

Integrating Artificial Intelligence in Human Resource Management: A SmartPLS Approach for Entrepreneurial Success

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Abstract

The primary focus of this research is to examine the pivotal role of Artificial Intelligence (AI) in driving business transformation, with a specific emphasis on its impact within the realm of human resource management (HR). The study seeks to assess the substantial influence brought about by the incorporation of AI in HR. Online data collection involved 110 respondents with professional backgrounds in HR. In pursuit of enhancing entrepreneurial success, the research adopts the Smart Partial Least Square (Smart PLS) approach to seamlessly integrate artificial intelligence into HR management. The analysis using Smart PLS delves into the examination of AI's effects on the recruitment process, employee development, and performance management. The findings of the research reveal that the utilization of AI in HR significantly expedites processes, enhances decision accuracy, and positively contributes to the attainment of entrepreneurial objectives. The practical implications of these outcomes are thoroughly discussed, and potential avenues for future research are outlined. This not only provides valuable insights for stakeholders but also offers guidance on optimizing the application of AI in the context of human resource management.

Keywords: Artificial Intelligence, Entrepreneurship, Human Resource Management, SmartPLS, Performance Management.

1. Introduction

In the rapidly evolving digital landscape, the incorporation of artificial intelligence (AI) into human resource management (HR) stands out as a pivotal strategy for companies aspiring to achieve entrepreneurial success [1]. The utilization of AI in various business activities has garnered attention owing to its profound impact on the business environment [2]. AI empowers companies to establish novel recognition patterns and language translations through diverse algorithms in a global business context, influencing functions spanning management, marketing, operations, and supply chain management [3]. Despite extensive research on AI's role in these business domains, investigations specifically targeting human resource management processes, encompassing HR functions, remain relatively scarce [4].



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This study aims to elucidate the role of artificial intelligence within the realm of human resource management, concentrating on its ramifications for employee-related outcomes [5]. The primary contribution of this research lies in providing a comprehensive understanding of how AI technology can reshape and modernize HR functions, instigating significant transformations in recruitment processes, employee development, and management performance [6].

Furthermore, the research seeks to unravel the dynamics of the relationship between AI-based systems and employer reputation. The focus is on exploring the repercussions of AI-based recruitment and the quality of AI on the adoption of AI-based systems, subsequently influencing employer reputation [7]. Employer reputation, serving as a barometer of a company's prowess in attracting, recruiting, and retaining talent, exerts a substantial impact on accomplishing organizational goals [8]. This research also delves into comprehending the potential adverse consequences stemming from suboptimal talent management and HR practices [9]. With the advent of AI technology, there are fundamental shifts in data processing and business operations that can redefine the modus operandi of HR departments [10]. The concept of e-recruitment and e-based HR functions assumes growing significance due to the accuracy, speed, and efficiency they offer, ultimately leading to cost reduction and long-term benefits [11].

Hence, the research endeavors to evaluate the success of companies, particularly in the context of AI-based HR (recruitment) and the quality of AI [12], which can forecast a company's inclination to adopt and implement AI-based solutions [13]. The anticipation is that the research findings will present a nuanced perspective on how the application of AI technology can positively contribute to the efficacy of human resource management and overall organizational performance [14].

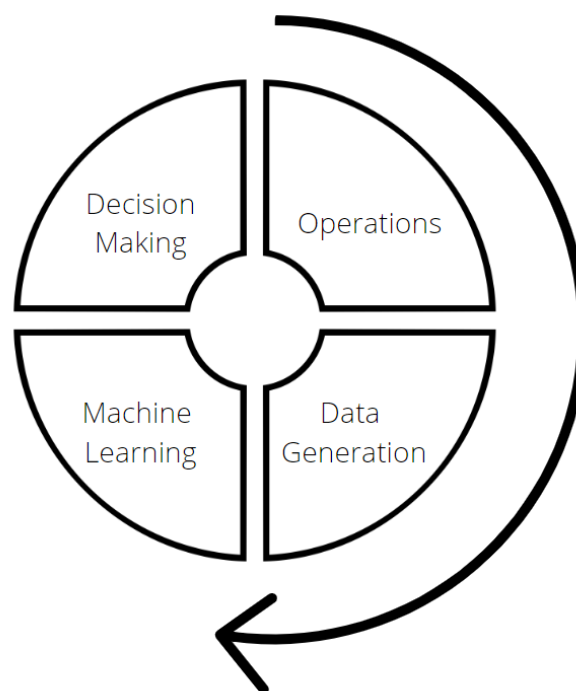


Figure 1. AI-Supported Human Resource

2. Research Method

This research adopts a quantitative approach and encompasses medium to large companies in Indonesia, encompassing those that have integrated AI-based HR systems (technological aspects) and those that have not. The primary unit of analysis is the organization as a holistic entity, with data collection executed through a structured questionnaire utilizing a

score scale ranging from 1 to 5. The central objective of this study is to assess employers' reputation based on the implementation of AI-based systems in human resource management. Employing the Smart PLS analysis method, the research empirically examines the relationship between artificial intelligence-based systems and the quality of artificial intelligence in predicting employer reputation.

In addition, the research aims to empirically evaluate the mediating role of AI adoption between AI recruitment and AI quality in predicting employer reputation. Drawing from a sample of 33 companies in Indonesia, although initially securing 178 responses, a total of 110 complete responses were ultimately considered and included in the data analysis.

Through SmartPLS analysis, this research endeavors to furnish a comprehensive understanding of the impact of AI-based systems on employer reputation, along with exploring the relationships and mediation among the principal variables studied within the context of human resource management. This analytical approach is anticipated to make a substantial contribution to comprehending the role of AI technology in shaping perceptions of employer reputation in the Indonesian business milieu.

2.1 Literature Review

In facing the ever-growing digital era, the role of artificial intelligence (AI) in human resource management (HR) is increasingly prominent as the key to success in the realm of entrepreneurship [15]. The significance of utilizing AI in business activities not only attracts great attention but also has a huge impact on the entire business ecosystem [16]. In this context, there are several crucial variables that are interrelated, including artificial intelligence, entrepreneurial performance, quality of artificial intelligence, and company reputation [17].

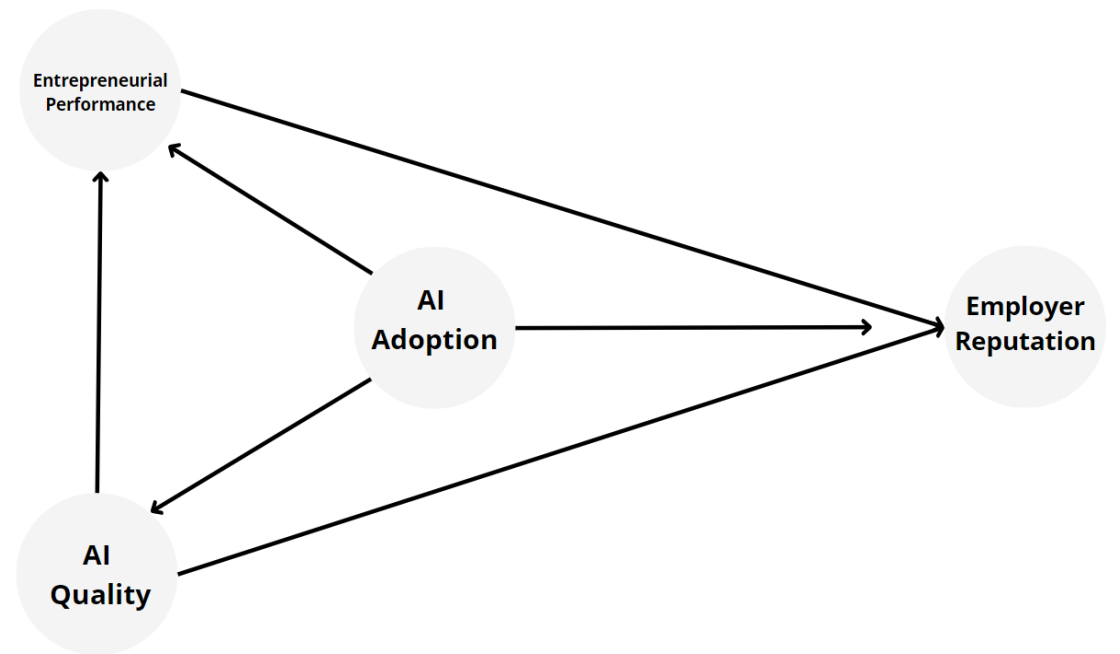


Figure 2. Research Framework

- a. SmartPLS (Smart Partial Least Square)
SmartPLS, an acronym for Smart Partial Least Squares, serves as a statistical analysis method employed in empirical research to examine and assess the relationships between variables within a structural model [18]. In the context of this study, SmartPLS functions as the primary tool for seamlessly incorporating artificial intelligence (AI) into human resource management (HR), with a specific focus on fostering entrepreneurial success [19].

Through SmartPLS, researchers are empowered to integrate the intricate variables associated with artificial intelligence, human resource management, and entrepreneurial success [20]. This methodology enables the identification of relationships and impacts among these variables, thereby facilitating the examination of the validity of resulting hypotheses.

SmartPLS offers researchers the capability to conduct path analysis, unraveling the extent to which specific variables contribute to outcomes such as entrepreneurial success [21]. This analytical approach aids in pinpointing the factors that wield the most significant influence [11].

The utilization of SmartPLS in this research has provided a profound understanding of how artificial intelligence influences human resource management and, ultimately, entrepreneurial success [22]. This rigorous analytical method establishes a robust foundation for extracting valuable insights regarding the application of artificial intelligence within the realm of human resource management, contributing significantly to both practical and theoretical understanding [23].

b. Artificial Intelligence and Employer Reputation

Artificial intelligence (AI) has emerged as a pivotal force reshaping Human Resources (HR) functions in the digital era [24]. Within this dynamic landscape, the application of AI technology presents significant opportunities for companies to modernize their recruitment, employee development, and performance management processes [25]. Leveraging diverse algorithms, companies can optimize operations on a global scale, fostering increased productivity and cultivating an adaptive and innovative work environment [26]. The rapid and accurate data processing capabilities of AI positively influence company efficiency, enabling the development of more effective solutions in human resource management [27].

As companies integrate AI technology, they must conscientiously assess its impact on their reputation [28]. While the advancement of this technology offers competitive advantages, ethical considerations and transparency in its application are paramount [29]. Building and maintaining employee trust in AI systems, as well as ensuring adherence to ethical standards in managing personal data, are critical components in establishing and upholding a company's reputation [30]. Consequently, the incorporation of artificial intelligence requires prudent execution and clear communication efforts to all stakeholders, ensuring operational sustainability and preserving the company's positive image [31]. In business globalization, artificial intelligence serves not only as a productivity-enhancing tool but also as a catalyst for corporate culture transformation [32]. By fostering an adaptive and innovative work environment through AI, companies can fortify their competitiveness and position themselves as industry leaders [33]. Consequently, companies adept at synergizing artificial intelligence with sustainability-focused and ethical policies are better equipped to effectively manage their reputation, create added value, and exert a positive impact on stakeholders [34].

H1: The adoption of AI technology in recruitment, employee development, and performance management is positively associated with employee perceptions of company reputation.

H2: The implementation of artificial intelligence in HR is positively correlated with the organization's image as an attractive employer, as perceived by employees.

c. Artificial Intelligence and Entrepreneurial Performance

In addition to enhancing operational efficiency, the role of AI in fostering innovation has become a pivotal factor influencing positive entrepreneurial performance [35]. The capability of AI to conduct in-depth data analysis and predict business trends empowers companies to identify novel opportunities and make more informed strategic decisions [36]. Consequently, artificial intelligence not only streamlines internal processes

but also cultivates a business environment that is adaptable to change an essential element for sustainable entrepreneurship [37].

Furthermore, AI's support for innovation can establish a competitive edge for companies within a constantly evolving market. Through the analysis of intricate data patterns and anticipation of consumer needs, artificial intelligence enables companies to develop products and services that align more closely with market demands [38].

The incorporation of AI into the research and development process further creates avenues for the generation of inventive and revolutionary solutions [39]. In essence, AI serves not only as a tool for enhancing operational efficiency but also as a critical catalyst for innovation, driving entrepreneurial growth and ambition [40].

H3: The adoption and application of artificial intelligence in company operations positively contribute to entrepreneurial performance.

d. **Quality of Artificial Intelligence and Entrepreneurship Performance**

The efficacy of artificial intelligence is a crucial determinant in shaping its impact on entrepreneurial performance [41]. Research can delve into the profound influence of artificial intelligence quality, encompassing attributes such as reliability, accuracy, and predictive power, on the effectiveness of Human Resources (HR) functions and overall entrepreneurial outcomes [42]. By scrutinizing these factors, one can discern how the sophistication level of artificial intelligence contributes to fortifying company operations, enhancing productivity, and stimulating comprehensive entrepreneurial growth [43].

In the entrepreneurial performance context, the role of artificial intelligence quality, incorporating reliability, accuracy, and predictive power, becomes pivotal in comprehending how this technology generates sustainable added value [44]. The successful integration of artificial intelligence into HR functions not only hinges on optimizing employee recruitment and development processes but also entails producing reliable and pertinent information for strategic decision-making within an entrepreneurial framework [45].

In addition, the quality of artificial intelligence emerges as a pivotal factor in shaping a business ecosystem that is responsive and proactive to market dynamics, bolstering efforts to enhance entrepreneurial performance [46]. A profound understanding of this quality aspect serves as a foundational basis for steering the development of artificial intelligence technology toward providing a positive and sustainable impact on the advancement and success of companies in the entrepreneurial landscape [47].

H4: There exists a positive and significant relationship between the quality of artificial intelligence and entrepreneurial performance.

H5: There is a significant relationship between the level of AI adoption in an organization and the quality of AI implementation (Quality AI).

e. **Entrepreneurial Performance and Employer Reputation**

The incorporation of artificial intelligence in Human Resources (HR) management holds the potential to directly enhance entrepreneurial performance, subsequently influencing the overall reputation of the company. Subsequent research endeavors could investigate the correlation between achieving company objectives in the adoption of artificial intelligence in HR and the consequent improvement in the perception and image of the company, both among employees and external stakeholders. The influence of artificial intelligence extends beyond internal efficiency, also contributing significantly to the company's external image. A detailed understanding of how entrepreneurial performance is positively influenced by artificial intelligence can shape favorable perceptions of the company.

H6: Increasing entrepreneurial performance has a positive impact on the overall company reputation.

3. Findings

Table 1. Measurement Model

	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
AI Adoption	0.812	0.826	0.889	0.728
AI Quality	0.826	0.828	0.896	0.742
Employer Reputation	0.809	0.820	0.888	0.725
Entrepreneurial Performance	0.852	0.856	0.911	0.773

The average variance extracted (AVE) values achieved were 0.728, 0.742, 0.725, and 0.773, surpassing the acceptable AVE threshold of 0.50. This indicates that all the research constructs exhibit reliability and validity, as substantiated by the statistical values.

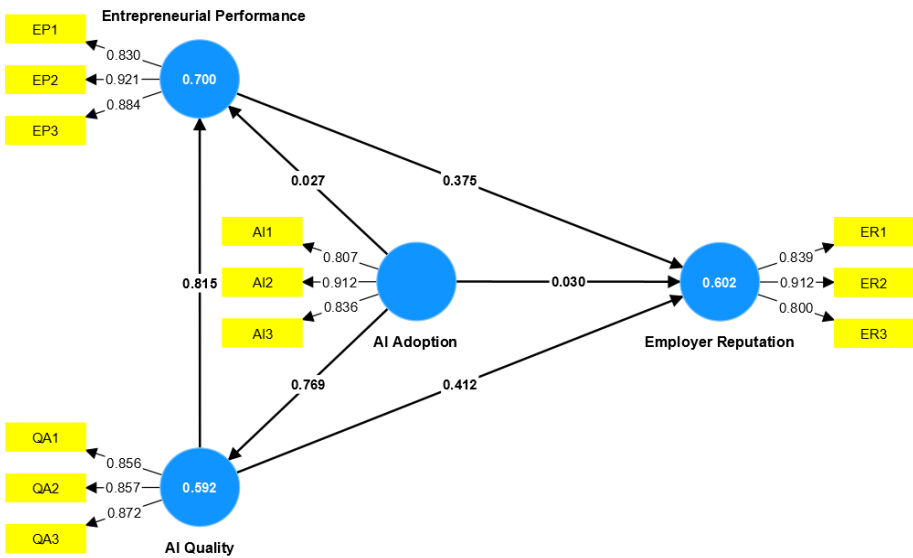


Figure 3. Conceptual Model

Figure 3. Above illustrates the resulting framework using the PLS algorithm to assess Cronbach's alpha, composite reliability, and average variance extracted. While the figure presents factor loadings of items for each construct, specific measurements are undertaken for each construct. Employer Reputation is gauged through four items, designated as ER1, ER2, ER3, and ER4. The quality of artificial intelligence is assessed through four items, labeled as QA1, QA2, QA3, and QA4. Similarly, artificial intelligence adoption is appraised with four items, denoted as AI1, AI2, AI3, and AI4, and entrepreneurial performance is evaluated with four items, encompassing EP1, EP2, EP3, and EP4.

Table 2. Construct Evaluation

	Item	Outer Loadings
AI1	Artificial Intelligence technology commonly utilized in your organization's employee recruitment process?	0.807
AI2	Have employees in the organization undergone training to understand and effectively utilize artificial intelligence technology in human resource management?	0.912
AI3	To what extent do employees express acceptance and provide support for the implementation of artificial intelligence technology in HR activities?	0.836
EP1	In what ways does the successful implementation of artificial intelligence impact innovation and an organization's capacity to adapt to change?	0.830
EP2	To what degree has the incorporation of artificial intelligence in HR elevated operational efficiency and employee productivity?	0.921
EP3	How do employees perceive the influence of implementing artificial intelligence on the attainment of organizational entrepreneurial goals?	0.884
ER1	How do employees perceive the organization's image as an attractive employer?	0.839
ER2	To what extent does an employer's reputation enhance an organization's capacity to attract and retain high-quality talent?	0.912
ER3	How is organizational innovation and sustainability externally perceived due to the implementation of artificial intelligence in HR?	0.800
QA1	To what degree can the implemented artificial intelligence system accurately forecast human resource needs?	0.856
QA2	How satisfied are employees with the performance of the artificial intelligence system in overseeing employee development?	0.857
QA3	Has the organization assessed the success level of implementing artificial intelligence in enhancing the efficiency of HR functions?	0.872

a. Discriminant validity

This segment of the study aims to appraise the convergent validity of the construct using data obtained through the Partial Least Squares (PLS) algorithm within a framework of a measurement model. Convergent validity assessment involves scrutinizing the correlation among identical constructs and alternative constructs. Prior analyses have underscored reliability and validity as benchmarks for internal consistency. Simultaneously, discriminant validity is quantified as the square root of the Average Variance Extracted (AVE), surpassing the correlation between constructs. Previous research has established statistically that the square root of the mean variance must significantly surpass its correlation with other AVE constructs and must also exceed the correlation between the constructs themselves.

Table 3. Discriminant Validity

	AI Adoption	AI Quality	Employer Reputation	Entrepreneurial Performance
AI Adoption	0.853	-	-	-
AI Quality	0.769	0.861	-	-
Employer Reputation	0.592	0.748	0.852	-
Entrepreneurial Performance	0.655	0.837	0.738	0.879

Table 3. displays a matrix that illustrates the relationships and distinctiveness among four categories: AI Adoption, AI Quality, Employer Reputation, and Entrepreneurial Performance. The diagonal values (AI Adoption: 0.853, AI Quality: 0.861, Employer Reputation: 0.852, Entrepreneurial Performance: 0.879) represent the self-relation of each category, indicating their individual reliability and distinctiveness. The off-diagonal elements show the discriminant validity between pairs of categories, such as AI Quality and AI Adoption (0.769), Employer Reputation and AI Quality (0.748), and so forth. These values measure how distinct each category is from the others, with higher diagonal values and lower off-diagonal values indicating better discriminant validity.

Table 4. R-Square

	R-square
AI Quality	0.592
Employer Reputation	0.602
Entrepreneurial Performance	0.700

Table 4. presents R-square values for three categories: AI Quality (0.592), Employer Reputation (0.602), and Entrepreneurial Performance (0.700). These values indicate the proportion of variance in a dependent variable explained by each category in a regression model. AI Quality explains 59.2%, Employer Reputation 60.2%, and Entrepreneurial Performance the highest at 70%. These percentages reflect the strength of the relationship between each independent variable and the dependent variable, with higher values indicating a stronger explanatory power in the model.

Table 5. Provides a Summary of the Results Derived From Statistical Hypothesis Testing.

	Original Sample (O)	T Statistics (O/STDEV)	P Values	Decision
AI -> QA	0.769	10.092	0.000	Supported
AI -> ER	0.592	5.099	0.000	Supported
AI -> EP	0.655	6.945	0.000	Supported
QA -> EP	0.815	8.343	0.000	Supported
EP -> ER	0.375	2.132	0.033	Supported

Table 5. summarizes results from statistical hypothesis testing, examining relationships between AI (Artificial Intelligence), QA (Quality Assurance), ER (Employer Reputation), and EP (Entrepreneurial Performance). The table shows that all tested relationships (AI to QA, AI to ER, AI to EP, QA to EP, and EP to ER) are statistically significant, as indicated by their original sample values (ranging from 0.375 to 0.815), high T statistics (ranging from 2.132 to 10.092), and low P values (all 0.033 or lower). Each hypothesis in the table is marked as "Supported," indicating that the data provides strong evidence for these relationships. This suggests a significant impact of AI on QA, ER, and EP, as well as a notable relationship between QA and EP, and between EP and ER.

4. Result and Discussion

The test results for H1, H2, H3, H4, H5, H6 indicate a positive and significant influence. Statistically, with a p-value of 0.000 and $0.033 < 0.05$ at a significance level of 5%, all hypotheses (H1, H2, H3, H4, H5, H6) are substantiated.

H1 & H2: Examining the correlation between AI adoption and Corporate Reputation; The research results show a regression coefficient (β) of 0.592, an observed t value of 5.099, with a p-value of 0.000, meeting the statistical acceptance criteria.

H3: Investigate the influence of AI adoption on Entrepreneurial Performance; The results of the analysis show that the regression coefficient (β) is 0.655 and the t value is 6.945, with a p-value of 0.000. With these statistical values, the results of H3 are accepted as significant.

H4 & H5: Exploring the interrelationship of AI Adoption, AI Quality, and Entrepreneurial Performance; The research results show that the regression coefficient (β) for the relationship between AI Quality and Entrepreneurial Performance is 0.815, with a t-value of 8.343 and a p-value of 0.000. Meanwhile, AI Adoption and AI Quality show a regression coefficient (β) of 0.769, with a t-value of 10.092 and a p-value of 0.000. Both hypotheses, H4 and H5, are accepted significantly based on statistical values.

H6: Examining the impact of Entrepreneurial Performance on Employer Reputation; The results of the analysis show a regression coefficient (β) of 0.375, a t-value of 2.132, and a p-value of 0.033. Thus, H6 is accepted as significant based on statistical values.

5. Conclusion

In this research, we delve into the transformative influence of artificial intelligence (AI) on human resource management (HR) and its consequential effects on corporate reputation. Our conclusion underscores that the successful integration of AI to foster innovation hinges significantly on a company's preparedness for embracing change. We posit that companies capable of navigating the transition to AI technology judiciously, while cultivating the necessary

skills and comprehension of AI within their workforce, stand to maximize the innovative advantages offered by artificial intelligence. Consequently, the role of responsive and insightful human resource development emerges as a pivotal factor in securing long-term competitive advantage for companies within the dynamic entrepreneurial landscape. In empirically testing the proposed hypotheses, the research yielded the following results:

- a. Affirmation of a positive and substantial correlation between AI adoption and corporate reputation. Companies employing AI in recruitment, employee development, and performance management exert a favorable influence on employee perceptions, portraying the company as an appealing employer.
- b. Confirmation that the application of AI contributes positively to entrepreneurial performance. The infusion of AI into HR not only enhances operational efficiency but also propels innovation, fostering a more adaptive and inventive business environment.
- c. Emphasis on the affirmative and significant association between AI quality and entrepreneurial performance. The efficacy of AI, gauged by its acuity, precision, and predictive capabilities, plays a pivotal role in establishing enduring added value and contributing to comprehensive entrepreneurial growth.
- d. Revelation of the positive impact of entrepreneurial performance on company reputation. Companies attaining their objectives through the strategic application of AI in HR positively influence their overall reputation, both internally among employees and externally among stakeholders.

In light of these findings, it is evident that companies must proactively embrace and adeptly manage artificial intelligence in their HR strategies to attain a competitive advantage and fortify their standing in this fiercely competitive market.

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