



# Efficiency Gain Of AI & Automation In Human Resource Management

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*Abstract:* To have a successful business, effective human resources departments are vital, and efficient HR departments lead to successful organizations which ensure that HR activities are carried out smoothly and typically. HRM process automation rapidly became a key tool in employee management of each organization. With the rapid evolution of technology, organizations are increasingly turning to integrate AI automation to replace manual tasks and paper work to enhance efficiency, streamline operations, and optimize HR functions. This research delves with descriptive design and point out the efficiency and benefits of application of Artificial Intelligence (AI) within the Human Resource Management (HRM) processes of the organizations and aims to provide a comprehensive analysis of how these cutting-edge technologies are reshaping traditional HRM practices in the corporate landscape. Data are collected from Kerala based IT firms which are integrated AI in their HR functions through a well-structured questionnaire. Descriptive statistics are used for analyzing the data and interpret the results. The result of the study indicate that the integration of AI and automation significantly improves efficiency in HRM process particularly in employee wellbeing, candidate assessment, recruitment and talent acquisition, onboarding of employee, employee engagement, employee entry & exit and performance management.

**Key words:** Artificial Intelligence (AI), HRM automation, AI Automation

## I. INTRODUCTION

Implementation of technology and artificial intelligence can offer the best service to ensure HRM functions with standards. Also, the usage of IT or information technology such as digital technology and AI become a global demand. The operational cost of companies increases when there is an overload process and hiring more staff (Mohamed et al., 2022). Using the Internet, artificial intelligence, and automation are the three main elements of the fourth Industrial Revolution 4.0, and E-HRM is the result of these three elements that changed human resource management functions (Kumar, n.d.). Organizations must utilize creative ideas to stay competitive in the face of intense global competition. Every department in a company contributes to success in some way, but we think that human resources management (HRM) has a unique relevance (Uppin, 2017). HR Automation is a method for improving an employment organization's efficiency since it relieves staff members of tiresome, repetitive activities so they can concentrate on more difficult jobs like decision-making and strategy building. Automation is understood as the substitution of electronic and computer-

controlled devices for manual processes (Mishra, n.d.). Research in the field of electronic or digital human resource management is anticipated to be impacted by developments in artificial intelligence, smart automation, and mobile apps. In the most recent writings on these themes, a recurrent theme is the understanding that technology-oriented (HRM) practices and initiatives have far-reaching ramifications. The present development in the use of digital technology has also impacted the competencies and expectations of the digital workforce (Yabanci, 2019). It's a system that automates and completes the bulk of low-value HR duties so that more time can be spent on the strategic scope of work. Human resource applications including hiring and onboarding, internal mobility and staff retention, and job automation are where artificial intelligence is most frequently applied. (Ganeshan, 2022). Although It is anticipated that AI will significantly increase augmentation and automation in the HR domain toward difficult jobs like management and decision-making at all levels (Strohmeier, n. d, 2017) The development of electronic human resource management (e-HRM), is a much more potent enabler in changing the role of human resources (HR) from a merely advising staff function to a more strategic line function becoming an administrative expert, an employee champion, a business partner, and a change agent, has been made possible by the advancement of web technologies over the past few years (Kaur, 2012). Therefore, decision-making is becoming more decentralized as a result of increased administrative work automation and widely distributed data access. This allows people responsible for HRM activities to concentrate on difficult, judgment-based, and professionally demanding tasks and responsibilities with more efficiency (Marler & Parry, 2016). The practice of human resource management has been significantly altered by the widespread availability of HR services through technology and web-based apps in almost all businesses. On the other hand, the need to reduce expenses while expanding or improving services frequently drives these changes (Johnson & Gueutal, n.d.). This consideration implies that the industrial landscape is shifting as a result of technological advancements and HR functions need to concentrate on embracing automation and other technologies that promise efficiency, effective service delivery, and cost savings as technology alters the globe. RPA implementation can improve the level of service provided to management and employees. Enhance efficiency by digitizing data and auditing process data, which will boost (HR) productivity and cost savings by automating manual and repetitive operations. Also, ensure that (HR) processes comply with standards and regulations (Balasundaram & Venkatagiri, 2020). Automation is described as the introduction, installation, and institutionalization of machines and technologically assisted systems, such as computer resources, to supplement or replace human resources, and man-machine interfaces or work alignment are two examples if Machine-centric automation is used to describe situations when a machine or computer system manages an operation in real-time. Human-centric automation, on the other hand, refers to situations where HR actively handles critical tasks (Bagga et al., 2019). The process of automation for decision-making is also the focus of the organizations for the making of strategic decisions but concentration is on individual employee development (Kazakovs et al., 2015). It brings out that, HRM begins the process of becoming human-automation resource management (HARM), an integrated corporate function (Bansal et al., 2023). It is believed that the traditional separation of company functions into HR departments is nearing its limit. They can either act as a lobby for the human role in this

technological environment of automation, digitalization, and big data, or they can become extinct and be replaced by those roles that define automation through IT and technology (Stein & Scholz, 2020).

### OBJECTIVES OF THE STUDY

1. To measure the perception of HR managers regarding the efficiency gains achieved through the application of AI automation in HRM process.
2. To identify the AI tools used by the organization to automate HR Processes
3. To analyse the functional areas of HRM where AI are Integrated for improving the efficiency.
4. To analyze the relationship between the HR Manager's perception on benefit of AI integration and the extent of usage of AI in their organization
5. To identify the challenges of AI adoption in human resource management.

### II. LITERATURE REVIEW

This paper primarily examines the opportunities and obstacles associated with HR automation within small and medium-sized enterprises (SMEs). A thorough examination of existing research reveals that the automation of HR functions is not only effective but also brings about more benefits than disadvantages. Numerous countries recognize the importance of businesses adopting cutting-edge technology, and they actively encourage the implementation of HR systems to enhance performance and achievements (Szymkowiak et al., 2021). The paper deliberated on an examination of the level of HR automation within small manufacturing enterprises. This involved an analysis of the benefits and challenges while also charting a path for future enhancements in organizational efficiency. It underscores the shift in human resource functions from being perceived solely as basic management goals to a more strategic role (Amour Al Noumani & Taqui Syed, 2020a). The argument centers around three key aspects: the development of HR branding, the digitization of recruitment processes for sales managers, and the automation of labor-related functions. This demonstrates that automating HR processes eliminates repetitive tasks for employees and reduces the likelihood of errors, all while harnessing digital technology to enhance the HR brand (Fedorova et al., 2019). Identified to understand how HR automation affects professionals to advance their careers in any organization and suggest the implication of web-based technologies for human resource functions. Also, this study brings out the effect and impact of automation in reducing the cost, time spent, paperwork, error reduction, and software solutions (Nawaz & Gomes, 2014). Discussed that improvement of technology has changed the style of business in the whole world and, utilization of technological advancements encourages the organizations to invest in their human resource also bring out the effectiveness and benefits of HR automation is higher than challenges (Amour Al Noumani & Taqui Syed, 2020b). Bring out that size of organizations has a direct effect on the automation level of the HR process, and evaluation of ranking happens on the base of paperwork, level of digitalization, and complete digitization of HR (Suvalova et al., 2021). The paper has concentrated on the IT function and implementation of the RPA robotic process automation for the automatization of an organization's service process, by using the case study shows that the adoption of the RPA with the IT function will be effective and useful for the digitalization of business service (Leslie Willcocks & Craig, 2015). A successful and developed human resource service depends on the utilization of digital technology especially for recruitment and planning functions, this case shows that adopting automation came over the challenges

faced during the recruitment process and the effectiveness of automation changed the image of HR (Gupta et al., 2018). Examines the fundamental procedures of human resource management and cites justifications for the demand for automated human resource management solutions. In order to implement the automated system of human resource management in the project-oriented organization, a thorough strategy and recommendations have been made and, the system and rules for implementing it within the organization have been developed. The article named “Development and Implementation of Automated System of Human Resources Management in the Project-Oriented Companies” (2017) explains how the Analytic Hierarchy Process is used in decision-making for the process of employee development planning. The Analytic Hierarchy Process enables dynamic manipulation of the decision-influencing elements. The list of criteria that are or are not taken into account in the decision-making situation might be supplemented as needed or in certain circumstances (Kazakovs et al., 2015b). The body of work indicates that the evolution of HR process automation is not taking place in a vacuum, the development of information technology into an essential component of contemporary organizations is increasingly interconnected with many facets of the workplace and will lead to new demands and change in the culture of organizations (Uppin, 2017). On the success of e-HRM system adoption and utilization, it tries to study the impact of organizational leadership, organizational framework, and staff capacity for technology. The study's findings suggest that organizational structure and staff technological capabilities have a positive and significant impact on the success of e-HRM. On the other hand, organizational leadership had little impact on e-HRM's success (Amoako et al., 2022). Adopting digital technology is not only effective for the development of the organization but is more efficient for the HRP human resource planning which shows the development of human resources, strategic plans, and business strategy of the companies and it paves the ground for an automation process (Kazakovs, 2016). This research paper identified the concept, role, benefits, and challenges of AI in human resource management by using the descriptive research design. Also brings out that AI has a crucial role in HR functions by decreasing the workload, retention rates, and high probability of errors, and make easy the selection process (Vivek & Yawalkar, 2019). Address the connection between e-HRM and HRM to bring out the significance of the interaction among the technological and organizational aspects and it finds that the quality of the human resource management service is the result of e-HRM application and two major strengths (Bondarouk et al., 2017).

### III. RESEARCH METHODOLOGY

This research is a quantitative study with a descriptive design which aims to measure the benefits of using AI in HR, evaluate the perception of HR managers regarding AI and identify the challenges of using AI in human resource management. Therefore, a structured questionnaire consist of a series of questions were administered to the heads of HR and HR managers of 30 IT companies in Kerala were conducted on the base of purposive sampling method. The questionnaire was formulated in six parts with a series of statements correlated with each objectives using five-point Likert scale. Open ended questions were also asked to know the suggestions of the respondents. Percentage, Mean, Standard deviation and Correlation were done using SPSS software for data analysis.

#### IV. DEMOGRAPHIC PROFILE

The demographic table shows that 36.7% of the respondents are male and 63.3% are female, it means the majority of respondents are female which become 2/3rd of total HR managers in 30 IT companies. A high percentage of the respondents (66.7%) are with the 1-5 years of experience in the field of HR and 90% of the respondents have personally experienced benefits of AI and automation in human resource management HRM.

Table 1. Demographic Profile of the respondents (N=30)

Contents	Count	Column N %	
Gender	male	11	36.7%
	female	19	63.3%
Experience	1-5	20	66.7%
	5-10	4	13.3%
	10-15	2	6.7%
	15-Above	4	13.3%
Personal experience with AI tools	Yes	27	90.0%
	No	3	10.0%

#### V. RESULTS AND DISCUSSION

This section deals with the analysis and result derived from the survey conducted in this research to know the benefits of integration of AI and automation in human resource management which is driven from the contribution of HR manager's perspective, experience and knowledge.

##### 5.1 Efficiency gains of using Artificial Intelligence (AI) in HRM

Table 2. Efficiency gains of using artificial intelligence (AI)

	N	Minimum	Maximum	Mean	Std. Deviation
Streamlined Recruitment Processes	30	1.00	5.00	2.1000	1.02889
Improved Talent Acquisition	30	1.00	3.00	2.0667	.78492
Efficient Performance Management	30	1.00	5.00	2.5000	1.07479
Optimized Training and Development	30	1.00	3.00	1.9333	.63968
Data-Driven Decision Making	30	1.00	5.00	2.1333	.93710
Enhanced Employee Engagement	30	1.00	5.00	2.2667	1.01483
Time saving	30	1.00	5.00	2.1667	1.20583
Reduce Errors	30	1.00	3.00	1.3000	.53498
Enhanced Employees Experience	30	1.00	3.00	1.6333	.71840
Quick Information Access	30	1.00	4.00	1.8000	.80516
Improved Organizational Efficiency	30	1.00	5.00	1.7000	.91539
Enhanced Decision Making	30	1.00	3.00	1.7667	.62606
Reduced Bias in Recruitment	30	1.00	4.00	2.5333	.93710
Improved Compliance and Security	30	1.00	5.00	2.1667	1.08543
Faster Process	30	1.00	5.00	1.6667	.88409
Tracking the Documents	30	1.00	5.00	1.8000	.99655
Reduce Hiring Delays-fill Vacancy Rapidly	30	1.00	5.00	1.9667	.99943
Provide Analytical Decision Support	30	1.00	5.00	2.1000	1.18467
Valid N (listwise)	30				

The descriptive statistic in Table 2 indicate, Artificial Intelligence for automation is beneficial to the smooth conduct of various HRM functions. The perspective of HR managers shows particularly strong improvement in reduce bias in recruitment and efficient performance management with the high mean values of 2.5,

enhanced employee engagement with mean value of 2.26. The AI and automation is also more beneficial in time saving and improving compliance and security with the high mean value of 2.16 in both. It also shown that AI and automation is most beneficial to streamline recruitment process with mean value of 2.1, providing analytical decision support with the same mean value of 2.1).

### 5.2 Efficiency improvement by AI and automation in HR

Table 3. Efficiency improvement in HRM after integration with AI

	Frequency	Percent	Valid Percent	Cumulative Percent
Moderate improvement	12	40.0	40.0	40.0
High improvement	16	53.3	53.3	93.3
Very high improvement	2	6.7	6.7	100.0
Total	30	100.0	100.0	

As it is reflected in table 3, HR managers confidently expressed their opinion regarding the efficiency improvement in human resource management process by AI and automation and 40% of them believe that there is a moderate improvement, 53% of them are agree with high improvement and only 7% of them experienced a very high improvement in human resource management process after integration of AI. Nobody responded favorably with low or very low improvement of HRM process after integration of AI.

### 5.3 Functional areas of HRM where AI are integrated for smooth functioning

Table 4. HR functions using AI

	N	Minimum	Maximum	Mean	Std. Deviation
Recruitment and Talent Acquisition	30	1.00	3.00	1.6333	.49013
Candidate Assessment	30	1.00	3.00	1.7667	.43018
Onboarding of Employees	30	1.00	3.00	1.6333	.49013
Employee Engagement	30	1.00	3.00	1.6000	.49827
Employee Entry and Exit	30	1.00	3.00	1.6667	.47946
Performance Management	30	1.00	3.00	1.6000	.49827
Learning and Development	30	1.00	3.00	1.3000	.46609
Employee Well-being	30	1.00	3.00	1.8333	.37905
Task Automation	30	1.00	3.00	1.4667	.50742
Collaborative Schedule Management	30	1.00	3.00	1.5667	.50401
Valid N (listwise)	30				

Table 4, helps to identify areas where AI is effectively integrated and highlights potential opportunities for further AI implementation in HR functions which shows high usage of AI in employee well-being with a mean value of 1.83 and candidate assessment with 1.76. Moderate usage of AI is in recruitment and talent acquisition, onboarding of employees, employee engagement, employee entry & exit and performance management with a mean value range of 1.5667 – 1.6667 and also the lower usage of AI is in learning and development with the lowest mean value of 1.3. A 3-point Likert scale was used to measure the extent of usage.

#### 5.4 AI Tools used in the business and its extent of usage

Table 5. The extent of usage of AI tools in HRM

	N	Mean	Std. Deviation
Chatbots	30	4.1000	1.12495
Albus	30	2.2000	1.42393
ChatGPT	30	4.9333	.25371
Effy AI	30	2.0000	1.48556
Leena AI	30	1.7667	1.22287
Entelo	30	1.7333	1.25762
First up	30	1.5333	.89955
Workday	30	1.8667	1.16658
IBM Watson Talent	30	2.0333	1.37674
Textio	30	1.8000	1.34933
Spring Recruit	30	1.8000	1.21485
Ideal	30	1.8000	1.27035
Pymetrics	30	1.8333	1.44039
Attract.ai	30	1.8000	1.27035
Paradox.ai	30	1.8333	1.31525
Loxo	30	1.7000	1.20773
Zavvy	30	1.8333	1.31525
Beamery	30	1.7000	1.20773
Eightfold AI	30	1.7667	1.22287
SeekOut	30	1.7333	1.20153
Anodot	30	1.7667	1.22287
Obviously, AI	30	1.7667	1.22287
HR Signal	30	3.5667	1.27802
Talent Guard Workforce GPT	30	1.9333	1.25762
Docebo's Learning Suite	30	1.7333	1.20153
Totara	30	1.8000	1.29721
Paradox	30	1.7000	1.20773
Talk push	30	2.0667	1.48401
Valid N (listwise)	30		

An attempt has also been made to know the different types of AI tools used in business to smoothen the HRM functions. Table 5 turn the light on the extent use of AI tools in human resource management whether HR mangers of IT companies are familiar and using them in HR functions or routine duties. Chatbots are the most frequently used AI among the HR managers with the mean value of 4.10 indicating regular use of it. ChatGPT is also has high usage after Chatbots which is the second most extensively used AI tool with the mean value of 4.93 and low standard deviation. The other tools are shown as very rarely used with mean values close to or slightly above 1, indicating infrequent use and confidently can say that HR managers of IT companies are familiar with it but not using in their human resource management process.

### 5.5 Challenges of integration of AI in HR Process

Table 6. Challenges of AI integration in HRM

Challenges	N	Minimum	Maximum	Mean	Std. Deviation
Data Privacy and Ethics	30	1.00	5.00	2.1667	1.01992
Resistance to Change by Employees and Top Officials	30	1.00	5.00	2.5333	1.13664
Technical Challenges	30	1.00	5.00	2.5333	.97320
AI Can be Biased	30	2.00	5.00	2.9000	.88474
Employees & Candidates Distrust AI	30	2.00	5.00	2.9333	.94443
Privacy Concern	30	1.00	5.00	2.8000	1.12648
Job Displacement	30	1.00	5.00	2.3667	1.03335
Lack of Human Touch	30	1.00	5.00	2.7000	1.20773
Unintended Biases	30	1.00	5.00	2.4000	1.06997
Ethical Dilemmas	30	1.00	5.00	2.8333	1.20583
Job Replacement	30	1.00	5.00	2.7000	.87691
Larg Number of Transactional Management Task	30	1.00	5.00	2.5000	1.16708
Reducing the Number of Labore Force	30	1.00	5.00	2.3667	.92786
Fluctuation in Labore Demand	30	1.00	5.00	2.3333	.95893
Reduce the Number of Employees	30	1.00	5.00	2.3667	1.09807
Lack of Human Emotional Experience	30	1.00	3.00	1.9000	.75886
Valid N (listwise)	30				

Table 6 provides statistics for various challenges of AI in the human resource management of IT companies. From the given 16 major challenges, the highest concern among the respondents are employee and candidates distrust of AI with highest mean value of 2.93 indicating a significant level of skepticism about AI's reliability and fairness. The second high mean value is given for AI can be biased, it is also a high concern reflecting worries about fairness and discrimination in AI-driven HRM processes. Ethical dilemmas and privacy concerns with mean values of 2.83 and 2.80 are also known as kind of challenges in HR by managers. Lack of human touch and job replacement with the same mean value of 2.7 also shows the respondent's concern regarding the application of AI tools in human resource management. So, there is not such high concern with respondents about the adoption of AI tools in the HR process that is why other challenges are with the less mean value and high level of standard deviation.

### 5.6 Relationship between perception of HR Managers about the Benefit of AI and extent usage of AI in their organizations for smoothening HR functions

Table 7. Correlation Analysis

		perception	Extent usage of AI
Perception	Pearson Correlation	1	.080
	Sig. (2-tailed)		.723
	N	30	30
Extent of usage	Pearson Correlation	.080	1
	Sig. (2-tailed)	.723	
	N	30	30

An attempt has been made to know whether the perception of HR managers on the benefits of AI are influenced by the usage of AI in their organization. Correlation analysis was done to know the relationship. According to table 6, the correlation analysis reveals a very weak and statistically insignificant relationship between HR manager's perception of AI and the extent to which AI is used in human resource process within their companies. The Pearson correlation coefficient is 0.080, indicating almost no linear relationship between the variables. Additionally, the high p-value of 0.723 suggests that this relationship is not statistically significant.

### 5.7 Satisfaction regarding the usage of AI in HR functions

Table 8. AI using satisfaction

		Frequency	Percent	Valid Percent
Valid	Yes	30	100.0	100.0
	NO	0	0.0	0.0

The Table No. 8 indicates the frequency of respondents who responded positively and negatively towards the satisfaction of using AI in their business. Yes or No question is asked to know the satisfaction of the respondents. The percentage analysis shows that all are satisfied with the usage of AI in HR functions.

## VI. RESULTS AND DISCUSSION

Integration of digital technology transformed the HR to electronic human resource management (e-HRM) or digitalized HR which overcome many challenges specially by using AI, many tasks and HR functions become automated and increased the level of organizational performance. The result of the study has come out on the base of primary data and accurate analysis. From the perspective of HR managers, it is clearly evident that the Use of AI in HR functions of IT companies was very crucial and beneficial which shows high efficiency gain in particular functional areas of HRM. Even if the respondents show their agreement towards the gains of AI Integration, nobody strongly agreed against the efficiency gains of integration of AI in HR. The challenges created by the AI obstruct them to blindly depending on AI. AI tools are mainly used for employee engagement, recruitment and selection process. From the perception of HR managers, AI tools are highly useful for reducing biases in the recruitment and selection process. Respondents also observed the benefits of AI in Payroll & Data Analytics, and creating job descriptions. The HR managers are opined that the usage of AI for learning and development are insignificant. Most of AI tools available now are not extensively using by the HR managers of IT companies. Chat GPT and Chatbot are the prominent AI tools

used in their organization. However, they are familiar about all the listed AI tools in the study and using such tools very rarely. Employees distrust with AI are the major challenges the companies are facing during the integration. Fear of displacement of employees and ethical issues are also the come under the challenges of AI. However, all the HR managers come under the purview of the study are satisfied with the performance of AI integration with HR.

## VII. CONCLUSION

This study explored the efficiency gains of AI Automation in the human resource management process. The findings of the study indicate that the integration of AI and automation significantly improves efficiency in the HRM process, particularly in employee wellbeing, candidate assessment, recruitment and talent acquisition, onboarding of employees, employee engagement, employee entry & exit, and performance management. The study indicates AI and automation are beneficial to various HRM functions. The perception of HR managers shows particularly strong improvement in reducing bias in recruitment and efficient performance management. Employee well-being, candidate assessment, recruitment, talent acquisition, onboarding of employees, employee engagement, and employee entry & exit are the areas where AI is effectively integrated and highlight potential opportunities for further AI implementation in HR functions. This study also turned the light on the extent use of AI tools in human resource management which Chatbot, ChatGPT and HR signal were the most used AI tools among all tools. Among the 16 major challenges the highest concern among the respondents was employees' distrust towards AI, AI can be biased, Ethical dilemmas also arise, privacy concerns, Lack of human touch and job replacement are also perceived as the byproduct of AI. The perception of HR managers regarding the benefit of AI never influences the extent of usage of AI in their business. Even if hot discussions are going on related with the extensive usage of algorithmic HRM and e-HRM in the corporate arena, the usage of AI and its integration in HR functions in the IT companies in Kerala are still in the infancy stage. The concern about the challenges of AI integration among employees and executives may be wiped out for the extensive usage of AI and welcoming the positive outcome of AI integration.

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