

## DETERMINANTS OF ARTIFICIAL INTELLIGENCE ADOPTION IN RECRUITMENT WITHIN THE PAKISTANI IT SECTOR: THE MEDIATING ROLE OF DIGITAL LEADERSHIP

Marium Azad Khan<sup>1</sup>, Dr Ali Salman<sup>2</sup>, Dr Syed Ali Abdullah Mehboob<sup>3</sup>, Sadaf Noreen<sup>\*4</sup>

<sup>1</sup>Lecturer, Department of Management Sciences, National University of Modern Languages, Mirpur Campus, Azad Kashmir, Pakistan

<sup>2</sup>Lecturer, School of Information Risk Management (SIRM College), United Kingdom.

<sup>3</sup>Assistant Professor, University of Gujrat

<sup>4</sup>Lecturer, The University of Lahore.

<sup>1</sup>marium.azad@numl.edu.pk, <sup>2</sup>salmankhawaja1@gmail.com, <sup>3</sup>syed.ali@uog.edu.pk, <sup>4</sup>neeron\_12377@yahoo.com

<sup>1</sup>ORCID: <https://orcid.org/0009-0000-9588-650X>, <sup>2</sup>ORCID <https://orcid.org/0000-0003-1469-3998>

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Adoption of AI; Digital leadership; Technological expertise; Innovative climate; Competitive pressure; Employee expectations.

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Corresponding Author: \*  
Sadaf Noreen

### Abstract

Current research discusses how the technological knowledge, the spirit of innovation, the intensity of competition, and the demands of employees determine the implementation of artificial intelligence (AI) in the sphere of human resource management, and the role of digital leadership as a mediating factor. Based on the diffusion theory and organizational theory, the study conceptualizes AI adoption as a multidimensional construct, consisting of evaluation, adoption, and routinization, and, in turn, incorporates these aspects into a composite scale of AI adoption in the recruitment and selection processes. The study is framed within the context of the Pakistani IT industry, a sector that is in the early stages, with a significant number of workers being employed, and with an increasing reliance on online technologies. Based on a structured questionnaire and composite-variable analysis, the results show that the positive and statistically significant effects of technological expertise, innovative Climate, competitive Pressure, and employee expectations on AI adoption are positive and statistically significant in the context of practices related to recruitment. In addition, the findings also support the fact that digital leadership is a critical mediator, which strengthens the relationships between these organizational and environmental antecedents and AI adoption.

The descriptive and regression analysis shows that the highest rates of organizational preparedness toward AI implementation and strong perceptions of digital leadership are present. The addition of digital leadership to the model of analytical power will positively impact the explanatory power of the latter, and the importance of leadership capabilities in converting technological and environmental drivers into successful AI integration should be highlighted. Altogether, the research is based on the empirical data that the effective implementation of AI in human resource management requires not only

*technological and competitive conditions, but leadership approaches that contribute to the growth of trust, flexibility, and employee involvement. The results show how leadership plays a central role in closing the divide between the contextual drivers and the adoption of technology. The current study provides useful information to organizations that seek to adopt AI-based HR applications in a way that will not only be effective but also humane, and thus guide future strategic endeavors and policy developments.*

## INTRODUCTION

Artificial Intelligence (AI) has already become both a hypothetical idea and an omnipresent dictator of modern social and economic positions (Wang & Siau, 2019). This fact indicates the immense transformational potential of AI that has evolved, moving past the primitive rule-based systems to sophisticated architecture modes that can process natural language and predictive analytics, computer vision, and complex decision-making (Dwivedi et al., 2021). The increased development of AI has influenced a range of social and business areas, which are able to offer significant opportunities but are, at the same time, extremely challenging. AI is used to make processes more efficient and create more innovations in such fields as data science, fintech, automation services, and personalized consumer experience; however, it also provokes pertinent issues related to workforce displacement, data protection, and overdependence on automated operations (Tewari & Pant, 2020; Yawalkar, 2019). It has been predicted that AI would add as much as US\$15.7 trillion to the world's gross domestic product by 2030, thus showing the macroeconomic importance of AI (PwC, 2025).

In the organizational setting, AI has had a significant impact on the field of Human Resource Management (HRM). Conventional HR activities that were mostly manual and administrative are being automated and data-driven. AI now supports core business operations such as recruitment, performance evaluation, training, retention, and workforce analytics, which contribute to increased operational efficiency and responsiveness and objectivity in decision-making (Strohmeier & Piazza, 2015). This is leading to HR professionals no longer having to focus on routine administrative tasks, but instead taking on strategic, human-focused

roles that include employee development, culture development, and talent retention. As an illustration, AI-based recruitment algorithms will be able to run large amounts of resumes, filter the candidate pool by job requirements, and potentially predict future performance and cultural fit, thus reducing human bias and shortening the recruitment process (Chowdhury et al., 2023). In spite of these benefits, the understanding of the determinants of AI usage in HR is a major area of investigation. This research paper aims at studying these determinants by duplicating and building upon the work of (Tambe et al., 2019), What Drives the Diffusion of AI Recruitment Systems in Swiss HRM? The initial research established technological savvy, innovative Climate, competition and expectations of employees as external factors that affected the adoption of AI (Revillod, 2024). The present study maintains these variables, yet adds a mediating variable, which is digital leadership, and consolidates the above discrete dependent variables (evaluation, adoption, and routinization) into a single one, the adoption of AI, which specifically refers to CV pre-selection tools. Contextual variables of the original study are not included to focus on factors about organizational, environmental, and technological factors that affect the adoption in the Pakistani context (Qamar et al., 2021; Jain, 2018; Bhagyalakshmi & Maria, 2020).

The IT and IT-enabled services (ITeS) industry of Pakistan is an appropriate context for this question. This industry has seen a booming growth- owed to the export of software, freelancing and the spread of e-friendly services. In recent years, the government and industry reports suggest that the exports of IT/ITeS amounted to around US\$3.8 billion in the

FY202425 and that IT has become one of the most important contributors to foreign exchange earnings and macro-economic growth (Kshetri, 2021). The industry is also facing high demands in terms of qualified specialists, such as developers, data scientists, and cloud specialists. AI-based recruitment applications (including resume parsing, skill-based matching, automated shortlisting, and video-based-intervention analytics) have the potential to increase hiring efficiency, enhance the quality of placement, and lower the recruitment cost, especially in businesses that handle high-volume recruitment and remote hiring (PMC, 2025).

The current research paper will determine whether there is a positive convergence of four independent variables determined by Khalil (2025): technological expertise, innovative Climate, competitive Pressure, and employee expectations, with the adoption of AI-based CV pre-selection as a tool in Pakistani IT companies mediated with the help of digital leadership. Digital leadership refers to a leadership style that has been adapted to the digital age, where leaders utilize technological tools, information-based decision-making, and innovation-driven approaches to drive organizational change (Ahmed & Ramish, 2024). Digital leaders ensure the creation of flexible and adaptive cultures and innovation-driven cultures, stimulate employees to become change agents, and encourage the further evolution of an organization, in contrast to traditional leadership, which is characterized by hierarchical control, entrenched procedures, and routine performance control (Mannuru et al., 2025). Digital leadership as a mediating variable has a theoretical meaning. It fits both the Technology Organization Environment (TOE) model and the Diffusion of Innovations (DOI) theory as they reveal how leadership behaviors may affect organizational preparedness, employee acceptance, and overcome resistance to the introduction of AI. Investigating the mediating effect of digital leadership, the given study builds upon Islam and Tamzid's (2023) model and provides a new angle to the relationship between human-centric leadership and technological and organizational factors of AI implementation in

HR practices. The key research question that will be used in this exploration is: What is the degree to which organizational, environmental, and technological factors affect the usage of AI-based CV pre-selection tools in the HR functional field of the Pakistani IT sector? The importance of the study is two-fold. It is also valuable academically as it adds a mediating element of digital leadership to the existing body of research on AI adoption in HRM to offer a more nuanced view of the context of AI adoption in developing economies. In practice, it provides practical information to HR managers, outlining how AI-based recruitment systems can successfully be implemented, large-scale hiring can be optimized, and technological efficiency and employee welfare can be balanced. Synthetically, AI has essentially redesigned HR practices, especially recruitment, where the need to be efficient and precise is paramount. Due to reproducing and transferring the model developed by Revillod (2024) and placing it in the context of the IT industry in Pakistan, the paper investigates the interaction between technological knowledge, innovative environment, competitive forces, employee demands, and digital leadership in promoting the use of AI. The practical implication of the empirical results is expected to bring both theoretical and practical suggestions to the dynamic discussion of the technology-based transformation of HRM. The rest of the paper is structured in the following way: Section 2 is the literature review; Section 3 is the description of a theoretical framework and hypotheses; Section 4 is the description of the research methodology; Section 5 presents the discussion of the results; and Section 6 is the conclusion and future research directions.

## 2. Literature Review:

The literature review (LR) will discuss the significance of AI in the modern age and how it is transforming Human Resource Management practices, specifically the recruitment and selection techniques. It will then discuss why organizations must respond to this change, both in the context of developed and developing countries and will specifically discuss its

significance for Pakistani organizations operating in the IT sector and why implementing AI is imperative in this sector. The literature will also give insight into the factors which are important in the adoption of AI, as discussed in Revillod G.'s (2024) study, i.e., technological expertise, innovative Climate, competitive Pressure, and employee expectations. The LR will also deliberate on the mediating role of digital leadership in implementing AI adoption and how it is different from traditional leadership. Lastly, the Literature Review will justify the need for conducting this study and how its conduction will fill an important gap in the current body of knowledge.

### 2.1 Conceptualizing Artificial Intelligence:

Artificial Intelligence (AI) is a concept that is becoming a source of change in modern organizations. According to Pham Thi et al. (2025), AI can be defined as the ability of a digital computer or computer-controlled robot to perform tasks that are traditionally attributed to intelligent beings; it is important to highlight the simulation of the intellect of human beings by way of reasoning, learning, and solving problems. The claim that AI is any artificial system that is described to solve tasks that necessitate human-like perception, cognition, planning, learning, communicating, or taking physical action is also outlined by NASA (2025), which emphasizes flexibility and enhancement of performance throughout time. According to Albannai et al. (2025) and Şişu (2023), AI can be thought of as the ability of computer systems or algorithms to present intelligent human behavior. By definition, all these mean that AI is a collection of systems designed to replicate human mental capabilities based on learned data, reasoning, and solutions.

The fields of use of AI are quite numerous, and they include science, healthcare, finance, and business management. The fast evolution of AI, machine learning, robotics, and automation transforms the way people work, communicate, and interact, thus becoming the impulse of what is commonly known as the Fourth Industrial Revolution (Wang and Siau, 2019). In developed

economies, AI simplifies the process of automation, supply chain optimization, and data-driven decision-making, whereas in developing nations, the adoption is not uniform because of infrastructural and skills challenges, as well as regulatory challenges (Lin, 2025; Lopez-Figueroa et al., 2025; Sağbaş & Erdoğan, 2022). However, AI has also proven to be quite useful in the emerging economies by improving access to services in terms of mobile health, agricultural advisory services, and multilingual platforms.

### 2.2 The AI in Human Resource Management:

There are profound implications of AI on Human Resource Management (HRM) that entail hiring, training, performance management, compensation, and employee engagement (Hammami, 2024). With more and more data on employees and applicants processed by HR departments, AI is offering a chance to become more efficient, accurate, and judgmental (Bersin, 2019). By 2022, the global investments in artificial intelligence to use in business are estimated at \$79.79 billion, with the estimated value of the entire economy amounting to 3.9 trillion (Jameson et al., 2022; Nuryadin et al., 2023; Ratajczak, 2022). AI can be utilized in HR strategy to predict and prescribe talent acquisition, employee development, and workforce planning. The use of AI-based applications such as fuzzy logic, artificial neural networks, and expert systems can determine the most suitable candidates, automate the recruitment process, and optimize training programs (Bersin, 2019). In the same way, AI enables ongoing evaluation of performance, which enables organizations to adopt objective and data-driven evaluation and compensation systems to promote equity and efficiency.

### 2.3 Artificial Intelligence Recruitment and Selection:

One of the most apparent and influential areas of AI implementation in HRM is recruitment and selection. The automation of AI goes through time-consuming activities like the screening of applicant resumes, scheduling interviews, and communicating with the applicants, which

reduces the workload of the administration and enhances the quality of decisions (Jameson et al., 2022; Nuryadin et al., 2023; Ratajczak, 2022). With the help of AI-powered tools, candidates can be ranked according to their skills, experience, and alignment with the needs of the organization, whereas chatbots help to increase the engagement of the candidate and the rates of application submissions (Khaw et al., 2022). These efficiencies testify to the first four hypotheses:

**H1:** The HR teams have technological expertise that can be used to deploy AI tools.

**H2:** An innovative climate leads to exploration and implementation of AI in the recruitment process.

**H3:** Organizations prefer to use AI as a means to be competitive in the market.

**H4:** Expectations of fair, efficient, and transparent recruitment as a factor among employees determine the adoption of AI.

AI also enables HR professionals to concentrate on more strategic and high-level functions like employee experience, workplace culture and labor planning by automating simple processes.

#### 2.4 AI Implementation in developed and developing nations:

The use of AI to apply HRM practices in developed and developing nations differs drastically. The developed world has automated AI applications in its human resource activities, but the developing economies confront structural and cultural barriers (Bankins, 2021). Multinational enterprises have enabled the spread of AI-based HRM systems in emerging markets. As an example, the AI-powered chatbot by EY named Goldie was already implemented in 138 countries, many of them in the Global South, whereas local solutions like WeChat Recruiting and the Malaysian DIANE platform demonstrate localization (Billi & Labraña, 2025). With these efforts, adoption has yet to be balanced as a result of organizational willingness, employee ability, and executive assistance.

#### 2.5 AI-Based HRM in Pakistan:

The use of AI in Pakistan is accelerating, especially in the IT industry, which is marked by a high growth rate, a huge number of staff to be hired, and competition across the globe (Ahmed et al., 2024; PSEB Annual Report, 2025). Automated selection and evaluation of the candidates, HireVue and similar AI-powered platforms allow the screening of CVs, ranking the candidates, and evaluating their suitability, which streamlines the recruitment process and offers objective data in terms of the candidate's suitability. Because of these benefits, cultural resistance, inadequate HRM capabilities, and organizational inertia remain the major obstacles (Kong et al., 2021; Varghese, 2023; Kumar and Yanamala, 2023). Varying strategic benefits are realized in the adoption of artificial intelligence (AI) in the Information Technology (IT) sector in Pakistan. Among the several positive aspects is the automation of the large-scale recruitment processes that not only amplify operational effectiveness but also cut the time-to-hire metric (Ahmed et al., 2025). In addition, AI can support the correspondence of the competencies of the employees with particular projects and create individual upskilling suggestions, which optimizes the use of the workforce (Khalil, 2025). AI-driven predictive analytics are useful to facilitate objective and data-driven performance management, which results in fairer and more effective assessments (Zheng et al., 2025). Moreover, AI platforms allow predicting employee turnover and implementing specialized retention programs, which is why valuable human capital can be maintained (Zheng et al., 2025). Finally, AI can help to decrease operational expenses and enhance competitiveness in the international marketplace by means of unifying and simplifying the recruitment, performance evaluation, and skill-building procedures (PSEB Annual Report, 2025).

2.6 Diffusion and Adoption of AI: Revillod (2024) is conceptualizing the adoption of AI as a gradual diffusion instead of a decision, as is accounted by the Diffusion of Innovations (DOI) theory. Organizations advance through

evaluation (estimating the potential value), adoption (implementing AI tools), and routinization (definitive integration of AI into normal workflows), after which they go through confirmation or extension (training and consistent innovation). The Technological-Organizational-Environmental (TOE) model (Tornatzky and Fleischer, 1990) places the adoption of AI in a technological, organizational, and environmental situation and points out that several interconnected factors determine the success of adoption.

### 2.7 Exogenous Factors that affect the adoption of AI:

Based on the empirical research of Revillod (2024) and grounded on the Technology-Organization-Environment (TOE) framework, it is possible to identify four independent variables, which have a significant effect on the adoption of artificial intelligence in human resource management (HRM). Technological expertise refers to the ability and knowledge needed to achieve successful deployment and use of AI systems, thus balancing technical capacity with organizational goals. Companies that have an increased level of technological proficiency are, therefore, in a better position to implement AI tools in HR operations so that they can be both effective and strategically pertinent (Billi and Labrana, 2025). NewClimate refers to a group perception of the employees that experimentation and creativity are supported and rewarded in the organization. This positive atmosphere preconditions the increased level of openness to new technologies, thus improving the chances of successful AI implementation in the HR field (Kim et al., 2024).

Competitive Pressure refers to the intensity of external market forces such as inter-firm competition, changing customer needs, and accelerating technological turbulence that force organizations to seek innovative responses to the forces so as to maintain competitive advantage. Companies that become more exposed to competitive Pressure are, thus, better equipped to incorporate AI into the HR processes, which enhances operational efficiency and promptness

(Thi et al., 2025). Employee expectations include the expectations of the workers with regard to fair treatment, career promotions and friendly working conditions. Their expectations inform their motivation and readiness to participate in AI-powered processes, thus having an overriding impact on the effectiveness of technology adoption in HRM on the whole (Basar, 2024).

### 2.8 Digital Leadership as a Mediating Variable:

The ability to use digital resources to reach strategic goals and lead teams in the process of change is essential in transforming potential AI into actual results, but it is referred to as digital leadership (Araujo et al., 2021; Hung et al., 2023). Digital leaders mediate the interaction between the independent variables and AI adoption by achieving the aims of innovation, sharing of knowledge, and empowering the employees (Büyükbese, 2022; Tigre et al., 2023). As an example, digital leadership can: Upskill the technological proficiency to actual AI application by developing skills and addressing the technical-human divide (Senadjki et al., 2023; Daxbacher et al., 2024). Improve novelClimate through model simulation of adaptive behaviors and encouraging experimentation (Yang et al., 2025; Alshammary and Ali, 2024). Transform the competitive Pressure into practical AI strategies, match the tools with the market needs (Albannai et al., 2025; Seraj et al., employee expectations, making it less resistant and positioning AI as a chance to empower and develop skills (Kamran Rafique et al., 2025); Business in the Digital Era, mechanisms endorse the mediating hypotheses H5-H8.

**H5:** Digital leadership mediates the relationship between technological expertise and the adoption of AI in recruitment and selection.

**H6:** Digital leadership mediates the relationship between innovative Climate and the adoption of AI in recruitment and selection.

**H7:** Digital leadership mediates the relationship between competitive Pressure and the adoption of AI in recruitment and selection.

**H8:** Digital leadership mediates the relationship between employee expectations and the adoption of AI in recruitment and selection.

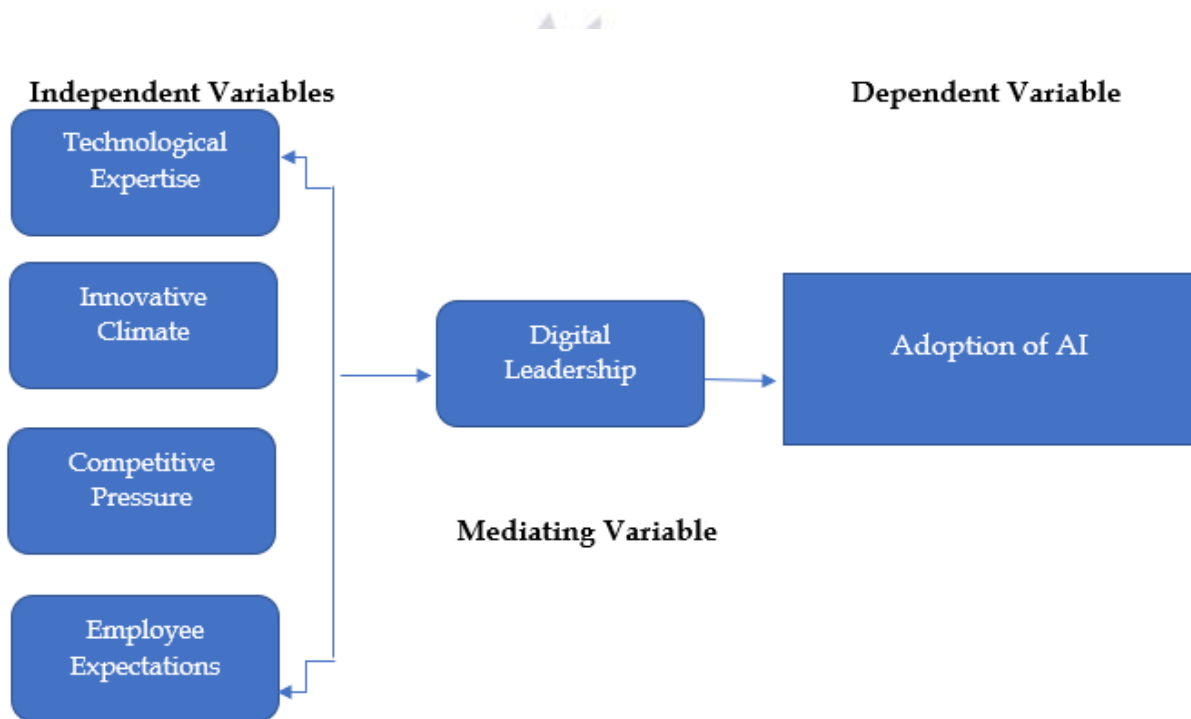
As shown in the literature, AI represents one of the key agents of organizational change, especially in HRM, as it has been shown to improve recruitment, selection, performance management, and compensation practices. Technological expertise, innovative Climate, competitive Pressure, and employee expectations influence adoption, whereas digital leadership is an important intermediary in actualizing the potential of AI. The implementation of AI in the IT sector in Pakistan is strategic, as it can be used to deal with high-volume employment, skills mapping, employee retention, and competitiveness. The current research builds upon the model by Revillod (2024), incorporating the element of digital leadership; hence, providing the framework with the theoretical background and empirical applicability to explore the field of AI adoption

in the recruitment and selection process in the context of a developing country.

**2.8 Theoretical Framework**

Grounded in the Diffusion of Innovation (DOI) theory and the Technology-Organization-Environment (TOE) framework, the current study proposes a modified conceptual model adapted from Revillod (2024). The model is extended by introducing digital leadership as a mediating variable to explain the adoption of AI-based HRM practices better. This modification aims to capture the role of leadership capabilities in strengthening or weakening the relationship between technological, organizational, and environmental factors and AI adoption within organizations.

**MODIFIED MODEL**



**3. Research Methodology:**

The current study has taken a quantitative research design, wherein a structured questionnaire will be used to collect data among

employees and managers in IT companies operating in Pakistan. The questionnaire items that matched the independent and dependent constructs were based on Revillod (2024), thus

making sure that the instruments had empirical validation and were responsively developed to investigate the adoption of artificial intelligence in the recruitment and selection processes. To measure the mediating construct of Digital Leadership, the Human-Centric Digital Leadership Scale (DLS) developed by Khan, Mugge and Gudergan (2025) was used. The scale captures major aspects of digital leadership, especially the use of AI-based approaches with ethics, participative leadership, and transparency, skill development, growth mentality, and people-focused leadership.

The demographic targeted was the employees and managerial staff in the IT industry in the main metropolitan areas in Pakistan, where AI-based human resource systems are becoming a common occurrence. The convenience sampling methodology was applied and can be explained by the conditions of time and accessibility, as well as the lack of an extended sampling frame of IT professionals working at various organisations. The convenience sampling is widely used in technology adoption studies and is considered suitable in both explanatory and exploratory research (Sekaran and Bougie, 2020).

3.1 Measurement and Variables

Table 3.1: Measurement and Variables

Variable Type	Variable Name	Definition / Description	Source	Measurement Scale
Dependent Variable	Adoption of AI	The degree to which AI is adopted in recruitment and selection processes	Revillod (2024)	5-point Likert (1 = Strongly Disagree, 5 = Strongly Agree)
Independent Variable	Technological Expertise	Knowledge and skills to apply, integrate, and evaluate technologies in alignment with organizational goals	Billi & AI Labrana (2025); Revillod (2024)	5-point Likert
Independent Variable	Innovative Climate	An organizational environment that encourages experimentation, creativity, and innovation	Kim et al. (2024); Revillod (2024)	5-point Likert
Independent Variable	Competitive Pressure	Intensity of external market forces that motivate the adoption of innovative solutions	Thi et al. (2025); Revillod (2024)	5-point Likert
Independent Variable	Employee Expectations	Employees' beliefs about fair treatment, career growth, and conducive work environment affect their engagement with AI.	a Basar (2024); Revillod (2024)	5-point Likert
Mediating Variable	Digital Leadership	Leaders' ability to guide digital transformation, foster innovation, and ensure effective use of AI tools	Khan, Mugge & Gudergan (2025)	5-point Likert

3.2 Data Analysis Approach

Descriptive statistical operations, correlation tests, multicollinearity measurements through variance inflation factors (VIF), and multicollinearity using multiple regression were employed in the current study to measure the

direct and mediating impacts. To test the mediating role of the digital leadership, the Baron and Kenny (1986) approach, with the support of regression-based mediation models, was utilized. The conceptual regression equation can be defined as: AI Adoption.

**Table 1: Descriptive Statistics of Study Variables**

Variable	Mean	Std. Deviation	Variance	Minimum	Maximum	Skewness	Kurtosis
Adoption of AI	3.52	0.41	0.17	2.40	4.00	-0.61	-0.48
Technological Expertise	3.47	0.44	0.19	2.33	4.00	-0.55	-0.36
Innovative Climate	4.12	0.53	0.28	3.00	5.00	-0.42	-0.29
Competitive Pressure	3.39	0.46	0.21	2.00	4.00	-0.48	-0.41
Employee Expectations	3.58	0.43	0.18	2.00	4.00	-0.63	-0.37
Digital Leadership	3.66	0.38	0.14	2.70	4.00	-0.57	-0.44

Table 1 gives descriptive statistics that give an overview of the study variables in terms of central tendency, dispersion and distribution. The mean score of all constructs is higher than the midrange of the five-point Likert scale (3.0), which means that the respondents, overall, view a positive organisational environment in adopting AI in recruitment and selection. Innovative Climate has the highest mean of 4.12, which depicts that employees have a strong perception of the organisational supportiveness of the organisation towards experimentation, creativity and innovation. The next strong positive perceptions can also be observed in Digital Leadership (Mean = 3.66) and Employee Expectations (Mean = 3.58), which implies that leaders are seen as having the capability to spearhead digital transformation and that employees have positive expectations towards the use of AI. The average Adoption of AI (3.52) suggests that integration of AI in the recruitment procedures is moderately high. Technological Expertise (Mean = 3.47) and Competitive Pressure (Mean = 3.39) are evidence that the external market-motivated elements and technical opportunities are rather strong in the

organisations. Standard deviation, lying between 0.38 and 0.53, represents average variability in the responses and indicates that, though the perceptions are usually positive, there is some variability in terms of experience and perceptions of respondents. This moderate distribution of data is supported by the values of variance that are in agreement with the standard deviations. The skew values of all variables are negative with a range of -0.42 to -0.63, which implies a slightly left-skewed distribution. This means that the respondents gave higher scores at a greater rate, which supports the decoding of positive perceptions in all constructs. The values of kurtosis, between -0.29 and -0.48, are relatively near zero, which means that the distribution of the responses is not strongly skewed towards either peak or flat. These descriptive statistics prove that the sample has relatively high technological expertise, innovative Climate, competitive Pressure, employee expectations, digital leadership, and AI adoption, the distributions of which are close to normal distribution.

**Table 2: Correlation Matrix**

Variables	Adoption of Tech. AI	Innov. Climate	Comp. Pressure	Emp. Expectations	Digital Leadership
Adoption of AI	1.000				
Technological Expertise	0.61	1.000			
Innovative Climate	0.58	0.55	1.000		
Competitive Pressure	0.49	0.46	0.51	1.000	

Variables	Adoption of Tech. AI	Innov. Expertise	Innov. Climate	Comp. Pressure	Emp. Expectations	Digital Leadership
Employee Expectations	0.57	0.53	0.54	0.47	1.000	
Digital Leadership	0.72	0.63	0.66	0.54	0.61	1.000

The correlation matrix shown in Table 2 clarifies the relationships between the variables of the study and provides initial evidence on the relationship between these variables. Each of the variables shows a favorable and statistically significant relationship with AI adoption, meaning that high rates of technological knowledge, innovative environment, competition, employee anticipation, and digital leadership are good predictors of higher AI adoption in the recruitment and selection contexts. Digital Leadership has the highest correlation with AI adoption ( $r = 0.72$ ), which reflects the key role of digital skills and leadership strategies in supporting the implementation of AI. There are also strong positive correlations between Technological Expertise ( $r = 0.61$ ) and Employee Expectations ( $r = 0.57$ ). Further importance of organisational and environmental aspects to drive the adoption process is indicated by Innovative Climate ( $r = 0.58$ ) and Competitive

Pressure ( $r = 0.49$ ). The independent variables' correlations are moderate ( $0.46 - 0.66$ ), which is positive, but not extremely strong, so the issue of multicollinearity in the future regression analysis is alleviated.

Regarding the study hypotheses, the correlations observed offer preliminary empirical evidence to H1-H4 since all the independent variables are positively associated with AI adoption. The especially strong connection between digital leadership and AI adoption also provides early-stage data of the potential mediating impact of digital leadership (H5H8), which means that leadership could enhance or direct the impacts of organisational and technological antecedents on AI integration. The correlation analysis proves the fact that the variables correspond to the theoretical assumptions and require further investigation with the help of the regression and mediation analysis to test the hypotheses formally.

**Table 3: Variance Inflation Factor (VIF) Results**

Predictor	Tolerance	VIF
Technological Expertise	0.56	1.78
Innovative Climate	0.52	1.92
Competitive Pressure	0.61	1.64
Employee Expectations	0.58	1.72
Digital Leadership	0.49	2.04

Table 3 shows the Variance Inflation factor (VIF) and tolerance factor of the explanatory variables used in the model, and, therefore, allows assessing multicollinearity. Tolerance values of all

predictors take the value between 0.49 and 0.61, which is actually far above the accepted value of 0.10, thus showing that there is no excessive intercorrelation of the variables. Simultaneously,

the VIFs range between 1.64 and 2.04, which is not very close to the standard cut-off of 5 or even 10. Digital Leadership has the largest VIF (2.04), followed by Innovative Climate (1.92); however, these values still represent a rather insignificant level of multicollinearity. All of the results prove that there is no substantive problem of multicollinearity in the model, and each

independent variable, such as technological expertise, innovative Climate, competitive Pressure, employee expectations, and digital leadership, can be included in the regression analysis without influencing the estimated coefficients.

**Table 4: Regression Results – Adoption of AI**  
**Dependent Variable: Adoption of AI**

Predictor	B	Std. Error	t-value	p-value	Decision
Technological Expertise	0.21	0.04	5.25	<0.001	Supported
Innovative Climate	0.18	0.05	3.98	<0.001	Supported
Competitive Pressure	0.14	0.04	3.42	0.001	Supported
Employee Expectations	0.19	0.04	4.76	<0.001	Supported
Digital Leadership	0.32	0.05	6.84	<0.001	Supported

Statistic	Value
R	0.81
R Square	0.66
Adjusted R Square	0.65
F Statistic	92.4
Model Significance	<0.001

The regression findings shown in Table 4 provide a detailed analysis of the determinants of AI adoption. The subsequent interpretation is thematic. This overall model fit and strength measure the reliability of the test-statistics and the degree to which the test findings satisfy the researcher. Overall Model Fit and Strength. This overall model fit and strength is a measure of the reliability of the test-statistics and how well the test findings meet the researcher's hypothesis. The regression model has a high level of statistical power and reliability. The R-value of 0.81 demonstrates a positive relationship of high strength among the predictors and the adoption of AI. Additionally, the R2 value of 0.66 implies that the five variables included in the present study can explain about 66 percent of the

variance in AI adoption, which is strong in social science studies and indicates that the model represents the common factors in the organizational adoption of AI. The F-value of 92.4 and a significance value of p under 0.001 indicate that, on the whole, the model is very significant and the correlation between the predictors and the dependent variable cannot be due to mere chance.

Digital Leadership was found to be the most important predictor of AI adoption when compared to the other predictors that were analysed. It is the most unstandardised coefficient (B = 0.32) and value (6.84). Therefore, AI adoption increases by 0.32 units in the case of a one-unit change of Digital Leadership. In practice, this highlights the idea that the strategic vision, digital literacy, and proactive involvement

of the leaders of the organization are the most important factors of successful transition to the operations that are based on AI. The second factor is Technological Expertise with a coefficient of  $B = 0.21$  and  $t\text{-value} = 5.25$ . This finding highlights the need to prepare internally; having a desire to adopt AI is not enough, as the technical knowledge and workforce to install and sustain these technologies are necessary. The great level of significance ( $p < 0.001$ ) proves that technical expertise is a prerequisite that systematically preordains the successful adoption of AI.

The findings also confirm the significance of organizational environment in terms of Employee Expectations ( $B = 0.19$ ) and an Innovative Climate ( $B = 0.18$ ). Both predictors are statistically significant at  $p < 0.001$ . Therefore, the adoption of AI is not only a top-down technical move but also a bottom-up employee-driven move and an overall willingness of the culture to new ideas. As long as employees expect modern technologies and the business culture promotes taking risks and innovations, there is a significant probability of the development of AI projects.

Competitive Pressure is the weakest predictor of the five, with its  $B = -0.14$   $t = 3.42$  being statistically significant. This result suggests that although the competitive parity does influence the decision to implement AI, it does not have a significant impact on it compared to internal factors like leadership and expertise. It is therefore possible to imagine that AI adoption is rather an internally led and proactive strategic decision rather than a necessarily reactive reaction to market competition. The  $p$ -value of 0.001 still supports the hypothesis that the external environment is a valid factor in the decision-making process. The inclusion of digital leadership in the regression model resulted in a reduction in the direct effects of technological expertise, innovative Climate, competitive Pressure, and employee expectations on AI adoption, while digital leadership itself remained a strong and significant predictor. This pattern indicates that digital leadership plays a mediating role in the relationship between organizational factors and the adoption of AI.

## 5. Discussion:

The proposed model is supported by the empirical results of this study, which show that the implementation of Artificial Intelligence (AI) in the hiring process is a complex process with technological, organizational, and environmental factors driving it. The overall model performance is extremely high, as an overall explanation of 0.66 is obtained as the value of  $R^2$ , which indicates that the predictors explain 66 percent of the variance in AI adoption. These results agree with the Technology-Organization-Environment (TOE) model that argues that technology adoption is not an isolated technical choice, but rather a reaction to a complex ecosystem of internal and external forces. The high  $F$ -statistic (92.4) again confirms that the results are statistically significant and thus eliminates the possibility of random chance.

One of the major conclusions made during this study is that Digital Leadership proves to be the strongest indicator of AI adoption ( $B = 0.32$ ,  $p < 0.001$ ). This fact supports the assumption that in the Pakistani IT industry, a strategic vision and digital literacy of a leader are the most significant drivers of change. In contrast to the traditional leadership models that focus on the hierarchical structure, digital leadership encourages a culture of innovation and flexibility. As a result, the leaders in this industry act as efficient change agents, which is one of the primary principles of the Diffusion of Innovation (DOI) theory, as they facilitate the interplay between the contextual factors and the practical use of technology. The results associated with Technological Expertise ( $B = 0.21$ ) and Innovative Climate ( $B = 0.18$ ) indicate the importance of internal organizational preparedness. Hypothesis H1 and H2 Results of relevance In line with H1 and H2, it is presented that simple aspiration of AI is insufficient; organizations need to have the technical know-how to implement such tools successfully. In addition, a novel climate is the psychological basis of adoption. The organizational inertia commonly hindering the implementation of AI reduces when the employees feel that experimentation is rewarded. These internal factors portray more force as compared to the

external market forces, hence signifying an active attitude towards technology in the industry. Though Competitive Pressure was determined as the weakest predictor, it is statistically significant ( $B = 0.14$ ), which supports H3. This observation implies that in Bangladesh, the adoption of AI by Pakistani IT companies is driven more by a strategic goal of the company than by a reactive need to follow suit by competitors<sup>15</sup>. At the same time, H4 is confirmed by the fact that Employee Expectations ( $B = 0.19$ ) have a strong impact on the process of adoption. The bottom-up Pressure represented by the perception of employees ensures that AI implementation is not a top-down order but rather responsiveness to the needs of the workforce to get equitable, effective, and open recruitment patterns. The paper goes further to explain that Digital Leadership operates as a key mediator. With the addition of leadership variables in the model, the direct impacts of other predictors are attenuated, which means that leadership mediates the other predictors to a successful adoption. As an example, the digital leaders transform Pressure in the market into action-driven strategies and use technological competence to bridge the human-technical. It is a crucial mediational mechanism that allows building trust and ensures that AI-based HR solutions are introduced in a human and ethical way. Conclusively, the successful implementation of AI in the Pakistani IT industry requires a sympathetic balance between technological competence and humanistic leadership<sup>22</sup>. Establishing digital leadership abilities should be the leading concern of organizations so that they can leverage the potential of their technological and environmental drivers.

**6. Conclusion:** Empirical findings support the claim that the implementation of Artificial Intelligence (AI) in the recruitment process of the IT industry in Pakistan is driven by the combination of technological, organizational, and environmental factors. The proposed model explains 66 percent of AI adoption variance, based on the Technology- Organization-Environment (TOE) framework and the theory of Diffusion of Innovation (DOI) ( $R^2 = 0.66$ ).

Technological Expertise, Innovative Climate, Competitive Pressure, Employee Expectations, and Digital Leadership were all found to be statistically significant as nominal predictors. It is worth noting that Digital Leadership emerged as the most prominent catalyst, playing a mediating role between the internal capabilities and external pressures to translate it into the successful integration of AI. It testifies to the fact that in the case of organizations operating in an emerging economy like Pakistan, the shift towards AI is both a leadership requirement and an imperative as much as it is a technological one.

### 6.1 Recommendations:

According to the empirical data, it is highly recommended that the organizations operating in the Pakistani IT industry should focus on developing Digital Leadership. Since it is the strongest predictor of AI adoption ( $B = 0.32$ ), the management should overcome the traditional hierarchical paradigms in favour of a framework that prefigures the state of digital literacy, transparency, and strategic foresight. The leaders are to be trained to operate as change agents who can help to bridge the so-called technical-human divide and build trust during the implementation of AI tools. Also, the IT companies should invest heavily in the Internal Technological Expertise and an Innovative Climate. In the study, having the necessary technical know-how ( $B = 0.21$ ) is the basic requirement to proceed with an evaluation of the routinization of AI tools. At the same time, the culture that promotes experimentation ( $B = 0.18$ ) is vital in offsetting organizational inertia and promoting bottom-up innovation. When organizations align these internal capabilities with Employee Expectations in activities of a fair and efficient process, they will create the impression that the adoption of AI is seen as a strategic asset and not a danger. Lastly, though Competitive Pressure is a valid driver ( $B = 0.14$ ), organizations are better off avoiding reactive adoption. They should instead use AI-driven predictive analytics to promote the quality of hires and lower the costs involved in recruitment in order to maintain a competitive advantage in the global market.

### 6.2 Limitations:

The research applied the convenience sampling method, which can limit the external validity of the results to the broader IT industry or even other Pakistani industries. The study was outlined in terms of being confined to the Pakistani IT and ITeS sector, meaning that the findings might not be readily applicable to other industries with varying levels of digital maturity (i.e., manufacturing or conventional retail). The study has focused more on the use of AI in the context of CV pre-selection tools and not on the entire range of AI utilization in Human Resource Management. The study only covered major metropolitan centres in Pakistan, and that might have failed to capture the dynamics of smaller or remote IT activities.

### 6.3 Future Directions:

The second way in which future research may take a longitudinal design is by following the trajectory of the routinization of AI over time in organizations, connecting these results to other industries, including banking or the healthcare industry. This would provide a wider understanding of AI adoption determinants in developing economies. Future research might integrate more variables into the model, including data privacy issues or regulatory framework, into the analysis to determine their influence on the mediating power of Digital Leadership. It may be beneficial to use qualitative research, such as in-depth interviews, to gain a deeper understanding of the leadership behaviors that would best reduce employee resistance to AI.

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