

Unveiling the Transformative Influence of Artificial Intelligence on Human Resource Management

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Abstract

Artificial intelligence (AI) is becoming more and more prevalent in businesses. In the specialised subject of human resource management (HRM), artificial intelligence (AI) has grown in importance recently. There are lot of studies that have been done on the topic of AI and HR. As a result of shifts in the IT industry, this research delves into how innovations in AI have affected human resource management. Human resources (HR) experts may leverage AI at every stage of the employee lifecycle, from recruitment to performance reviews. Finding out if HR operations' innovativeness and user-friendliness impact the AI-HR function relationship is the driving force behind this study, which is conducted within the context of Bangalore IT industry. This study drew 200 responses from HR professionals working for IT firms in the Bangalore region. Using a multiple regression method, we were able to illustrate that HR functional performance improves as AI usage increases in the workplace, lending credence to the premise that the two variables are positively correlated. Contrarily, AI is commonly linked to practicality and originality, which implies that AI directs human resources towards ease and innovation.

Keywords: Artificial Intelligence, Human resource functions, usability

Introduction:

A growing number of sectors are embracing artificial intelligence (AI) systems, which aim to increase output per unit of effort by modelling human intellect in simulated environments. A variety of activities fall within the purview of human resource management (HRM), including recruiting, selecting, onboarding, and developing employees. It is the responsibility of every department to help bring about the desired results for the business.

In the field of human resources (HR), artificial intelligence (AI) is a relatively new development. To the contrary, it is now widely believed to be an indispensable tool for human resource managers in the areas of talent acquisition, development, and retention (Ivanov & Webster, 2017). Also, there's a growing trend of using AI and ML in HR, which could lead to huge improvements in employee engagement and workplace efficiency (Buzko I, 2016).

Big data, machine learning, mobile technology, the Internet of Things, geo-tagging, virtual reality, speech recognition, biometrics, and artificial intelligence (AI) are all part of the Fourth Industrial Revolution (4IR) (Shank et al., 2019). Adaptive decision-making is just one example of how artificial intelligence (AI)-enabled machines may do jobs that normally need human cognition (Tambe et al., 2019, p. 16). The use of automation in human resource management has not been thoroughly studied, according to Castellacci and Viñas-Bardolet (2019), so far, and the results on people, their job, and the organisation as a whole have not been fully understood.

Human resource management is mostly concerned with managing payrolls, performance evaluations, and remuneration in order to motivate employees to perform at their best. When it comes to tasks like hiring, training, and development, human resources managers may rely on chatbot-agnostic AI solutions and algorithms to lighten their load. In addition to improving procedures and eliminating paperwork, this integration streamlines administrative processes, which in turn piques employees' interest in their work.

Use of AI in human resource management streamlines and automates a number of operations, including scheduling, employee information accessibility online, and processing leave requests. Thanks to its remarkable outcomes, artificial intelligence (AI) is quickly becoming a mainstream practice in human resource management. This is driving its increasing application in the field. AI allows human resources professionals to collaborate with machine learning to reduce administrative work, improve hiring decisions, and create valuable HR data on the cloud. It is also important to

show how these HR-focused AI apps improve outcomes while reducing undesirable side effects. So, we argue that the social-technological environment can help us achieve better results through things like a flexible organisational structure, good training, overcoming fear of change, and improving our employees' abilities. Furthermore, we argue that individualised aspects of employees, including EQ and personality, must be considered because they can influence company outcomes (Peigong Li et al., 23)

Intelligent integration of people, processes, and technology yields transformational value, according to the report. AI analytics provide deeper insights into the usage of HR data. The research seeks to investigate the present and future effects of AI on HRM, taking into account the vital role of AI in improving workers' time management and strategic value creation. This study is crucial for comprehending the impact of AI on the corporate sector, as the last 20 years have seen a meteoric rise in AI development, mostly as a result of the broad use of machine learning.

2. Literature review

HRM industry has already been greatly benefited by AI and that this trend is likely to persist. Human resources professionals should always be well-prepared for any eventuality, and aspiring HR specialists would do well to study up on the field and be abreast of any new trends. Scott W. O'Connor (2020). HR procedures that use AI-based technologies can greatly improve organisational efficiency. Although AI is already used in several areas of human resources, such as hiring, training, onboarding, and performance evaluation, many companies still have not completely integrated AI into their HR procedures. Prasanna Vatsa and Kusuma Gullamjji (2019).

According to Jennifer Johansson and Senja Herranen (2019) AI is still in its infancy, very few businesses have completely integrated it into their hiring processes. In spite of recognising the advantages of faster quality and the removal of mundane jobs, the article notes that organisations' general reluctance to adopt new technology is a great hurdle. AI-based solutions enhance worker productivity through the better assessment, forecasting, and diagnosis of resource demands. Still, problems like a skill gap, an absence of well-established apps, or integration capabilities have been noticed (Angrave, D, Charlwood 2016). Barbara van Pay (2018) discusses that how organisations are curious about AI solutions but wary of giving robots too much power. Hike Vue and Mya are examples of AI-powered workplace applications that speed up the hiring process by automatically analysing applications and resumes to find the most qualified individuals.

Anupam Jauhari's (2017) article, "How Artificial Intelligence and Machine Learning Will Change Human Resources in the Future," makes the prediction that chatbots powered by machine learning will manage recruitment activities. This would allow HR professionals to more easily use AI for screening applicants and informing them of their status. As part of their 5th annual global human capital trends report, 2022, Deloitte analysed data from Indian companies and found that while 22% had actually implemented digital technology, 53% were poised to do so.

Out of all the departments, HR has the most complex needs for data management and analysis (Premnath & Chully, 2020). There are several things that artificial intelligence can achieve, like reducing the workload of personnel, improving the efficiency of processes, and analysing data. Connecting certain machines, computers, and other devices is what AI engineering is all about. A number of uses for the AI framework have been identified, including but not limited to: re-engagement, career development, screening of applicants, and staff participation (Jia et al., 2018). A more efficient human resources department is a direct result of the use of AI-powered applications. Staff the human resources department with more specialised roles that contribute significantly to the company's success; Artificial intelligence helps human resources professionals by automating repetitive tasks and allowing them to make judgements based on evidence rather than gut feelings. Human resources departments use AI to find qualified candidates, reduce bias, and hold on to top performers. Additionally, people are expected to use AI when technology becomes more reliable and affordable (Bankins, S., & Formosa, P, 2020). The economy benefits greatly from swiftly capitalising on breakthrough technology without squandering time and money on expensive risk studies. By improving data gathering and processing skills, artificial intelligence technology can help any department make initial estimates based on changing circumstances (Ruby Merlin. P, 2018).

The current body of research on AI in HRM emphasizes the remarkable beneficial effects on the field, with uses spanning from hiring to professional development. But there's still a lot we don't know about the methodical framework that controls the incorporation of AI in HRM. While research has pointed to AI's possible advantages—like better decision-making, less effort, and data analysis—there has been little investigation into the strategic application and organisational effects of AI in different HRM domains. Furthermore, research indicates that many companies are hesitant to completely embrace AI owing to issues including reluctance to new technology and an absence of proven uses, particularly in the hiring process. This is in contrast to the expectations of broad AI adoption. To achieve a more comprehensive understanding for both practitioners and policymakers, additional research is required to fill this

knowledge vacuum by investigating the real-world obstacles, organizational preparedness, and overall effects of AI on HRM practices.

Based on the literature that was reviewed two research questions were laid down:

1. To explore the contribution of Artificial Intelligence in Human Resource Management
2. Examining the Impact of Artificial Intelligence on Human Resource Management.

3. Research methodology

Extensive literature and theory reviews support the study. After the research problem and questions have been defined, the next stage is to choose a suitable research strategy. The next step is to implement the selected tactics for data collection. The researcher has used the acquired data to conduct data analysis in accordance with previously established hypotheses.

A survey was administered to 200 individuals in the IT industry in the Bangalore at random to gather primary data. The questionnaire that was used for the survey was carefully designed. The dataset has been enhanced and added additional context through the use of secondary sources, which include previously published research, studies, and the works and blogs of renowned authors. Incorporating primary and secondary data, this thorough methodology guarantees a multi-faceted examination of the study issue, enhancing the depth and dependability of the conclusions.

3.2 Data analysis

Both descriptive and inferential statistics were employed in the study's analysis and presentation of findings. IBM SPSS version 24 was used to analyze the data, and descriptive statistics including the sample's mean, standard deviation, percentage, and frequency were calculated. In order to extrapolate from the sample to the population, we used inferential statistics like correlation and multiple regression. The study used a quantitative methodology and relied on survey data. A questionnaire was developed after a thorough literature analysis, with constructs taken from previous research. A 5-point Likert scale, with 1 representing severe disagreement and 5 representing strong agreement, was used to rate each statement in the questionnaire. Questions on AI usage, Efficient Human Resource Management (HRM), and its incorporation into HRM procedures including training, performance evaluation, and recruitment were the primary foci of the survey. Annotated citations for Efficient HRM, AI technology, and AI in HRM processes come from Almarashda et al. (2021) and Chakraborty et al. (2020).

4. Results

4.1 Demographic characteristics:

Table 1: Demographic profiles of women respondents (N=200)

Measures	Items	Frequency	Percentage
Gender	Male	121	60
	Female	79	40
Marital Status	Married	45	23
	Unmarried	155	77
Education	PG	82	42
	Secondary board/ Equivalent degree	22	10
	UG	96	48
Age in years	Less than 30	48	24
	31 to 40	91	45
	41 to 50	42	21
	Above 50	19	10

Source: Primary data

A slight majority of 60% comprises males, while 40% are females, indicating a gender distribution that leans slightly towards males. Marital status reveals that a significant 77% of respondents are unmarried, while only 23% are married, shedding light on the prevailing relationship status within the surveyed group. Education levels display diversity, with 48% having completed undergraduate (UG) studies (B.Tech and BBA), 42% holding postgraduate (PG) qualifications (MBA), and 10% possessing secondary board or equivalent degrees (Diploma). This signifies a varied educational background among the participants. In terms of age distribution, the largest cohort falls within the 31 to 40 age range, constituting 45% of the sample. The "Less than 30" and "41 to 50" groups follow with 24% and 21%, respectively, while those above 50 make up the smallest portion at 10%. This suggests a well-distributed age representation, with a notable concentration in the 31 to 40 age bracket.

Table 2: Cronbach's alpha, Mean, Std. deviation and Correlation of the variables.

	AIT	RAI	TDAI	PAAI	EHRM
Reliability (Alpha value)	0.851	0.874	0.911	0.887	0.902
Mean	4.241	4.425	4.398	4.516	4.565
Standard deviation	.6960	.7850	.6991	.6845	.6626
AI technology (AIT)	1				
Recruitment through AI (RAI)	0.429**	1			
Training & development through AI (TDAI)	0.558**	0.455**	1		
Performance appraisal through AI (PAAI)	0.578**	0.409**	0.580**	1	
Efficient Human resource management (EHRM)	0.593**	0.551**	0.631**	0.599**	1

The table provides an overview of reliability measures, mean scores, and standard deviations for five constructs related to AI adoption in the context of human resource management. The alpha values for reliability are consistently high, ranging from 0.851 to 0.911, suggesting strong internal consistency for all constructs.

Examining the mean scores, respondents rated Efficient Human Resource Management (EHRM) the highest, with a mean of 4.565, indicating a positive perception of the integration of AI in HR practices. On the other hand, AI Technology (AIT) received the lowest mean score at 4.241, suggesting a relatively lower perception of AI technology compared to the other constructs. The standard deviations are relatively moderate, indicating a moderate level of variability in responses across the constructs.

The correlation matrix indicates positive associations between different constructs. Noteworthy correlations include positive relationships between AIT and both Recruitment through AI (RAI) and Training & Development through AI (TDAI), indicating that as AI technology increases, there is a tendency to adopt AI in recruitment and training & development. Similarly, strong positive correlations are observed between RAI and Performance Appraisal through AI (PAAI), TDAI and PAAI, and EHRM and all other constructs, suggesting a comprehensive integration of AI technologies in various HR functions.

Impact of AI technology and its adaptation in Human resource process on HRM effectiveness:

The impact of four independent variables on the dependent variable was determined using multiple regression analysis. Implications of AI on HR: Effective HRM served as the dependent variable, while AI-powered performance evaluation, training and development, and recruitment served as the independent variables. It was verified that the Multicollinearity assumption was valid before administering the regression test. The results were discussed in greater depth thereafter.

Table 3: Multi-collinearity Tests

Independent Variables	Tolerance	VIF	Durbin-Watson
AI technology (AIT)	0.573	1.746	2.123
Recruitment through AI (RAI)	0.737	1.357	
Training & development through AI (TDAI)	0.559	1.788	
Performance appraisal through AI (PAAI)	0.561	1.781	

Source: Primary Survey

Note: VIF = variance inflation factor

It was determined that multi-collinearity was present in the dataset by analysing the values of the variance inflation factor (VIF) and the tolerance value. By definition, multicollinearity does not exist when there is no statistically significant correlation between any two independent variables (predictors) and the VIF value is less than four and the tolerance value is more than 0.02. Checking Table 6 showed that the VIF and tolerance values were lower than the predetermined limit, indicating that there were no problems with multicollinearity in the data. There was no evidence of autocorrelation in the residuals, since the Durbin-Watson statistic (DW = 2.13) was within the crucial range of 1.5 to 2.5.

Table 4 ANOVA

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	49.305	4	12.326	63.133	.000
	Residual	38.072	195	.195		
	Total	87.377	199			

(Source: Primary Survey)

The statistical significance of the regression model in predicting Efficient HRM (the dependent variable) is indicated by the F-test value of 63.133 in ANOVA table 4, which is less than the significance level of 0.05 ($p=0.000$). The regression's mean square (12.326) was significantly greater than the residuals' mean square (0.195). The findings of the analysis of variance (ANOVA) provide more evidence that the regression model successfully accounts for the observed variation in the dependent variable, lending credence to its predictive power.

Table 5: Coefficients of Multiple Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig. (p)	Results
	B	Std. Error	Beta			
(Constant)	0.699	.246		2.840	.005	
AI technology	0.196	0.059	0.206	3.295	.001	H1 supported
Recruitment through AI	0.209	0.046	0.248	4.498	.000	H2 supported
Training & development through AI	0.263	0.060	0.277	4.388	.000	H3 supported
Performance appraisal through AI	0.211	0.061	0.218	3.456	.001	H4 supported

(Source: Primary Survey)

Table 5 shows that AI technology has a good and significant impact on efficient HRM ($\beta = 0.206$, $p = 0.001$). Support for Hypothesis H1 comes from a p-value lower than 0.05 and a T value higher than 1.96 (3.456). A β value of 0.248 and a p-value less than 0.05 validate Hypothesis H2, which states that AI considerably improves HRM when used in recruitment. Likewise, a p-value of 0.000 and a path coefficient value of 0.277 support Hypothesis H3, showing that organisations using AI for training and development significantly impact HRM efficiency.

Moreover, the effectiveness of HRM is significantly and positively affected by performance appraisal by AI ($\beta = 0.218$, $p = 0.001$). Validation of Hypothesis H4 is achieved with a p-value less than 0.05 and a T-value (3.456) more than 1.96. All the hypotheses are supported by the overall significance value of $p < 0.05$, which confirms that AI technology and its use in HR operations significantly impact efficient HRM. According to standardised regression weights, AI technology has a considerable impact on HRM efficiency. AI in training and development has the biggest influence, followed by AI in recruiting and performance appraisal.

Table 6: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.751	0.564	0.555	.44186

An R-value of 0.751 indicates a weak degree of connection, as shown in Table 6. With an R² value of 0.564, the independent factors explained 56.4% of the variation in the HRM effectiveness dependent variable. The average divergence of the actual values from the projected values is known as the standard error of the estimate, and it comes to 0.44186. This number shows how well the model predicted the dependent variable from the independent ones. A more exact match between the model and the data is shown by a smaller standard error.

4. Discussion and Implications

There is evidence that AI can improve HR processes, specifically efficient HR. Though they have analytical, predictive, and diagnostic capabilities, these AI-powered HR solutions still can't match a human's emotional intelligence or cognitive capacity. But they are a powerful resource for any business.

The real issue that the world's workforce is facing is the obvious influence of AI on job losses in many different areas. However, the real question is not whether or whether more advanced technologies will emerge; rather, it is how well humans will be able to incorporate and benefit from these advancements that will determine our fate. When HR procedures are enhanced with AI-based solutions, organisational performance is likely to see an uptick. Though they lack the emotional and cognitive capacities that humans possess, these AI-based HR solutions are nonetheless a great asset to any business due to their ability to assess, predict, and diagnose. The research also demonstrated that there are a number of areas where organisations might benefit from implementing AI into HRM. These areas include data, compliance, operations, strategy, and organisation. This study sheds light on the real-world uses and effects of AI software in HRM, which can lead to better AI implementation in the sector. Businesses in the Bangalore area would get more information to make smart AI investment decisions.

There will be far-reaching consequences for researchers and professionals in the subject as a result of this study's examination of AI's effect on HRM. Organisational strategy decisions and efforts can be better informed by the insights provided by the results, which illuminate the revolutionary possibilities of AI in HRM practices.

The study's findings that AI has a favourable and substantial effect on effective HRM are an important consequence. To improve overall operational effectiveness, this insight highlights the significance of incorporating AI tools and processes into HR functions. Managing talent, recruiting top talent, educating employees, and evaluating their performance are all areas where organisations can benefit from recognising and utilising AI in HRM.

In addition, HR professionals can benefit from the study's specific recommendations since it outlines the ways in which AI can improve the hiring process, employee development, and performance reviews. To ensure a focused and effective integration of AI into HRM practices, organisations must first understand the areas where AI may make a big impact. Only then can they customise their implementation methods.

5. Conclusion

The study emphasizes the basic importance of artificial intelligence (AI) in shaping the future course of human resource management (HRM). It highlights the established benefits of greater efficiency that arise from integrating AI, but it also explores the nuances of HR roles where AI has the most room to grow. The thorough comprehension provided here acts as a road map for businesses looking to use technology to revolutionize their HR procedures. This research provides valuable insights into HRM's ongoing transformation in the modern digital context. It provides a nuanced view on the particular HR domains where AI interventions have the greatest positive effects in addition to confirming the positive influence of AI on HRM. In doing so, it provides enterprises with actionable intelligence, empowering them to confidently and strategically traverse the complex landscape of HRM. The study's conclusions are a significant resource for organizations as they begin the process of adjusting to the new HRM paradigms brought about by the digital age. They provide decision-makers with the information and insight they need to make wise decisions, ensuring that their businesses not only endure but prosper in the face of Artificial Intelligence's revolutionary impact on HRM practices.

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