

The Impact of Intelligent Screening Systems on Reducing Human Error in Talent Acquisition

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Abstract

In today's competitive business environment, organizations face increasing pressure to attract and recruit top talent, making the quality of decision-making in the recruitment process a critical determinant of organizational success. Human errors, cognitive biases, and decisions based on subjective judgment or personal experience may result in inappropriate hiring decisions and reduced organizational performance. Consequently, growing attention has been directed toward the interaction between intelligent technologies and human behavior in human resource management, creating new opportunities for scientific research in this field. Accordingly, the present study aimed to investigate the impact of intelligent screening systems on reducing human error in the recruitment of top talent in large industrial companies in Tehran. The statistical population consisted of 250 human resource managers and experts, and the sample size was determined to be approximately 154 participants using Cochran's formula. Data were collected through structured questionnaires measuring technology acceptance, human error reduction, and user satisfaction. The data were analyzed using SmartPLS software. The findings revealed that the implementation of intelligent screening systems significantly reduces human error and enhances the efficiency of the talent acquisition process. Furthermore, managers' technology acceptance, user satisfaction, and improved system performance were identified as significant factors contributing to more accurate recruitment decisions and the mitigation of human biases. The findings provide valuable insights for organizations seeking to design and implement intelligent talent acquisition systems and offer practical implications for future research on the application of intelligent technologies in human resource management.

Keywords: Talent acquisition; Human error reduction; Intelligent screening systems; Technology acceptance; Human resource management; Recruitment process efficiency.

Introduction

In today's organizational environment, competition for attracting and retaining top talent has intensified significantly, making the recruitment process one of the key determinants of organizational success (Zhang, 2025). Poor hiring decisions can lead to reduced productivity, increased employee turnover, and substantial financial costs for organizations. Traditional recruitment methods, which rely heavily on human judgment, are prone to errors arising from cognitive biases, subjective evaluations, and inconsistencies in decision-making (Chen, Han, Zhang, & Lu, 2025). Such human errors in the selection process may result in a mismatch between applicants' skills and job requirements, ultimately affecting organizational performance and innovation capacity.

The emergence of intelligent screening systems and artificial intelligence (AI)-based technologies has provided organizations with advanced tools capable of automating and optimizing applicant evaluation. AI-driven recruitment systems utilize sophisticated algorithms and large-scale data analytics to assess candidates' qualifications, predict job performance, and improve the objectivity of hiring decisions (Úbeda-García, Marco-Lajara, Zaragoza-Sáez, & Poveda-Pareja, 2025). These technologies can systematically reduce errors associated with human judgment, including unconscious biases related to gender, race, or educational background, all of which have been shown to exert a significant influence on recruitment decisions (Wilson & Caliskan, 2024; Mujtaba & Mahapatra, 2024).

Despite these advantages, integrating AI into recruitment processes also presents several challenges. Previous studies have demonstrated that algorithmic models may unintentionally reproduce existing biases, particularly when training datasets are not representative of the target population or when the underlying decision-making logic lacks transparency (Dadaboyev, Abdullayeva, Abbosova, Suleymenova, & Mamadjanova, 2025; Xu, Li, & Jiang, 2025). Furthermore, the acceptance of and trust in AI-based systems among human resource managers play a decisive role in determining their effectiveness. Resistance to emerging technologies may limit organizations' ability to fully realize the benefits of intelligent recruitment systems (Sakib, Rayasam, & Dey, 2026). Therefore, achieving alignment among system performance, user satisfaction, and decision quality is essential in determining whether intelligent recruitment tools can genuinely improve the employee selection process.

Recent empirical studies have also highlighted the importance of explainable artificial intelligence (XAI) in recruitment, enabling HR professionals to understand, interpret, and justify the recommendations generated by automated systems (Zhang, 2025; Chen et al., 2025). Transparency is particularly critical in recruitment because of its ethical and organizational implications, ensuring fairness, accountability, and trust throughout the hiring process (Wilson, Sim, Gueorguieva, & Caliskan, 2025). Combining algorithmic accuracy with human oversight may therefore provide a balanced approach that minimizes human error while preserving the value of expert human judgment.

Given these considerations, understanding the impact of intelligent screening systems on reducing human error in talent acquisition has become a critical issue for organizations seeking to optimize recruitment outcomes. Although previous research has investigated AI adoption, bias reduction, and algorithmic transparency in recruitment, relatively few empirical studies have simultaneously examined the effects of intelligent screening technologies on reducing human error within organizational settings. Consequently, addressing this issue can fill an important gap in the literature while providing practical guidance for the effective implementation of intelligent recruitment systems.

Accordingly, the present study focuses on examining the extent to which intelligent screening systems contribute to reducing human error, improving decision-making accuracy, and enhancing the overall efficiency of talent acquisition processes in large industrial companies. By analyzing the relationships among system performance, user acceptance, and recruitment outcomes, this study seeks to make meaningful theoretical and practical contributions to the field of human resource management in the era of artificial intelligence.

Lecture review

Artificial Intelligence and Its Application in Human Resource Management

Artificial intelligence (AI) is defined as a branch of computer science that enables machines and computer systems to perform tasks that typically require human intelligence (França, São Mamede, Barroso, & Santos, 2023). This technology encompasses machine learning algorithms, big data analytics, and automated decision-making systems capable of processing complex information and identifying hidden patterns.

Within the field of human resource management (HRM), AI has found extensive applications. Its most significant uses include recruitment and selection, employee performance evaluation, talent identification, and training and development management (Madanchian, 2024). AI enables the automation of activities such as résumé screening, skills assessment, and job-fit prediction, allowing organizations to make recruitment decisions based on data and empirical evidence rather than subjective judgment.

A key advantage of AI in HRM is its ability to reduce the influence of human bias while enhancing the objectivity of decision-making processes. For example, AI-based systems can evaluate candidates without regard to gender, ethnicity, or educational background, thereby promoting fairness and transparency in recruitment (Hosain, Amin, Debnath, & Rahaman, 2025). Furthermore, by processing large volumes of data within a short period, AI enables comprehensive applicant evaluation, significantly improving the speed and efficiency of talent acquisition (Ahmed, 2025).

Nevertheless, the successful implementation of AI in HRM requires users' awareness and technical competence, algorithmic transparency, and appropriate training for HR professionals. Previous studies have shown that technology acceptance and trust in intelligent systems are critical determinants of successful AI implementation (Sakib, Rayasam, & Dey, 2026). Therefore, AI should not be viewed merely as a technological tool; rather, its effectiveness depends on its interaction with human behavior and organizational culture.

Intelligent Screening Systems in Talent Acquisition

Intelligent screening systems refer to software applications and algorithmic tools that automate the initial evaluation of job applicants and facilitate the identification of the most suitable candidates from a large pool of applications (Madanchian, 2024). These systems employ machine learning algorithms and advanced data analytics to process résumés, questionnaires, and applicants' online information, creating competency- and skill-based filters for candidate evaluation.

One of the principal advantages of these systems is their ability to identify patterns and predict applicants' job suitability. For instance, algorithms can compare candidates' educational qualifications, work experience, and technical skills with job requirements and assign a suitability score to each applicant (França, São Mamede, Barroso, & Santos, 2023). Consequently, HR professionals can focus their attention on thoroughly evaluating the most promising candidates while reducing the time and cost associated with reviewing large numbers of résumés.

In addition to accelerating the recruitment process, intelligent screening systems possess continuous learning capabilities. As organizations accumulate performance-related data on hired employees, these algorithms can refine their predictive accuracy and identify increasingly effective screening strategies (Ahmed, 2025). This adaptive learning capability supports evidence-based decision-making and contributes to reducing human error.

Furthermore, intelligent screening systems can enhance transparency and accountability throughout the recruitment process. Because every stage of the screening procedure is systematically recorded and traceable, hiring decisions can be reviewed and evaluated whenever necessary. This not only increases applicants' trust in the recruitment process but also enables organizations to continuously improve their hiring practices and minimize inappropriate selection decisions (Hosain, Amin, Debnath, & Rahaman, 2025).

Given the importance of minimizing bias while improving recruitment accuracy, recent studies suggest that combining intelligent algorithms with human oversight produces the most effective outcomes. Under this hybrid approach, intelligent systems conduct the initial analysis of applicants' résumés and data, whereas HR managers make the final hiring decisions by integrating algorithmic recommendations with their professional expertise and experience (Praveen, 2025).

Human Error Reduction and the Role of Intelligent Systems

Human error represents one of the major challenges in the recruitment and selection of top talent. Such errors may arise from cognitive biases, fatigue, excessive workload, and decisions based primarily on personal experience rather than objective evidence (Mujtaba & Mahapatra, 2024). These shortcomings can lead to poor hiring decisions, reduced organizational productivity, and even employee dissatisfaction. Intelligent screening systems have been developed to reduce human error and improve the accuracy of recruitment decisions. By analyzing both structured and unstructured data, these systems objectively evaluate applicants' qualifications and identify individuals whose competencies most closely match organizational and job requirements (França, São Mamede, Barroso, & Santos, 2023).

The Role of Intelligent Systems in Reducing Human Error

One of the important characteristics of intelligent screening systems is their ability to eliminate or reduce unconscious human biases. Research indicates that human judgments can be influenced by applicants' gender, age, ethnicity, or educational background (Wilson & Caliskan, 2024). By conducting accurate data analysis and focusing on relevant skills and experiences, intelligent algorithms minimize such biases and enhance fairness in candidate selection.

Furthermore, intelligent systems can improve the efficiency and speed of the recruitment process. Manually reviewing a large number of résumés and applicant data requires considerable time and resources, whereas intelligent screening systems can process large volumes of information within a short period and provide accurate results (Ahmed, 2025). This capability not only reduces human error but also enables faster and more timely decision-making throughout the hiring process.

Recent studies have also emphasized the importance of collaboration between intelligent systems and human decision-makers. Under this approach, the intelligent system performs the initial analysis and candidate filtering, while the HR manager makes the final decision by considering the provided data along with professional expertise and personal experience (Hosain, Amin, Debnath, & Rahaman, 2025). This integrated interaction enhances decision-making accuracy and fairness while reducing errors resulting from human judgment.

Ultimately, the use of intelligent systems for reducing human error not only improves the quality of employee selection but also enhances the overall effectiveness of the recruitment process and organizational efficiency.

Technology Acceptance by Managers and Its Role in the Success of Intelligent Systems

Technology acceptance among human resource managers is one of the key factors determining the successful implementation of intelligent recruitment and screening systems. Even the most advanced algorithms and technological solutions cannot create meaningful improvements in decision-making processes and organizational performance without managerial support and active utilization (Sakib, Rayasam, & Dey, 2026).

Well-established technology management frameworks, including the Technology Acceptance Model (TAM), indicate that perceived usefulness and perceived ease of use are two primary factors influencing managers' decisions to adopt emerging technologies (Hosain, Amin, Debnath, & Rahaman, 2025). In other words, when managers believe that intelligent systems can make recruitment processes faster, more accurate, and fairer, they are more likely to accept and effectively utilize these technologies.

Research has demonstrated that trust in the system and transparency of algorithmic performance also play significant roles in technology acceptance. Managers who can understand the decision-making logic of intelligent systems and monitor automated processes are more likely to interact effectively with these

technologies and make recruitment decisions with greater confidence (Lo, Qiu, Wang, Yu, Chen, Zhang, & Lo, 2025).

Moreover, organizational support and relevant training programs enhance managers' skills and readiness to use intelligent systems. This not only increases technology acceptance but also improves coordination between intelligent tools and human decision-making. Empirical studies have shown that effective interaction between artificial intelligence and human judgment leads to better recruitment outcomes and minimizes human errors (Madanchian, 2024).

Ultimately, technology acceptance by managers serves as a critical mediating factor between the technical capabilities of intelligent systems and the effectiveness of HR processes. Even with advanced algorithms, the true success of intelligent systems depends on managers' active and informed engagement with the technology and their ability to combine personal expertise with the data-driven insights provided by these systems.

User Satisfaction and Recruitment Process Efficiency

User satisfaction, particularly among HR managers and recruitment specialists, is a critical indicator of the success of intelligent screening and talent acquisition systems. Even if a system possesses strong technical capabilities, low user satisfaction may result in insufficient utilization, resistance to technology adoption, and ultimately reduced effectiveness (Hosain, Amin, Debnath, & Rahaman, 2025).

One of the main determinants of user satisfaction is the system's ease of use and reliability. Users must be able to easily input data and interpret analytical reports and system-generated results. Systems with simple, transparent, and user-friendly interfaces are more likely to increase satisfaction and facilitate managerial decision-making processes (Ahmed, 2025).

In addition, the accuracy and reliability of system-generated analyses play a crucial role in improving recruitment efficiency. When a system can provide accurate recommendations, identify the most suitable candidates, and reduce human error, the efficiency of the hiring process increases while saving organizational time and resources (França, São Mamede, Barroso, & Santos, 2023).

User satisfaction is also closely associated with perceptions of fairness and transparency in recruitment processes. When managers and recruitment specialists are able to track algorithmic decisions and understand the underlying logic, they develop greater trust in the system and become more confident in applying AI-generated recommendations (Lo, Qiu, Wang, Yu, Chen, Zhang, & Lo, 2025). This mutual trust between humans and intelligent systems not only improves user satisfaction but also enhances decision-making effectiveness and recruitment quality.

Ultimately, positive interaction between the technical efficiency of intelligent systems and human user satisfaction contributes to improving the overall recruitment process and reducing human error. Research suggests that combining artificial intelligence with human oversight represents an optimal model capable of simultaneously enhancing decision-making accuracy, fairness, and recruitment efficiency (Praveen, 2025; Sakib, Rayasam, & Dey, 2026). Therefore, examining user satisfaction and mechanisms for strengthening human-system interaction is essential for ensuring the long-term success and effectiveness of intelligent recruitment technologies.

Research Methods

This study is an applied research project with a descriptive-analytical approach, conducted to investigate the impact of intelligent screening systems on reducing human error in the recruitment of top talent in large industrial companies in Tehran.

Research Hypotheses

1. The use of intelligent screening systems reduces human error in the process of recruiting top talent.
2. The acceptance of intelligent system technologies by human resource managers has a positive effect on reducing human error.

3. User satisfaction with intelligent screening systems has a positive relationship with the reduction of human error.
4. Improving the performance of intelligent screening systems increases the accuracy of selecting top talent.
5. The use of intelligent screening systems enhances the efficiency of the top talent acquisition process.

Data Collection Instrument and Questionnaire Description

The main data collection instrument was a structured questionnaire consisting of three main sections:

- (1) Technology acceptance of intelligent systems based on the Technology Acceptance Model (TAM);
- (2) Assessment of human error reduction in the talent acquisition process using customized questions developed based on previous studies; and
- (3) User satisfaction and system performance measured through the standardized System Usability Scale (SUS) and evaluation of talent acquisition performance indicators.

Responses to the questionnaire items were collected using a five-point Likert scale ranging from strongly disagree to strongly agree.

Population and Sampling Method

The statistical population of this study consisted of 250 human resource experts and talent acquisition managers working in large industrial companies in Tehran. The sample size was determined using Cochran's formula with a 95% confidence level and a 5% sampling error. Based on the calculations, approximately 154 participants were selected as the final sample.

A stratified random sampling method was employed to ensure adequate representation of different large industrial companies and to provide an appropriate reflection of the statistical population.

Data Analysis Method

The collected data were initially processed using SPSS software to conduct descriptive statistical analyses and assess data quality, including validity and reliability evaluations. Subsequently, SmartPLS software was applied to analyze the structural relationships among variables and test the research hypotheses.

This analysis included evaluating construct reliability and validity through Composite Reliability (CR), Cronbach's Alpha, and Average Variance Extracted (AVE), as well as examining the structural model, path coefficients, and model fit indices such as the Goodness of Fit (GOF) index.

Data analysis

To evaluate the conceptual model of the study, ensure the existence or absence of causal relationships among the research variables, and examine the consistency between the observed data and the proposed conceptual model, the research hypotheses were tested using the **Structural Equation Modeling (SEM)** approach. The results of hypothesis testing are presented in the following diagrams.

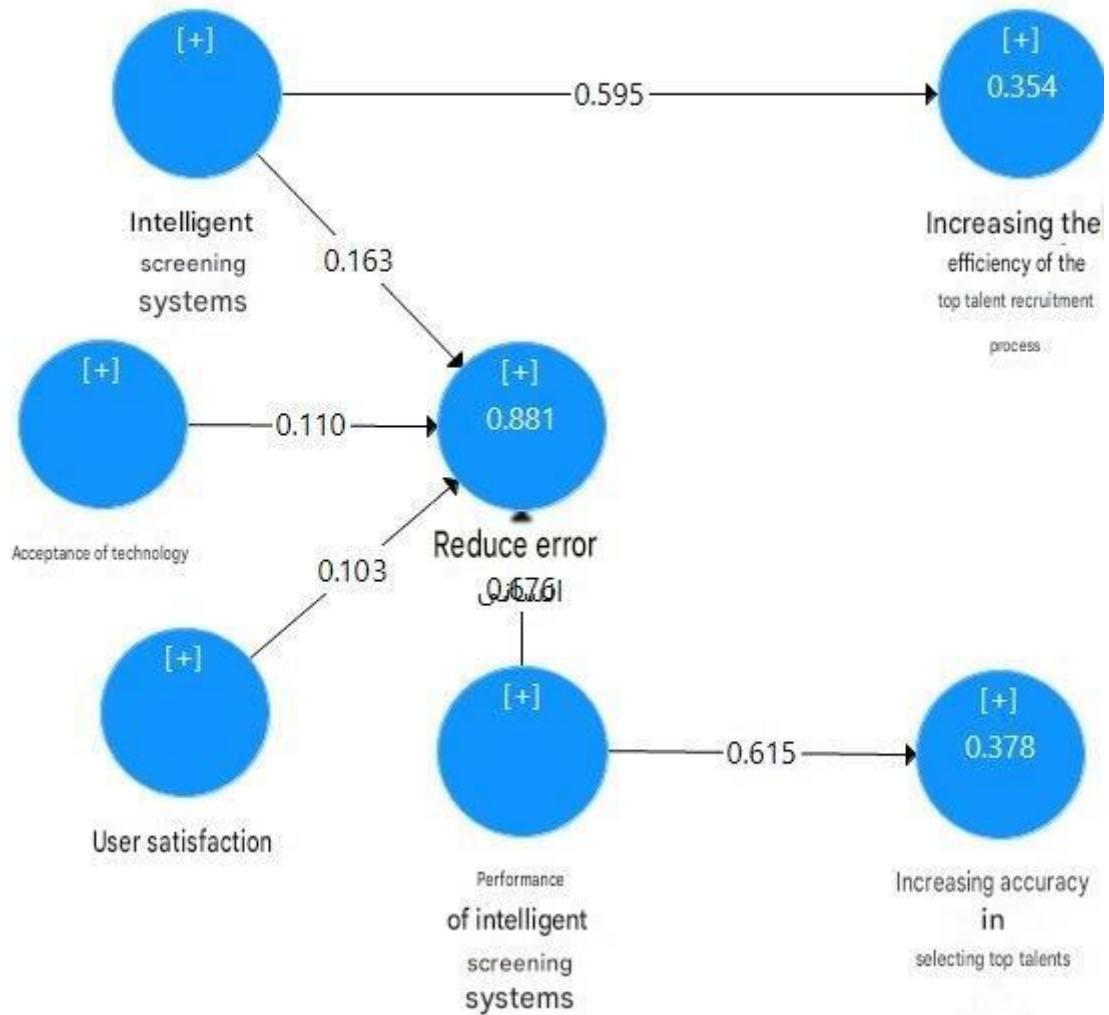


Figure 1. Measurement Model of the Overall Model and Hypothesis Results in the Standardized Mode

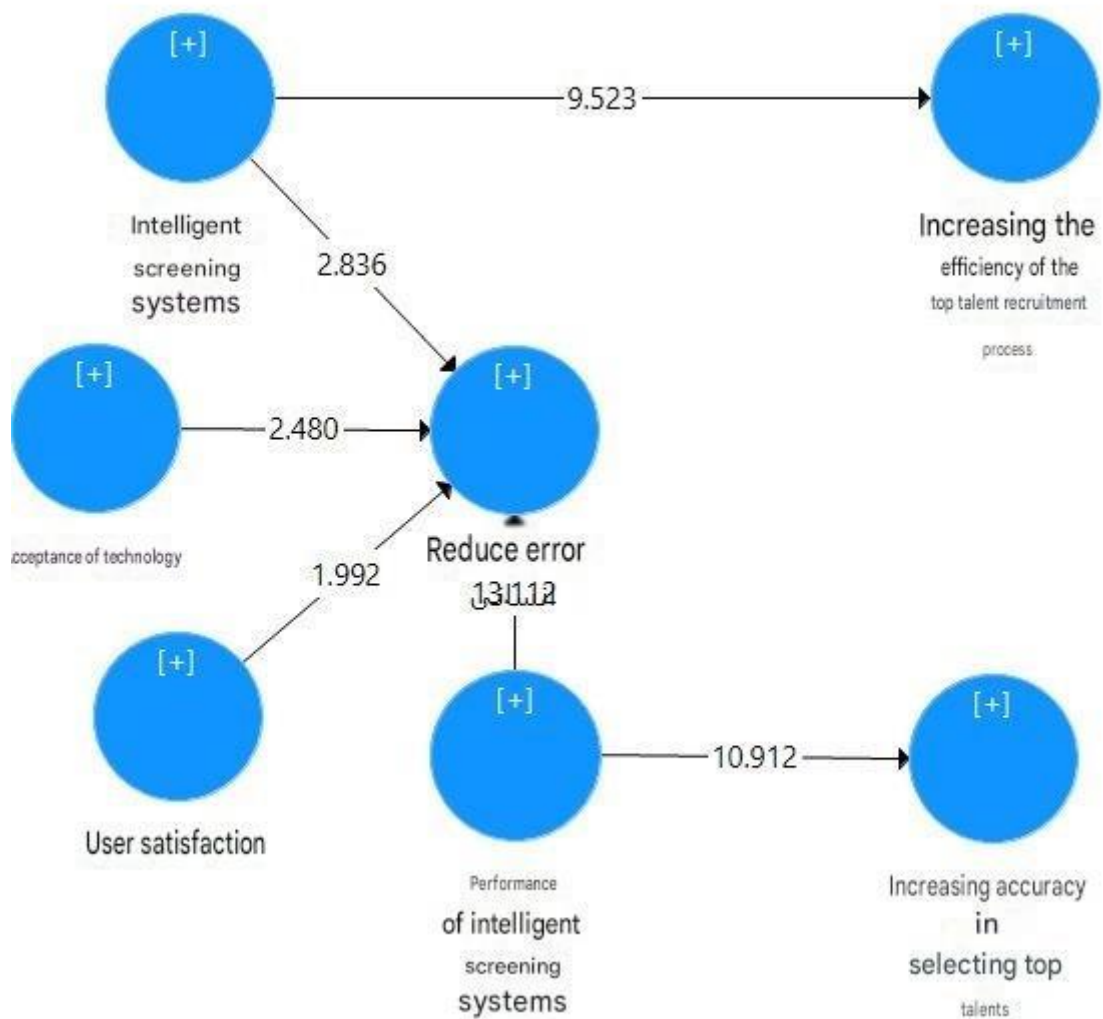


Figure 2. Measurement Model of the Overall Model and Hypothesis Results in the Significance Mode

To assess reliability, **Cronbach's Alpha** and **Composite Reliability (CR)** were employed. Convergent validity was evaluated using **Average Variance Extracted (AVE)**, and the model fit was assessed using the **Goodness of Fit (GOF)** index.

Table 1. Reliability and Validity of the Measurement Models

Variable	CR	AVE	MSV	1	2	3	4	5
Intelligent Systems	0.787	0.552	0.193	0.743				
Technology Acceptance	0.844	0.644	0.478	0.342	0.803			
User Satisfaction	0.918	0.651	0.423	0.331	0.467	0.807		
Human Error Reduction	0.885	0.720	0.478	0.440	0.692	0.651	0.849	
System Performance	0.960	0.649	0.149	0.066	0.259	0.213	0.386	0.806

- A Cronbach's Alpha value greater than **0.70** indicates acceptable reliability.

- A **Composite Reliability (CR) value above 0.70** for each construct demonstrates satisfactory internal consistency of the measurement model.
- An **AVE value greater than 0.50** indicates acceptable convergent validity.
- Considering the values of **0.01, 0.25, and 0.36** as weak, moderate, and strong thresholds for the GOF index, respectively, the obtained value of **0.62** indicates a strong model fit.

The following table summarizes the significance coefficients and the results of the proposed hypotheses.

Table 2. Hypothesis Testing Results

Hypothesis	Standardized Coefficient	Significance (t-value)	Result
The use of intelligent screening systems reduces human error in the process of recruiting top talent.	0.16	2.83	Supported
Technology acceptance of intelligent systems by HR managers has a positive effect on reducing human error.	0.11	2.48	Supported
User satisfaction with intelligent screening systems has a positive relationship with reducing human error.	0.10	1.99	Supported
Improving the performance of intelligent screening systems increases the accuracy of top talent selection.	0.59	9.52	Supported
The use of intelligent screening systems increases the efficiency of the top talent acquisition process.	0.61	10.91	Supported

Hypothesis Interpretation

Hypothesis 1:

The first hypothesis proposed that the use of intelligent screening systems reduces human error in the process of recruiting top talent. According to Table 2, the significance value of the path coefficient between the two variables is greater than **1.96**; therefore, this hypothesis is supported. Furthermore, since the obtained coefficient is positive, the relationship represents a direct positive effect.

Hypothesis 2:

The second hypothesis stated that technology acceptance of intelligent systems by human resource managers has a positive effect on reducing human error. The statistical analysis presented in Table 2 indicates that the significance value of the relationship between the two variables is greater than **1.96**. Therefore, the hypothesis is supported. Since the coefficient is positive, the effect is direct and positive.

Hypothesis 3:

The third hypothesis suggested that user satisfaction with intelligent screening systems has a positive relationship with reducing human error. Based on Table 2, the significance value of the path relationship is greater than **1.96**, confirming the hypothesis. The positive coefficient indicates a direct positive relationship.

Hypothesis 4:

The fourth hypothesis proposed that improving the performance of intelligent screening systems increases the accuracy of selecting top talent. According to the results in Table 2, the significance value of the relationship between the variables exceeds **1.96**, confirming the hypothesis. The positive coefficient demonstrates that this effect is direct.

Hypothesis 5:

The fifth hypothesis stated that the use of intelligent screening systems enhances the efficiency of the top talent acquisition process. The results presented in Table 2 show that the significance value of the path coefficient is greater than **1.96**; therefore, the hypothesis is supported. Since the obtained coefficient is positive, the relationship represents a direct positive effect.

Conclusions

The present study aimed to investigate the impact of intelligent screening systems on reducing human error in the process of recruiting top talent in large industrial companies in Tehran. The results of data analysis using SmartPLS demonstrated that all research hypotheses were supported. These findings indicate that the adoption of intelligent screening technologies can significantly reduce human errors in recruitment decisions and improve the accuracy and quality of the talent acquisition process.

One of the most important contributions of this study is highlighting the role of technology acceptance among human resource managers in determining the effectiveness of intelligent systems. The results revealed that higher levels of managerial acceptance and trust in these systems lead to greater reductions in human error. This finding emphasizes the importance of user training, empowerment, and creating appropriate organizational conditions for the effective adoption of emerging technologies.

Furthermore, user satisfaction with intelligent screening systems, as another key variable, showed a positive and significant relationship with human error reduction. This indicates that user-friendly and reliable systems not only facilitate the decision-making process but also enhance HR professionals' motivation and confidence in utilizing intelligent technologies.

The analysis also demonstrated that improving intelligent system performance, including faster data processing, higher evaluation accuracy, and better information integration, plays a decisive role in enhancing the quality of top talent selection. This finding suggests that organizations that strategically utilize intelligent technologies in recruitment processes can make more accurate and faster hiring decisions while reducing resource consumption.

Overall, this study confirms that intelligent screening systems not only contribute to reducing human error but also improve the efficiency and effectiveness of the entire talent acquisition process. Therefore, large industrial organizations are encouraged to invest in the design and implementation of intelligent recruitment systems and provide adequate training for their users. Moreover, these findings provide directions for future research examining the interaction between technology, human error, and decision-making quality in other areas of human resource management.

Limitations and Future Research Directions

Despite its significant contributions, this study has several limitations. One limitation is that the statistical population was restricted to large industrial companies in Tehran, which may limit the generalizability of the findings to other industries or geographical regions. Additionally, the data were collected through self-reported questionnaires, which may introduce response bias.

To address these limitations, future studies are recommended to investigate broader populations, including various industries and small- and medium-sized enterprises. Furthermore, researchers may incorporate objective recruitment performance data and actual records generated by intelligent systems, rather than relying solely on questionnaire-based measures, to improve the accuracy and reliability of findings.

Practical Implications

Considering that all research hypotheses were supported, the following practical recommendations are proposed based on each hypothesis:

1. Hypothesis 1 (Impact of Intelligent Systems on Human Error Reduction):

Organizations should increase investment in intelligent screening systems and utilize advanced analytical software for evaluating résumés and applicants in order to reduce human errors and biases in recruitment decisions.

2. Hypothesis 2 (Impact of Technology Acceptance on Error Reduction):

To enhance system acceptance, HR managers should receive specialized training on the use of intelligent technologies and promote an organizational culture that encourages trust in data-driven decision-making.

3. Hypothesis 3 (User Satisfaction and Human Error Reduction):

Screening systems should be designed with user-friendly interfaces and high reliability to improve user experience, increase satisfaction, and consequently reduce human errors.

4. Hypothesis 4 (System Performance Improvement and Selection Accuracy):

Organizations can enhance talent evaluation quality and make more accurate recruitment decisions by continuously updating algorithms and integrating intelligent systems with reliable databases.

5. Hypothesis 5 (Enhancing Recruitment Process Efficiency):

The implementation of intelligent systems can save organizational time and resources. Therefore, companies are encouraged to integrate these systems throughout different stages of recruitment and selection processes to maximize operational efficiency.

Contribution to Knowledge

This study contributes new knowledge to the fields of human resource management and technology-enabled recruitment by developing a conceptual model explaining the relationships among intelligent screening systems, human error reduction, and talent acquisition efficiency. The findings provide a foundation for future research on human–technology interaction and the role of intelligent systems in improving recruitment decision-making processes.

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