Enhancing HR Efficiency Through the Integration of Artificial Intelligence and Internet of Things: A Study on AI Implementation in Human Resource Management

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Abstract

The AI has a positive impact on the internet of things. Moreover, high development of the workplace is allowed to be determined. Therefore, innovation within the workplace is determined. Survey analysis plays an important role in this portion. Therefore, PLS SEM software tale spot in this research study. The big data analysis process is the important part determined in this portion. Therefore, proper planning in order to strengthen the foundation of the company is determined. Correlation between the variables takes important role in this finding portion. However, there are challenges related to data security, privacy, and the need for up skilling HR personnel. Overall, this study highlights the potential of AI and IoT to transform HR practices and suggests recommendations for organizations to overcome the challenges. Overall discussion about the research topic is highlighted in this portion, which helps to analyze the significance role of research findings.

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1. Introduction

The rapid advancements in technology have revolutionized various industries, and the field of human resources (HR) is no exception. As organizations strive to optimize their operations and improve efficiency, the integration of Artificial Intelligence (AI) and the Internet of Things (IoT) has emerged as a promising avenue. By harnessing the power of AI and IoT in HR processes, organizations can enhance their HR functions, streamline operations, and ultimately improve the overall efficiency of the HR department. Artificial intelligence (AI) and the IoT have caused widespread disruption across a number of industries including the human resources (HR) department. One of the main aim of this study is to take a closer look at how the use of AI on the IoT may enhance HR operations. We hope to elucidate the benefits, obstacles, and impact of this technological integration on organizational outcomes by studying the use and integration of AI and IoT technologies in HR procedures.

Organizations that want to revolutionize their HR practices by utilizing AI and IoT would benefit greatly from gaining a deeper understanding of how these technologies may improve HR productivity. To achieve our research objectives, we will analyze 65 sample size of managerial employees from a variety of sectors. To determine the influence of AI and IoT on HR and organizational results, we will conduct surveys and collect data on the level of adoption, perceived benefits, and problems experienced by

organizations. Using Python analysis, we will extract useful information from the data we have gathered to further our study goals.

Background

AI has a positive impact on the internet of things. Moreover, high development of the workplace is allowed to be determined. Therefore, innovation within the workplace is determined. Advanced growing technology is being emphasised, and it aids in determining the business's strategic scope.
Figure 2.1: Impact of AI in the HR Department (Source: Statista, 2023)
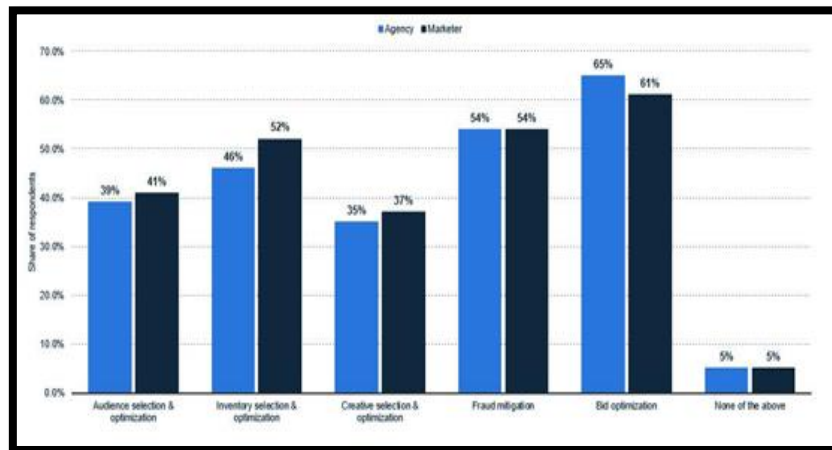

Figure 2.1 provides insight for assessing the impact of AI on human resources. Thus, it is emphasized that the internet of things is the foundation for better HR department organization (Canhoto & Clear, 2020). Also, it contributes to the expansion of the marketplace.

2. Research Aim and Objectives

Aim
Analyzation of the impact of AI on the HR department is the main aim of this research article. Therefore, the role of the internet of things has to be determined in this article.

Objectives of the study

RO1: To identify the role of AI in the HR department
RO2: To analyze the different factors of the internet of things that plays an impact full role in the HR department
RO3: To highlight the impact of technical skills in the HR department
RO4: To determine the Human Resources department benefits from a better understanding of the IoT's potential benefits.

Research Questions

In this article, four research questions are highlighted.
RQ1: What is the role of AI in the HR department?
RQ2: How to analyze different factors of the internet of things that is play an impact full role in the HR department?
RQ3: What is the impact of technical skills in the HR department?
RQ4: How do the benefits of the Internet of Things help to boost the effectiveness of the Human Resources division?

Significance of Study

Different factors of AI are allowed to be determined within this article. The impactful role of the internet of things has to be addressed within this portion. Moreover, findings, hiring, and therefore, support of the new employees have to be highlighted in this portion (Loureiro et al.2021). The big data analysis process is the important part determined in this portion. Therefore, an appropriate strategy for enhancing the organization's framework is developed.

Problem Statement

The adverse effects of AI in the workplace are being brought to light, and solutions are being deliberated upon. Inadequate technological competence is also brought to light by the IoT (Finlay, 2021). The Human Resources department also feels the effects, In addition to this, a detrimental effect is being produced on the HR department.

Literature Review

2.1 Analyze the role of AI in the HR department

Overcome to subjectivity is analyzed with the aid of AI. Preparation of the targeting questions and therefore, analysis of the similar role in is being determined. The HR department is one of the quintessential parts of any organization, which is directly affiliated with its employees. Therefore, a positive working environment is being highlighted that helps to aids in progress of the productivity of the company. As commented by Wamba-Taguimdje et al. (2020), creativity and empathy within the workplace are being generated and the potential of the employees is highlighted. Experiences of the employees are highlighted which is capable to improve the growth of the organization. Real-time capacity with based on decision-making capability is being generated, moreover, pre-programmed to improve the efficiency of the employees are tried to address with the support of AI.

Figure 2.1: Impact of AI on the HR department (Source: Influenced by Jain, 2019)
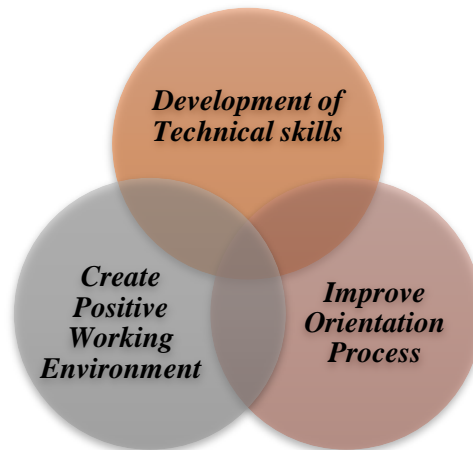

Figure 2.1 helps to address the impact of AI in the HR department. Therefore, a better working environment for the employees is being generated. Additionally, lots of applications are highlighted and it helps to improve productivity. On the other hand, as commented by Lee et al. (2019), a requirement procedure is being generated with the aid of this AI process. Meanwhile, an orientation procedure based on the new requirement is being generated and it helps to create a new business structure.

2.2 Role of the "Internet of Things (IoT)" in HR Management

Employees' responses are accelerated with the support of the IoT, which helps to choose employees that are more efficient. As commented by Marr, (2019), a virtual experience of the employees has to be determined and the internal process becomes addressed. Core competencies have to be addressed based on the IoT, and strategic business plans have to be generated. A good impact on the HRs department is being accelerated and it helps to improve the organizational culture. The technical expertise of the employees must be emphasized; therefore, things, connectivity, and the internet are three main components that are highlighted in this portion.

Figure 7.2 Role of IoT in HR Management (Source: Influenced by Zohuri & Moghaddam, 2020)
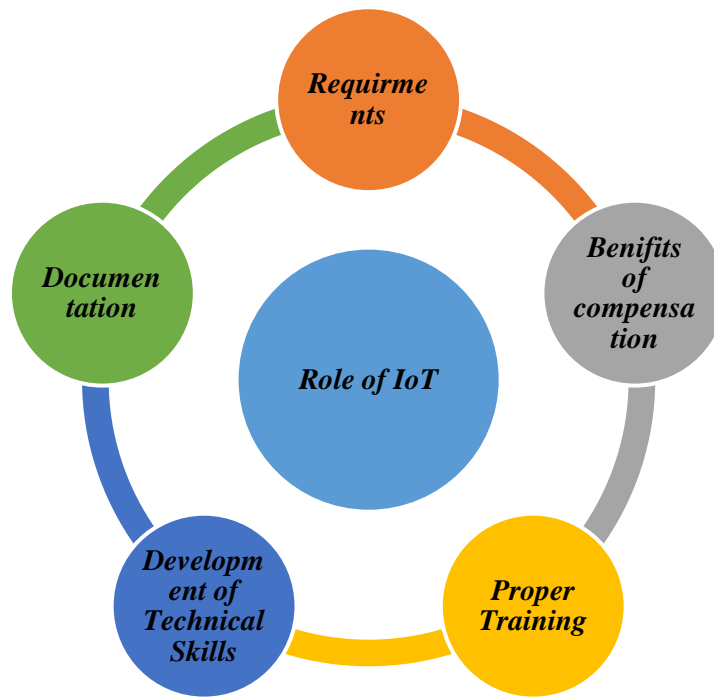
Figure 2.2 try to evaluate the significant role of the internet of things in the HR department. On the other hand, as argued by Bornet, Barkin & Wirtz, (2021), the development of the organizational structure is being determined and it tries to develop the source of the organization. Additionally, the evaluation of the new business structure is being determined with the aid of the proper management structure.

2.3 Literature Gap

In this research portion, an understanding of the research topic has to be generated. Relationship between the internet of things and AI are highlighted in this research article. As commented by Nguyen et al. (2021), employees' ability to make decisions should be addressed; performing so also aids in enhancing employees technical competence skills. Core competencies have to be determined in this portion, moreover, improvement of the organizational structure takes place within this portion. On the other hand, as highlighted by Dai, Zheng & Zhang, (2019) development of the technical skills of the employees is the key factor that helps to improve the productivity of the organization. Moreover, IT and HR departments are dependent on each other and based on this relationship, the growth of the organization is being addressed.

2.4 Theoretical Analyzation

Human Relation Theory

With the aid of this theory, the development of the HR department is being accelerated. Proper looking out for the needs of individuals is being highlighted and it helps to improve the organizational culture. The resultant behavior of the individuals is highlighted with the support of human relation theory, additionally; informal aspects of the business company have to be addressed. Job satisfaction of the employees is highlighted and the development of the technical skills of the employees tries to improve with the support of the human relation theory (Gandini, 2019). This theory is mainly based on the preference of humans rather than the economy and machines. Relationships between the employees and management have to be developed and it helps to bring innovation within the workplace.

Figure 2.4: Human Relation Theory (Source: Influenced by Gong, Kim & Liu, 2020)
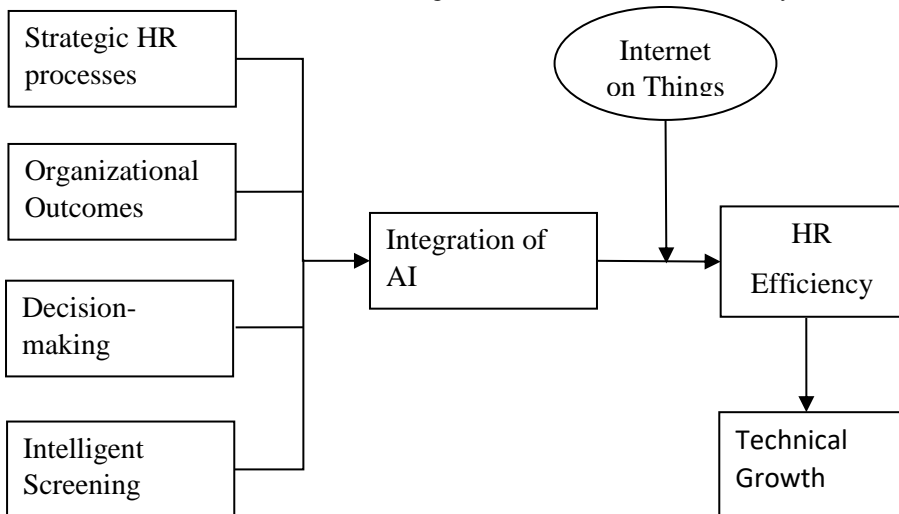

Figure 2.4 evaluate human relation theory, which is based on the HR management process. The key feature of this theory is to motivate employees; therefore, creating a proper business plan based on the needs of the employees has been evaluated with the aid of this theory.

2.5 Conceptual Framework:

Figure 2.5: Framework of the Study

Hypothesis of the study
H1: There is a significant relationship between AI and HR Department.
H2: There is an existing relationship between the Internet of Things and AI.

3. Research Methodology

Data Collection Method
Researchers are allowed to collect data based on the primary quantitative methods; therefore, statistical analysis of the research topic has been taking place within this article. Therefore, the positivist research philosophy is accelerated in this portion. On the other hand, descriptive research design helps to generate the collected data. With the support of this data collection method has a role of AI within the HR, the department has been determined (Peltokorpi et al. 2022). Moreover, the impact of IoT has to be determined in this portion. A structured questionnaire was used to collect data on the extent of AI and IoT adoption in HR processes, the perceived benefits and challenges, and the impact on organizational outcomes.

Data Analysis
Based on the survey questions, demographic analysis of the research topic is highlighted in this article. Statistical evaluation of the research findings has to be determined and PLS SEM software helps to analyze the collected information. There are 3 demographic questions and 7 findings-related questions are take place in this portion. Based on the data analysis impact of the AI and IoT on the HR department is analysed

4. Results and Findings

5

Therefore based on the demographic analysis of gender, it is mentioned that 38 female and 10 male respondents take place in this data collection process. Additionally, 7 participants are unable to take part in this process. It helps to identify the response rate of the participants. Therefore, 69.09% of female participants take part in this process and it becomes the maximum response rate. On the other hand, 18.18% of participants is based on male participants. It determines the demographic analysis based on age group. Therefore, it is mentioned that 17 participants are based on the 15-25 years age group, and 7 respondents belong to the 25-35 age group. Meanwhile, 18 participants belong to the 35-45 age groups. Study describe that 30.9% of respondents belong between 15-25 years of age groups, therefore, 32.7% of participants belong to the 35-45 years age group and it becomes the maximum response rate age group. Study analyzes the respondents according to their income rate. Moreover, 12 participants are based above 60000 income rate and 16 participants are belongs below the 25000 income rate. On the other hand, 13 participants belong between 45000 to 60000 income rates. It helps to analyze the data collection process based on the income rate. Moreover, 29.1% of respondents belonged below the 25000-income rate and which is the highest income rate participants. Moreover, the lowest income rate participants belong between 35000 to 45000-- income rate.

Table 1: Multiple regressions

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.749[a]	.562	.507	.496	.562	10.246	6	48	.000

Analysis of the model summary, therefore, it is highlighted that the R-value of DV is .000

Table 2: ANOVA Testing

ANOVA[a]					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	15.152	6	2.525	10.246	.000[b]
Residual	11.830	48	.246		
Total	26.982	54			

Table:2 analyzes the significance value of the different variables. Moreover, it is highlighted that the significance value is .000 according to the ANOVA table.

Table 3: Coefficient Values

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.235	.405		-.579	.565
	IV1	.692	.130	.572	5.328	.000
	IV2	.270	.172	.204	1.568	.123
	IV3	.126	.183	.091	.689	.494
	IV4	-.017	.157	-.016	-.106	.916
	IV5	.108	.183	.078	.591	.558
	IV6	-.007	.202	-.005	-.034	.973

Table 3 determines the coefficient value of the research topic. Therefore, it is highlighted that the significant value of the variables is .000 for IV1, .123 for IV2, therefore, .494 for IV3. Table 3 determines the coefficient value of the research topic.

Table 4 Reliability Test

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.842	.847	7

Table 4 determine the reliability statistics, moreover, Cronbach's Alpha value is 0.842

Table 5: Validity Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.780
Bartlett's Test of Sphericity	Approx. Chi-Square	162.743
	df	21
	Sig.	.000

Table 5 based on the validity test, and significance value according to "KMO and Bartlett's test" is .000, which is highly signified.

Table 6: Correlation Test

Correlations		DV	IV1	IV2	IV3	IV4	IV5	IV6
DV	Pearson Correlation	1	.702**	.511**	.418**	.340*	.316*	.344*
	Sig. (2-tailed)		.000	.000	.001	.011	.019	.010
	N	55	55	55	55	55	55	55
IV1	Pearson Correlation	.702**	1	.412**	.337*	.320*	.275*	.298*
	Sig. (2-tailed)	.000		.002	.012	.017	.042	.027
	N	55	55	55	55	55	55	55
IV2	Pearson Correlation	.511**	.412**	1	.597**	.380**	.326*	.488**
	Sig. (2-tailed)	.000	.002		.000	.004	.015	.000
	N	55	55	55	55	55	55	55
IV3	Pearson Correlation	.418**	.337*	.597**	1	.532**	.295*	.459**
	Sig. (2-tailed)	.001	.012	.000		.000	.029	.000
	N	55	55	55	55	55	55	55
IV4	Pearson Correlation	.340*	.320*	.380**	.532**	1	.638**	.669**
	Sig. (2-tailed)	.011	.017	.004	.000		.000	.000
	N	55	55	55	55	55	55	55
IV5	Pearson Correlation	.316*	.275*	.326*	.295*	.638**	1	.604**
	Sig. (2-tailed)	.019	.042	.015	.029	.000		.000
	N	55	55	55	55	55	55	55
IV6	Pearson Correlation	.344*	.298*	.488**	.459**	.669**	.604**	1
	Sig. (2-tailed)	.010	.027	.000	.000	.000	.000	
	N	55	55	55	55	55	55	55

Table 6 identifies the correlation between the variables. Therefore, these variables are highly co-related to each other as their significance value.

Result of the Hypotheses

Table 7 represents the result of the hypotheses formulated in the study.

Hypotheses	Decision
H1 - There is a significant relationship between AI and HR Department.	Accepted
H2 - There is an existing relationship between the Internet of Things and AI.	Accepted

5. Discussion

The overall discussion of the research topic is addressed in this part of the research. On the other hand, achieving the desired goal of a firm is highlighted and it improves the efficiency of AI. Development of the organizational structure has to be determined and it improves the organizational culture, which is stated in this research article (Loureiro, Guerreiro & Tussyadiah, 2021). The decision-making capability of the employees is being generated by adopting AI technology. The findings of this study suggest that AI and IoT integration in HR processes can improve efficiency, reduce errors, and enhance employee engagement. The use of chatbots for employee engagement, predictive analytics for recruitment, and wearables for employee health monitoring are promising applications that can be further explored. However, the challenges related to data security, privacy, and upskilling HR personnel need to be addressed.

Future Implications

The findings of this study are expected to contribute to the existing literature on AI, IoT, and

HR management. The insights gained from this research can guide organizations in their decision-making process regarding the integration of AI and IoT technologies in HR processes. Furthermore, the study will highlight potential areas for improvement, challenges to be addressed, and recommendations for successful implementation.

6. Conclusion

This study highlights the potential of AI and IoT to transform HR practices and improve organizational outcomes. The integration of AI and IoT in HR processes can improve efficiency, reduce errors, and enhance employee engagement. The use of chatbots for employee engagement, predictive analytics for recruitment, and wearables for employee upskilling. For future study suggested that organizations need to invest in cybersecurity measures, data privacy policies, and provide training to HR personnel to ensure they have the necessary skills to work with AI and IoT applications. This research article helps to analyze the background of the research topic; moreover, the problem statement is highlighted in this portion. Additionally, analysis of the research findings have to be determined within this portion. Additionally, the impact of the variables on the HR department is being analyzed with the help of this research study.

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