strongly influenced by these contextual factors, particularly organizational readiness and competitive pressures. Integrating TAM and TOE provides a more comprehensive explanation of technology adoption by capturing both individual acceptance and organizational conditions.

**Trust and AI Adoption in HRM:** Trust is a critical determinant of AI adoption in HRM, where automated decisions directly affect employees' careers and perceptions of fairness. AI-driven HR systems process sensitive personal data and rely on algorithmic decision-making, making reliability, transparency, and ethical considerations essential for acceptance. Studies show that concerns about data privacy, surveillance, algorithmic bias, and lack of explainability can significantly hinder adoption [4,8]. Pillai and Sivathanu (2020) demonstrate that trust mediates the relationship between AI system characteristics and user acceptance. Security, privacy protection, and robust data governance strongly influence HR managers' willingness to rely on AI-enabled decisions. Perceived reliability and credibility of AI outputs also affect perceptions of fairness in recruitment, promotion, and performance evaluation. Lack of transparency and human oversight can lead to resistance from both HR professionals and employees.

**Challenges in AI Adoption in HRM:** Despite its potential benefits, AI adoption in HRM faces several organizational, technological, and ethical challenges. One major barrier is limited technological literacy among HR professionals, which restricts effective use of advanced tools. Concerns about data privacy, confidentiality, and cybersecurity are particularly

significant because HR systems handle sensitive employee information. High implementation costs and uncertain return on investment further discourage adoption. Integration with legacy HR systems and existing organizational processes is also complex. Resistance to change, especially when AI is perceived as a threat to job security, presents an additional challenge. Research emphasizes that organizational readiness, leadership support, and continuous training are essential for successful implementation [5,14]. Without strong governance and ethical oversight, AI systems may introduce bias, discrimination, or unfair outcomes, potentially undermining employee trust and organizational culture. Industry analysts also highlight regulatory uncertainty and lack of explainability as key obstacles to widespread adoption.

## **RESEARCH GAP**

Although existing studies demonstrate that AI enhances HRM effectiveness and decision quality, several gaps remain. Much of the prior research focuses on conceptual discussions, developed economies, or broad industry contexts rather than sector-specific empirical studies. In particular, limited research examines AI adoption within Information Technology Enabled Services (ITeS) organizations, despite their high technological intensity. Additionally, many studies rely on a single theoretical framework (e.g., TAM or TOE) rather than integrated models. There is also insufficient empirical research examining trust as a mediating factor between technological characteristics and AI adoption outcomes in HRM. Given that AI-based decisions directly influence employees' careers, perceptions of fairness, transparency, and reliability are critical for acceptance. Furthermore, limited evidence exists on how specific AI capabilities as machine learning, natural language processing, predictive analytics, and bias detection affect HR practices and organizational outcomes. Therefore, this study addresses these gaps by examining technological, organizational, environmental, and trust-related

determinants of AI adoption in HRM within the ITeS sector using an integrated TAM–TOE framework. By focusing on a technology-intensive service industry and employing empirical analysis, the study contributes to both academic literature and managerial practice.

## **RESEARCH METHODOLOGY**

This study investigates the adoption of Artificial Intelligence (AI) in Human Resource Management (HRM) practices within the Information Technology Enabled Services (ITeS) sector. An exploratory and descriptive research design was employed to examine the AI tools used in HRM, determinants influencing adoption, implementation challenges, and the overall impact on HR functions.

## **RESEARCH OBJECTIVES**

The study was conducted with the following objectives:

1. To identify the AI tools currently used in HRM practices
2. To determine the factors influencing the adoption of AI in HRM
3. To examine the challenges faced by HR departments during AI implementation
4. To analyze the impact of AI tools on HRM practices
5. To suggest future directions for AI integration in HRM

## **DATA COLLECTION**

Both primary and secondary data were utilized. Secondary data were collected from academic journals, books, conference proceedings, and reputable online databases to establish the theoretical foundation of the study.

Primary data were obtained through a structured, self-administered questionnaire developed based on prior literature and expert consultation. The instrument underwent pilot testing to refine clarity,

relevance, and reliability before full deployment. The finalized questionnaire comprised five major sections covering the demographic characteristics of organizations, factors influencing AI adoption, challenges associated with AI implementation, the impact of AI tools on HR practices, and the future outlook of AI in Human Resource Management (HRM). All measurement items were assessed using Likert-type scales.

A pilot study involving 75 respondents was conducted to evaluate clarity, reliability, and validity. The reliability analysis produced a Cronbach's Alpha value of 0.887, indicating high internal consistency of the instrument.

**SAMPLE DESIGN:** The target population comprised HR managers working in ITeS companies located in Delhi, Noida, and Gurugram.

Simple random sampling was used to select respondents.

Out of 650 questionnaires distributed, 421 valid responses were received and included in the final analysis, representing a satisfactory response rate for organizational research.

**STATISTICAL TOOLS AND TECHNIQUES:** Data analysis was performed using SPSS 21.0 and SmartPLS 4 software. The following statistical techniques were applied:

1. Descriptive statistics to summarize organizational characteristics

2. Exploratory Factor Analysis (EFA) to identify underlying constructs
3. Confirmatory Factor Analysis (CFA) to validate the measurement model
4. Partial Least Squares Structural Equation Modeling (PLS-SEM) for hypothesis testing
5. Friedman Test to rank adoption challenges
6. These techniques ensured the robustness, reliability, and validity of the empirical findings.

## **DATA ANALYSIS AND INTERPRETATION**

The primary data collected through the structured questionnaire were analyzed to examine the adoption of AI tools in HRM practices among ITeS organizations. The analysis began with descriptive statistics to assess the organizational profile of respondents and the prevalence of AI usage.

The study focused on the following key aspects:

1. Identification of AI tools used in HRM
2. Factors influencing AI adoption
3. Challenges encountered during implementation
4. Impact of AI on HR functions such as recruitment, training, performance management, and compensation
5. The role of AI in enhancing data-driven decision-making in HRM

**Organizational profile of respondents:** The findings provide comprehensive insights into how AI contributes to improved efficiency, strategic decision-making, and transformation of HRM practices within the ITeS sector Table 1.

**Table 1.** Organizational Profile of Respondents (N = 421)

Profile of Respondents	Category	Number (N)	Percentage (%)
Type of Organization	BPO	15	3.6
	KPO	5	1.2
	Telecom Services	24	5.7
	Software Services	73	17.3
	Others	304	72.2
	<b>Total</b>	<b>421</b>	<b>100</b>
Number of Employees in Organization	50–200	70	16.6
	201–500	74	17.6
	More than 500	277	65.8
	<b>Total</b>	<b>421</b>	<b>100</b>
Employees in HR Department	Less than 10	77	18.3
	10–20	51	12.1
	21–50	78	18.5
	More than 50	215	51.1
	<b>Total</b>	<b>421</b>	<b>100</b>
AI Tools Adoption	Yes	388	92.7
	No	33	7.3
	<b>Total</b>	<b>421</b>	<b>100</b>
AI Enabled HR Practices	HR Planning	25	5.9
	Recruitment & Selection	243	57.7
	Training & Development	13	3.1
	Performance Management	17	4.0
	Compensation Management	14	3.3
	<b>Total</b>	<b>109 /421</b>	<b>25.9/100</b>
Time period since AI tools adopted	Less than 1 year	29	6.9
	1 year to less than 2 years	52	12.4
	2 years to less than 3 years	91	21.6
	3 years to less than 4 years	81	19.2
	4 years and above	168	39.9
	<b>Total</b>	<b>421</b>	<b>100</b>

Frequency analysis was conducted to examine organizational characteristics, including type of organization, size, HR department size, AI adoption status, HR functions utilizing AI, and duration of AI implementation. The results indicate that most organizations belonged to the "Others" category within the ITeS sector (72.2%), followed by software services (17.3%) and telecom services (5.7%), while BPO and KPO organizations showed comparatively lower representation. A majority of organizations were large-sized, with 65.8% employing more than 500 employees. Similarly, HR departments were substantial, with 51.1% having more than 50 HR personnel, suggesting greater capacity for adopting advanced technologies. AI adoption was highly prevalent, with 92.7% of organizations reporting the use of AI tools in HR functions. Recruitment and selection emerged as the primary area of AI application (57.7%), followed by other functions such as HR planning, training, performance management, and compensation. Regarding adoption duration, 39.9% of organizations had been using AI tools for four years or more, indicating increasing maturity and institutionalization of AI-enabled HR practices within the ITeS sector.

## **OBJECTIVE-WISE ANALYSIS**

### **Objective 1: Identification of AI Tools in HRM**

AI tools are extensively used to automate routine HR tasks, enhance operational efficiency, and support evidence-based decision-making. Organizations increasingly deploy AI solutions for recruitment, talent management, performance evaluation, employee engagement, and administrative support, thereby modernizing traditional HR practices.

### **Objective 2: Factors Influencing AI Adoption**

This objective examined the determinants of AI adoption using an integrated framework combining the Technology-Organization-Environment (TOE) model and the Technology Acceptance Model (TAM), with trust incorporated as an additional mediating

factor. Analysis of 421 responses using Confirmatory Factor Analysis (CFA) and Partial Least Squares Structural Equation Modeling (PLS-SEM) confirmed the robustness of the measurement model. Diagnostic tests indicated no significant issues related to non-response bias, common method bias, or endogeneity. Reliability and validity assessments demonstrated strong factor loadings, internal consistency, and acceptable model fit indices.

### **Objective 3: Challenges in AI Adoption**

Several key challenges affecting the adoption of Artificial Intelligence (AI) in Human Resource Management were identified. These include concerns related to data privacy and security risks, which are particularly significant given the sensitive nature of employee information handled by HR departments. Organizational resistance to change also emerged as a major barrier, as employees and managers may perceive AI implementation as a threat to job security or established work practices. Additionally, a lack of technological skills among HR personnel limits the effective utilization of advanced AI tools. The Friedman Test was applied to rank these challenges based on respondents' perceptions, and reliability analysis indicated high internal consistency, with an overall Cronbach's Alpha value of 0.892.

### **Objective 4: Impact of AI Tools on HRM Practices**

This objective evaluated the influence of various AI capabilities on HRM practices, including machine vision, natural language processing, automation, augmentation, machine learning, predictive analytics, and bias detection mechanisms. These technologies support a wide range of HR functions, from recruitment and performance evaluation to employee engagement and workforce planning. Exploratory Factor Analysis (EFA) using Principal Component Analysis (PCA) was conducted to reduce 38 observed variables into a smaller number of underlying factors. The sample size was found to be adequate, and the Kaiser-Meyer-Olkin (KMO)

measure confirmed the suitability of the data for factor analysis.

### STRUCTURAL MODEL RESULTS

After establishing measurement validity, the structural model was evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM). The model explained 65.3% of the variance in HRM practices ( $R^2 = 0.653$ ), indicating strong explanatory power. All examined AI capabilities demonstrated a significant positive influence on HRM practices. Among these, Bias Detection and Mitigation exerted the strongest effect, followed by Predictive Analytics and Augmentation. In contrast, the duration of AI usage did not show a statistically significant impact

on HR outcomes, suggesting that the quality of implementation is more critical than the length of time the technology has been in use. Effect size analysis identified one strong effect (Bias Detection and Mitigation), two moderate effects (Augmentation and Predictive Analytics), and smaller effects for the remaining variables. The model also exhibited high predictive relevance, with a  $Q^2$  value of 0.642, confirming its strong predictive capability. Furthermore, the CVPAT results indicated that the proposed model outperformed benchmark models, demonstrating superior explanatory and predictive performance as shown in Figure 1, Bias Detection and Mitigation exhibits the strongest effect on HRM practices, followed by Predictive Analytics.

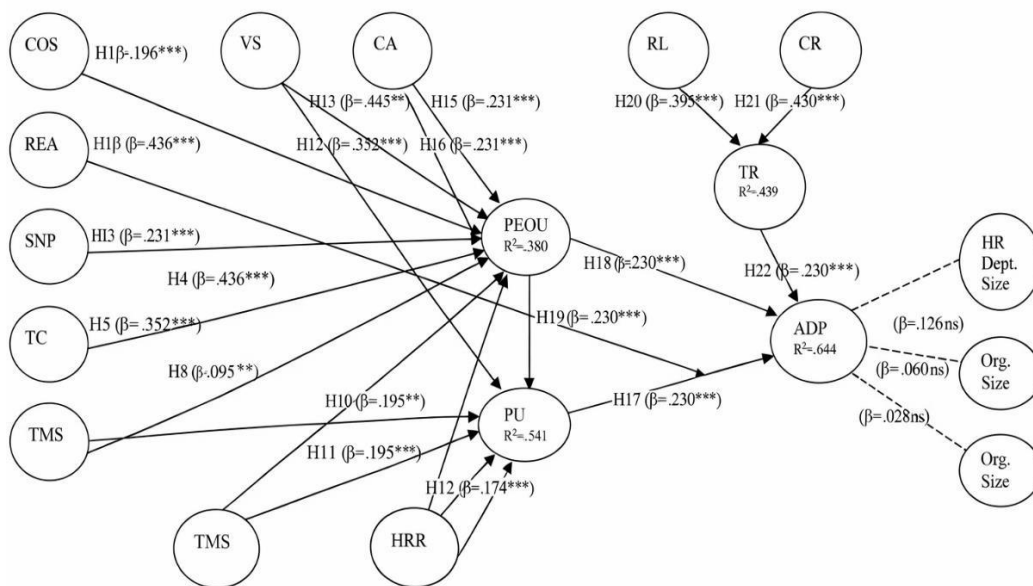


Figure 1. Structural Model Results (PLS-SEM Analysis)

### DISCUSSION

The findings of this study reinforce the growing consensus that Artificial Intelligence (AI) is reshaping Human Resource Management (HRM) by enhancing efficiency, objectivity, and strategic decision-making. The strong positive attitude of HR professionals toward AI adoption indicates a high level of readiness

for digital transformation within ITes organizations. Consistent with the Technology Acceptance Model (TAM), perceived usefulness (PU) and perceived ease of use (PEOU) emerged as the most influential predictors of adoption behavior (Davis, 1989). When HR professionals perceive AI tools as improving job performance while requiring minimal effort, their

intention to use such systems increases substantially. Organizational and environmental factors identified in the Technology–Organization–Environment (TOE) framework also played a significant role. Competitive pressure, relative advantage, and top management support positively influenced adoption, confirming that both organizational commitment and external market forces accelerate technological uptake [7]. Trust—particularly the perceived reliability and credibility of AI systems—further strengthened adoption, aligning with prior research emphasizing the importance of trust in automated decision systems [17-23]. Conversely, security and privacy concerns, along with technological complexity, negatively affected perceived usefulness and ease of use. These barriers reflect persistent apprehensions regarding data misuse, algorithmic opacity, and ethical risks associated with AI deployment. Organizational readiness influenced perceived usefulness but not ease of use, suggesting that while preparedness enhances perceived value, usability depends more on system design and user experience. From a functional perspective, recruitment and selection exhibited the highest level of AI integration. This finding is expected, as AI demonstrates strong capabilities in processing large applicant datasets, screening résumés, and conducting automated assessments. Tools such as applicant tracking systems, video interview analytics, and predictive hiring platforms significantly improve efficiency and reduce time-to-hire. However, concerns regarding bias and fairness remain prominent. Impact analysis revealed that advanced AI capabilities particularly Bias Detection and Mitigation and Predictive Analytics exert the strongest influence on HRM practices. These technologies enable fairer hiring decisions, proactive workforce planning, and more effective talent management. Machine Learning, Natural Language Processing, Automation, and Augmentation also contributed significantly, highlighting AI's multidimensional value across HR functions. The non-significant effect of usage duration suggests that

outcomes depend more on implementation quality, system integration, and user competence than on mere exposure time. Major challenges identified include low technological literacy, data privacy risks, and security concerns. These findings underscore the need for continuous training, robust governance frameworks, and ethical safeguards. Without addressing these barriers, organizations risk underutilizing AI's potential or encountering resistance from employees and HR professionals.

## **CONCLUSION**

This study concludes that AI adoption in HRM represents a transformative shift from traditional administrative personnel management to strategic, data-driven human capital management. The integrated TAM–TOE–Trust framework effectively explains AI adoption behavior, demonstrating strong explanatory power within the HR context. Perceived usefulness and perceived ease of use remain the primary drivers of adoption, supported by organizational readiness, environmental pressures, and trust in AI systems. AI technologies are enhancing HR performance by automating routine processes, improving recruitment accuracy, enabling predictive workforce planning, reducing bias, and strengthening evidence-based decision-making. Rather than replacing HR professionals, AI functions as an augmentation tool that enhances human judgment, efficiency, and strategic capability. Trust in AI outputs is essential for managerial acceptance, highlighting the importance of transparent algorithms, reliable systems, and ethical design. Despite its clear benefits, successful AI implementation requires addressing skill gaps, privacy concerns, ethical risks, and resistance to change. Organizations must invest in digital literacy initiatives, robust data governance mechanisms, and effective change management strategies to realize the full potential of AI. The findings also indicate that organizational size and resource availability facilitate adoption, suggesting that smaller firms may require

additional support, partnerships, or scalable AI solutions. Overall, AI in HRM should be viewed as a strategic enabler that enhances fairness, efficiency, and organizational competitiveness while preserving the human dimension of people management. Future research may examine longitudinal impacts of AI adoption, sector-specific differences, and the ethical implications of AI-driven HR decisions.

### CONFLICT OF INTEREST

The authors and co-authors have declared no conflict of interest.

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