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RESEARCH PAPER

Artificial Intelligence and Future HRM Practices: A Case of Pakistan Business Sector

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ABSTRACT

Artificial intelligence is the fastest growing field in the digital technology industry. Every industry is trying its best to shift its processes to AI based machines. Among these industries the HRM is one of which is adopting these. This study aims to examine the impact of the artificial intelligence on the HRMR practices of the business sector of the Pakistan. A quantitative approach was adopted to analyze the study. The data was gathered from the 300 business managers of the Pakistan two cities Karachi and Lahore by purposive sampling. Data was gathered from a closed ended questioner which was designed on Google forms. The gathered data was analyzed using a technique based on the Partial Least Square with the help of the software named as SmartPLS. From the results of this study, it was found that there are four major HRM practices exist in the business sector of Pakistan named as recruitment and selection, training and development, performance appraisal and compensation and benefits. Results reveals that these all the majors HRM practices are highly impact by the artificial intelligence technology in the upcoming future. This is also recommended to the business sector of the Pakistan to adopt AI based application more and more in their operations especially in HRM.

KEYWORDS Artificial Intelligence, Compensation and Benefits, Performance Appraisal, Recruitment and Selection, Training and Development

Introduction

In today's rapidly evolving technological landscape, the fusion of artificial intelligence (AI) and human resource management (HRM) presents a compelling narrative of transformation, redefining traditional practices and shaping the future of work (Asfahani, 2024). Within the context of Pakistan's dynamic business sector, where organizations strive to adapt to global trends while navigating unique socio-economic challenges, the integration of AI into HRM practices holds significant promise and implications (D'Cruz et al., 2022). The intersection of AI and HRM within Pakistan's business sector, exploring current trends, challenges, and opportunities, and envisioning the future trajectory of HRM practices in light of AI advancements (Kofler & Walder, 2024). Understanding Artificial Intelligence and its Relevance to HRM Artificial intelligence refers to the simulation of human intelligence processes by machines, typically through the utilization of algorithms and data (Liu et al., 2022). AI encompasses a spectrum of technologies, including machine learning, natural language processing, and robotics, each offering distinct capabilities that can revolutionize HRM practices (Wang et al., 2023). Within the HRM domain, AI holds the potential to automate routine tasks, augment decision-making processes, and enhance employee experiences through personalized interactions and insights (Ahmad et al., 2023). The Landscape of HRM Practices in Pakistan's Business Sector Pakistan's business sector reflects a diverse array of industries, ranging from manufacturing and agriculture to services and technology (Ni et al., 2023). Over the years, HRM practices within these sectors have evolved

from traditional personnel management to strategic initiatives aimed at attracting, retaining, and developing talent (Dong et al., 2023). However, challenges such as talent scarcity, skill mismatches, and regulatory constraints persist, necessitating innovative approaches to HRM (Ahmad et al., 2021). AI Adoption in Pakistan's Business Sector Despite facing socio-economic challenges, Pakistan's business sector has shown increasing interest in adopting AI-driven solutions to enhance operational efficiency and competitiveness (Khan et al., 2022). Organizations across various industries are exploring AI applications in HRM, including recruitment and selection, performance management, learning and development, and employee engagement. However, the pace of AI adoption varies across sectors, influenced by factors such as organizational culture, resource constraints, and technological readiness. Impact of AI on Future HRM Practices The integration of AI into HRM practices is poised to reshape the future of work in Pakistan's business sector in several ways: Automation of Routine Tasks: AI-powered tools can automate repetitive and time-consuming HR tasks, such as resume screening, scheduling interviews, and payroll processing, freeing HR professionals to focus on strategic activities (Ahmad et al., 2022). Data-Driven Decision-Making: AI enables organizations to collect, analyze, and interpret vast amounts of HR data, providing actionable insights for informed decision-making regarding workforce planning, performance management, and talent development. Personalized Employee Experiences: AI-driven chatbots and virtual assistants can deliver personalized learning experiences, provide real-time feedback, and support, and enhance employee engagement and satisfaction (Naim, 2023). Predictive Analytics: AI algorithms can forecast future workforce trends and identify potential risks and opportunities, enabling proactive HR interventions and strategic planning. Challenges and Considerations While the potential benefits of AI in HRM are vast, several challenges and considerations must be addressed to realize its full potential within Pakistan's business sector: Skills Gap: The adoption of AI necessitates upskilling and reskilling of the workforce to leverage new technologies effectively, requiring investments in training and development programs (Malik et al., 2022). Ethical and Privacy Concerns: AI applications in HRM raise ethical dilemmas regarding algorithmic bias, data privacy, and transparency, necessitating robust governance frameworks and regulatory oversight. Organizational Culture and Change Management: Successfully integrating AI into HRM practices requires cultural transformation, leadership commitment, and effective change management strategies to overcome resistance and foster adoption (Suseno et al., 2022). Infrastructure and Resource Constraints: Limited technological infrastructure, financial resources, and digital literacy pose barriers to AI adoption, particularly for small and medium-sized enterprises (SMEs) operating in Pakistan. Future Directions and Opportunities Despite the challenges, the convergence of AI and HRM presents numerous opportunities for innovation, collaboration, and sustainable growth within Pakistan's business sector: Partnerships and Ecosystem Development: Collaborative initiatives between government, academia, and industry can foster the development and adoption of AI solutions tailored to the needs of Pakistan's business environment (Budhwar et al., 2022a). Capacity Building and Knowledge Transfer: Investing in capacity building initiatives, knowledge sharing platforms, and industry-academia partnerships can enhance the digital skills and capabilities of Pakistan's workforce, enabling them to harness the benefits of AI. Ethical AI Frameworks: Developing ethical AI frameworks and guidelines specific to HRM can mitigate risks associated with bias, discrimination, and privacy violations, ensuring fairness, transparency, and accountability in AI-driven decision-making processes (Tursunbayeva & Chalutz-Ben Gal, 2024). Inclusive Innovation: Prioritizing inclusive innovation approaches that consider the diverse needs and perspectives of Pakistan's workforce can foster equitable access to AI technologies and opportunities, promoting social and economic development. Conclusion In conclusion, the integration of artificial intelligence into HRM practices represents a transformative journey for Pakistan's business sector, offering unprecedented opportunities to enhance efficiency, effectiveness, and employee experiences (Bozkus, 2024). By embracing AI-driven solutions, organizations can navigate the complexities of the digital age, drive innovation, and position themselves for sustainable growth in the global marketplace. However, realizing the full

potential of AI in HRM requires concerted efforts to address challenges, foster collaboration, and promote ethical and inclusive approaches to technology adoption (Mızrak, 2023). Through strategic investments, partnerships, and capacity building initiatives, Pakistan can harness the power of AI to shape a future of work that is equitable, inclusive, and prosperous for all.

Literature Review

Artificial Intelligence

Artificial Intelligence (AI) is revolutionizing Human Resource Management (HRM) practices by introducing innovative solutions that streamline processes, improve decision-making, and enhance the overall employee experience (Stouten et al., 2018). Through the utilization of advanced algorithms, machine learning, and natural language processing, AI offers a range of capabilities that significantly augment HRM functions. This essay explores how AI enhances HRM practices across various domains, including recruitment, training and development, performance management, and employee engagement (Della Torre & Solari, 2013). One of the key areas where AI is making a profound impact is recruitment. Traditional recruitment processes often suffer from inefficiencies, such as manual resume screening and biased decision-making. AI-powered tools enable HR professionals to automate resume parsing, analyze candidate profiles, and identify top talent more efficiently (Pan & Froese, 2023). Moreover, AI algorithms can assess candidate fit based on diverse criteria, including skills, experience, and cultural fit, thereby reducing bias and improving the quality of hiring decisions. In the realm of training and development, AI offers personalized learning experiences tailored to individual employee needs and preferences. Through adaptive learning platforms and intelligent tutoring systems, AI can deliver targeted content, assess learning progress, and provide real-time feedback, allowing employees to acquire new skills and knowledge at their own pace (Prikshat et al., 2023). Furthermore, AI-driven analytics enable HR teams to identify skill gaps and training needs across the organization, facilitating strategic investments in employee development initiatives. Performance management is another area where AI is transforming HRM practices. Traditional performance appraisal processes often suffer from subjectivity and bias, leading to inconsistent evaluations and demotivation among employees. AI-powered performance management systems leverage data analytics to track employee performance objectively, identify patterns and trends, and provide actionable insights for performance improvement (Budhwar et al., 2022b). Additionally, AI-driven feedback mechanisms enable continuous feedback loops, fostering a culture of coaching and development within organizations. Employee engagement and retention are critical concerns for HR professionals, particularly in today's competitive labor market. AI offers innovative solutions to enhance employee engagement through personalized interactions, predictive analytics, and sentiment analysis (Gryncewicz et al., 2023). AI-powered chatbots and virtual assistants enable employees to access information, receive support, and provide feedback in real-time, enhancing communication and collaboration within the organization. Moreover, AI algorithms can analyze employee sentiment and behavior to predict attrition risks and proactively intervene with targeted retention strategies (Menaka, 2023). In conclusion, AI is revolutionizing HRM practices by introducing innovative solutions that enhance efficiency, effectiveness, and employee experiences. From recruitment and training to performance management and engagement, AI offers a range of capabilities that enable HR professionals to make data-driven decisions, automate routine tasks, and focus on strategic initiatives that drive organizational success. By embracing AI technologies, organizations can unlock new opportunities for talent acquisition, development, and retention, thereby gaining a competitive edge in the digital age (Malik et al., 2023).

HRM Practices

Human Resource Management (HRM) stands at the cusp of a transformative evolution propelled by the integration of Artificial Intelligence (AI). As AI technologies

continue to advance at a rapid pace, the future of HRM appears promising, with AI playing a pivotal role in revolutionizing traditional practices and unlocking new opportunities for organizational success (Renkema, 2021). This essay explores how AI usage is poised to enhance HRM in the future, driving efficiency, innovation, and strategic value across diverse HR functions. One of the most significant ways AI will boost HRM in the future is through automation. AI-powered tools have the capability to automate repetitive and time-consuming HR tasks, such as resume screening, candidate sourcing, and administrative processes (Renkema, 2021). By harnessing machine learning algorithms and natural language processing, AI streamlines these tasks, freeing up valuable time for HR professionals to focus on strategic activities that add greater value to the organization. As a result, HR departments can operate more efficiently, reduce operational costs, and improve overall productivity. Furthermore, AI enhances decision-making within HRM by providing data-driven insights and predictive analytics. AI algorithms can analyze vast amounts of HR data, including employee performance metrics, engagement surveys, and workforce demographics, to identify patterns, trends, and correlations that may not be apparent to human analysts (Sipahi & Artantaş, 2022). By leveraging these insights, HR professionals can make informed decisions regarding talent acquisition, performance management, succession planning, and workforce optimization. Additionally, predictive analytics enable HR departments to anticipate future workforce needs and proactively address potential challenges, ensuring strategic alignment with organizational goals (Zehir et al., 2020). Another area where AI will boost HRM in the future is talent management and development. AI-driven platforms offer personalized learning experiences tailored to individual employee needs, preferences, and learning styles. Through adaptive learning algorithms, employees can access customized training modules, receive real-time feedback, and track their progress more effectively (Radonjić et al., 2024). Moreover, AI-powered talent management systems can identify high-potential employees, recommend personalized career paths, and facilitate targeted development initiatives, thereby maximizing employee potential and fostering a culture of continuous learning and growth within the organization. Additionally, AI enhances employee engagement and satisfaction by enabling more personalized and responsive interactions. AI-powered chatbots and virtual assistants serve as frontline support for employees, addressing inquiries, providing information, and assisting with HR-related tasks in a timely and efficient manner (Böhmer & Schinnenburg, 2023). These AI-driven interfaces enhance communication channels between employees and HR departments, fostering a more collaborative and supportive work environment. Moreover, sentiment analysis tools enable HR professionals to gauge employee sentiment and identify potential issues or concerns, allowing for proactive interventions to enhance employee well-being and satisfaction. In conclusion, the future of HRM is poised to be significantly boosted by the widespread adoption of AI technologies (Basu et al., 2023). From automation and decision-making to talent management and employee engagement, AI offers a range of capabilities that enable HR departments to operate more efficiently, make data-driven decisions, and create a more engaging and supportive workplace environment. By embracing AI usage, organizations can unlock new opportunities for innovation, growth, and competitive advantage in the dynamic and evolving landscape of HRM (Arslan et al., 2022).

Hypothesis

H_1: AI has a significant impact on future recruitment and selection

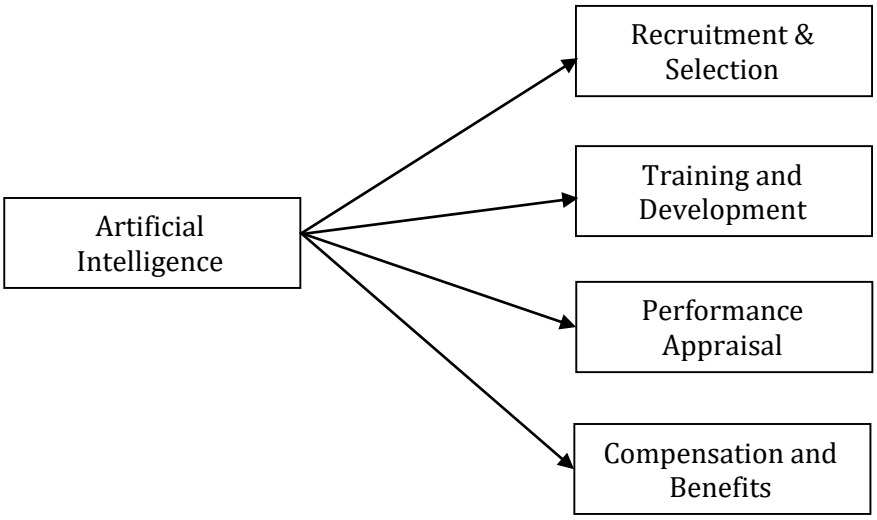
H_2: AI has a significant impact on future training and development

H_3: AI has a significant impact on future performance appraisal

H_4: AI has a significant impact on future compensation and benefits

Material and Methods

Research Model



Methodology

Methodological assumptions of any study are based on the philosophical assumption of the research. The philosophical foundation of this study are rooted from the positivism philosophy which is a pure scientific philosophy which relies on the measurable reality which is a concretely objective in nature. The methods of philosophical diagnosis used in this study was deductive. This study has used both primary as well as secondary data. The framework model of the study is rooted from the secondary data which was based on the previous literature about the topic. While the primary data was gathered from the 300 business manager of different industry of Pakistan specifically from the city of Karachi and Lahore. The sampling technique used quota sampling where the data was gathered from the two major quotas of the population. The data was gathered with a closed ended questionnaire. The gathered data was analyzed via partial least square technique with the help of software named SmartPLS.

Results and Discussion

Respondent Demography

Table 1 of the respondent demography shows the overall sample of the research. This shows that the total sample of the study was 300 among which 150 of them were male and remaining 150 were females. The second section of the demography table shows the age wise distribution of the respondents which shows that among the 300 participants 20% were between the age group of 20 to 30 years, 30% were between the age group of 31 to 40 years, 30% were between the age group of 41 to 50 years, 10% were between the age group of the 51 to 60 years while rest of the 10% were above the age of 60 years. The third and the last section of the table represent the city wise distribution of the respondents which shows the among the 300 respondents 40% were from Lahore and 60% were from Karachi.

Table 1
Respondent Demography

Gender	**Number**	**Percentage**
Male	150	50%
Female	150	50%
Total	300	100%
Age Group	**Number**	**Percentage**
20-30	60	20%
31-40	90	30%
41-50	90	30%
51-60	30	10%

61 and above	30	10%
Total	300	100%
City	**Number**	**Percentage**
Lahore	120	40%
Karachi	180	60%
Total	300	100%

Items Reliability

Once the data collected for the analysis then it is necessary first to diagnose the health of the data gathered for the analysis. For the data health of the primary data based on abstract concept the first tool is the item's reliability which confirms the reliability of each question of the study. The measure used for the item's reliability is the outer loading values. The threshold value for the outer loading value is the 0.7 and above. The table of the item reliability indicates that all the items of the study have an outer loading value greater than the threshold value which indicates that all the items of the study are reliable.

Table 2
Items Reliability

Construct	Items	Outer loadings
Artificial Intelligence	AI1	0.775
	AI2	0.876
	AI3	0.772
	AI4	0.744
	AI5	0.833
	AI6	0.821
Recruitment and Selection	RS1	0.857
	RS2	0.758
	RS3	0.882
	RS4	0.772
	RS5	0.883
	RS6	0.762
Training and Development	TD1	0.775
	TD2	0.899
	TD3	0.877
	TD4	0.775
	TD5	0.822
Performance Appraisal	PA1	0.745
	PA2	0.866
	PA3	0.834
	PA4	0.755
	PA5	0.792
	PA6	0.711
Compensation and Benefits	CB1	0.877
	CB2	0.836
	CB3	0.753
	CB4	0.793
	CB5	0.742

Construct Reliability

It is the second measure to diagnose the reliability of the data. Basically, it diagnose the overall reliability of the construct. There are two common measures used for the reliability of the construct named Cronbach Alpha and composite reliability. The threshold

for both measures is the 0.7 and above. The table of the construct reliability indicates that all the construct of the study have reliability value greater than the threshold value which indicates that the construct reliability has been established.

Table 3
Construct Reliability

Construct	Cronbach's Alpha	Composite Reliability
Artificial Intelligence	0.954	0.963
Recruitment and Selection	0.889	0.916
Training and Development	0.935	0.949
Performance Appraisal	0.874	0.909
Compensation and Benefits	0.916	0.935

Convergent Validity

Once the reliability of the scale is achieved then it is necessary to diagnose the validity of the scales. For the validity measurement there are two common test named as convergent and discriminant validity. Convergent validity describe that how much the overall items of a construct represent the construct. For the convergent validity the measure used is the AVE. The threshold value for the AVE is the 0.5 or above. The table of the convergent validity shows that all the constructs have the convergent validity value greater than the threshold value which indicates that the convergent validity of the scales has been established.

Table 4
Convergent Validity

Construct	Average Variance Extracted (AVE)
Artificial Intelligence	0.815
Recruitment and Selection	0.645
Training and Development	0.756
Performance Appraisal	0.666
Compensation and Benefits	0.705

Discriminant Validity

Another tool to measure the validity of the scales is the discriminant validity. Basically, discriminant validity explains that how much the one construct of the study differs from other theoretically from each other. The measure used for the discriminant validity is the HTMT ratios. The threshold value for the HTMT ratios is the 0.85 or less. The table of the HTMT ratios shows that all the HTMT values are less than the threshold value which indicates that the discriminant validity of the construct has been achieved.

Table 5
HTMT Ratios

	Recruitment and Selection	Training and Development	Performanc e Appraisal	Compensation and Benefits
Artificial Intelligence	0.709			
Recruitment and Selection	0.657	0.776		
Training and Development	0.73	0.703	0.746	
Performance Appraisal	0.597	0.729	0.739	0.833

Compensation and Benefits	0.673	0.879	0.875	0.751

Hypotheses Testing

Once the reliability and the validity of the data is achieved then the researcher will move towards the main cause of the research what the study want to find out. Mostly first we hypothesized the main cause of the study based on a cause and effect relationship then after data collection this cause, and effect relationship is tested where the hypothesized relationship in the certain population of the researcher exist or not. Mostly in social sciences researcher used regression analysis for the forecasting of the social effects. The measure used for the regression significance is the p value and the t value. The threshold value for the p value is 0.05 or less while the threshold value for the t value is 1.96 or above. The table of hypothesis testing shows that all the hypothesis of the study are significant where their p and t value are in range of the threshold limit. While the beta value of each relationship shows the magnitude of the impact of the relationship.

Table 6
Hypotheses Testing

Hypothesis	Beta	T Statistics	P Values
H1: AI -> Recruitment and Selection	0.341	11.893	0.000
H2: AI -> Training and Development	0.242	15.341	0.000
H3: AI -> Performance Appraisal	0.218	12.640	0.000
H4: AI -> Compensation and Benefits	0.316	7.193	0.000

Conclusion

Artificial intelligence is the fastest growing field in the digital technology industry. Every industry is trying its best to shift its processes to AI based machines. Among these industries the HRM is one of the which is adopting these. This study aims to examine the impact of the artificial intelligence on the HRMR practices of the business sector of the Pakistan. From the results of this study, it was found that there are four major HRM practices exist in the business sector of Pakistan named as recruitment and selection, training and development, performance appraisal and compensation and benefits. Results reveals that these all the majors HRM practices are highly impact by the artificial intelligence technology in the upcoming future. This is also recommended to the business sector of the Pakistan to adopt AI based application more and more in their operations specially in HRM.

Recommendations

It is recommended to the business sector organizations to adopt the artificial intelligence as soon as possible to avoid the technological gaps. It is also recommended to the new researcher to do a further enrich qualitative analysis on this topic to further explores the factors of new digital technology other than AI or the new versions of AI and how we can better adopt these.

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