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A Study on Role of AI in Selection Process with Special Reference to Corporate Sector in Chennai City

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Abstract

Artificial Intelligence has emerged as one of the most promising and transformative technologies in the modern era. Its potential spans across numerous sectors and industries, revolutionising the way we live, work, and interact with the world. In recent years, it has made its presence in the recruitment process, transforming the methods of candidate search, profile screening, interviews, and selection from vast data. Consequently, it has the potential to transform H. R. 's role, alter candidate perspectives, and even reshape an entire company's environment and policies. However, in this context, challenges abound due to limited awareness among recruiters regarding the availability of this technology or companies that are still in the early stages of implementation. We aim to provide readers with valuable insights into the practicality and effectiveness of AI in the hiring process. Our research will explore the opportunities that AI presents for both recruiters and candidates on one hand while addressing the core challenges and proposing possible solutions on the other.

KEYWORDS Artificial Intelligence, Recruitment Process, Hiring, Selection.

INTRODUCTION

The integration of Artificial Intelligence (AI) into Human Resources (HR) has transformed the way organisations manage their workforce. AI technologies are revolutionising various HR functions such as recruitment, employee engagement, performance management, and talent development.

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By automating repetitive tasks, analysing vast amounts of data, and enabling predictive insights, AI enhances efficiency, accuracy, and strategic decision-making within HR processes. This introduction sets the stage for exploring the multifaceted role of AI in reshaping HR practices to meet the demands of the modern workplace.

The study focuses on investigating the impact of AI on Human Resources (H.R.) practices, specifically within the context of the selection process. By examining how AI technologies are being integrated into recruitment and selection procedures, the study aims to provide insights into the benefits, challenges, and potential ethical considerations associated with AI-driven decision-making in H.R.

OBJECTIVES

I. To investigate and understand the impact and effectiveness of Artificial Intelligence in the selection process.
II. To study the challenges associated with the integration of AI in the selection process.
III. To determine whether AI can completely replace human H. R. Executives in the process of candidate selection.

PROBLEM STATEMENT

Despite the considerable promise of AI in streamlining and improving the selection process, there exists a need to evaluate its real-world application and its impact on H.R. professionals. There are uncertainties surrounding the advantages, challenges and potential risks involved in employing AI during candidate selection. Thus, it is of utmost importance to examine the perceptions related to fairness, bias and ethical implications of AI.

LITERATURE REVIEW

A study conducted by **Jharna Soni** (2022) titled - 'A Study on the Impact of Artificial Intelligence on Human Resource Management' evaluates the impact of Artificial Intelligence on Human Resource Management in the current era and how AI will affect HRM in the future. The findings of the author indicates that although AI applications do not possess emotional and cognitive abilities like humans, these powerful AI-based HR applications may be able to interpret, forecast, diagnose, and it is a powerful tool for any kind of organisation.

Himani Saini and **Preeti Tarkar** (2022) researched on 'Artificial Intelligence in Human Resource Practices with Challenges and Future Directions' which throws light on how intuitive solutions and chatbots will play a pivotal role in the recruitment process.
The incorporation of intuitive decision-making through robots will be employed for face-to-face interviews in the near future.

In the study conducted by **Worakamol Wisetsri, C.Vijai, Kasidit Chueinwittaya** and **Puttithorn Jirayus** (2022) titled - 'Artificial Intelligence in Human Resources Management - An Overview', the authors drew the conclusion that HR packages powered by AI can assist the executives. However, there are demanding situations like privateness, capabilities hole, upkeep, integration talents, or confined confirmed applications that need to be addressed.

RESEARCH METHODOLOGY

The survey is structured as a questionnaire, and the primary data was obtained by collecting the perceptions of 50 H. R. professionals relating to the topic of the study which would examine the problem in detail by using statistical tests like Chi-squared and ANOVA. The respondents were asked to share their perception towards various factors involving implementation of AI such as Cost, Time, Bias, Confidentiality & privacy, Reliability, Lack of aspects such as Human emotions, Creativity, Decision making ability, etc.

RESEARCH OUTCOMES - ANALYSIS

1. **Chi-Squared test of independence of attributes - Cost-effectiveness of AI and its Implementation**

H0 - The attributes of Cost-effectiveness and Implementation of AI are Independent.
H1 - The attributes of Cost-effectiveness and Implementation of AI are not Independent.
O - Observed Frequency; E - Expected Frequency

Contingency table - Observed

Particulars	Cost effective	Ineffective	Total
Implemented	3	17	20
Not implemented	8	22	30
Total	11	39	50

Contingency table - Expected

Particulars	Cost effective	Ineffective	Total
Implemented	4.4	15.6	20
Not implemented	6.6	23.4	30
Total	11	39	50

Chi-Squared Table

O	E	(O-E)	$(O-E)^2$	$(O-E)^2/E$
3	4.4	-1.4	1.96	0.445455
17	15.6	1.4	1.96	0.125641
8	6.6	1.4	1.96	0.29697
22	23.4	-1.4	1.96	0.083761
			χ^2	0.951826

Calculated value = 0.952; Table value at 95% significance level = 3.84
Calculated Value < Table value ⇒ Accept H0. Therefore, the attributes of Cost-effectiveness and Implementation of AI are Independent.
⇒ Application of AI in the selection process is not affected by its cost-effectiveness.

2. Chi-Squared test of independence of attributes - Time-effectiveness of AI and its Implementation

H0 - The attributes of Time-effectiveness and Implementation of AI are Independent.
H1 - The attributes of Time-effectiveness and Implementation of AI are not Independent.

Contingency table - Observed

Particulars	Cost effective	Ineffective	Total
Implemented	20	0	20
Not implemented	23	7	30
Total	43	7	50

Contingency table - Expected

Particulars	Cost effective	Ineffective	Total
Implemented	17.2	2.8	20
Not implemented	25.8	4.2	30
Total	43	7	50

Chi-Squared Table

O	E	(O-E)	$(O-E)^2$	$(O-E)^2/E$
20	17.2	2.8	7.84	0.455814
0	2.8	-2.8	7.84	2.8
23	25.8	-2.8	7.84	0.303876
7	4.2	2.8	7.84	1.866667
			χ^2	5.426357

Calculated value = 5.426; Table value at 95% significance level = 3.84
Calculated Value > Table value ⇒ Reject H0. Therefore, the attributes of Time-effectiveness and Implementation of AI are Dependent.
⇒ Application of AI in the selection process is favourable because of its Time-effectiveness.

3. One - Way ANOVA - AI improving efficiency in selection process

(Key - X1 - Strongly agree; X2- Agree; X3 - Neutral; X4 - Disagree; X5 - Strongly disagree)

H0 - There is no significant difference in the efficiency and accuracy of candidate selection between using AI-assisted methods and traditional manual methods.
H1 - The use of AI-assisted methods significantly improves the efficiency and accuracy of candidate selection compared to traditional manual methods.

FACTORS	X1	X2	X3	X4	X5	$X1^2$	$X2^2$	$X3^2$	$X4^2$	$X5^2$
Resume	37	8	4	1	0	1369	64	16	1	0
Aptitude	32	15	2	1	0	1024	225	4	1	0
Shortlisting	20	14	5	10	1	400	196	25	100	1
Total	89	37	11	12	1	2793	485	45	102	1

ANOVA Table

Source of Variation	Sum of Squares	Degrees of freedom	Mean Sum of Squares	Variation Ratio
Between Columns	935.33	4	467.665	3.8863589
Error	240.67	11	120.335	
	1176	14		

N=15	T= 150	Correction factor 2250	SST 1176	SSC 935.3333	SSE 240.6667

Calculated Value = 3.886; Table value at 95% significance level = 3.3567
Calculated value > Table Value ⇒Reject H0. Therefore, the use of AI-assisted methods significantly improves the efficiency and accuracy of candidate selection compared to traditional manual methods.

4. One - Way ANOVA - AI Replacing H. R. executives

H0 - There is no significant difference in the effectiveness and outcomes of HR-related tasks between AI-based systems and human HR executives.
H1 - There is a significant difference in the effectiveness and outcomes of HR-related tasks between AI-based systems and human HR executives.

FACTORS	X1	X2	X3	X4	X5	$X1^2$	$X2^2$	$X3^2$	$X4^2$	$X5^2$
Data privacy and security issues	18	18	11	3	0	324	324	121	9	0
Algorithmic bias and fairness concerns	12	12	12	13	1	144	144	144	169	1
AI being in its Initial Stage	14	15	8	13	0	196	225	64	169	0
Reliability still a matter of concern	16	15	16	3	0	256	225	256	9	0
Total	60	60	47	32	1	920	918	585	356	1

ANOVA Table

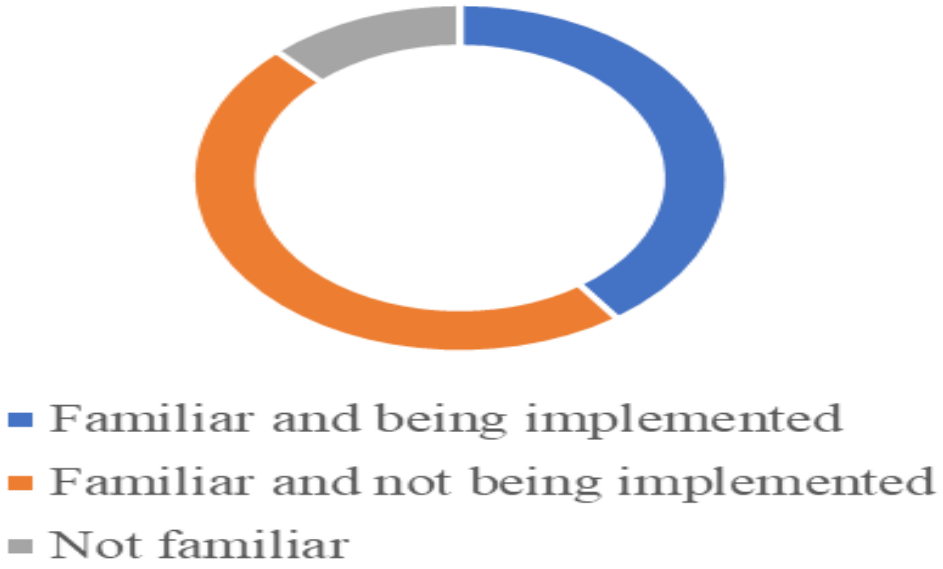
Source of Variation	Sum of Squares	Degrees of freedom	Mean Sum of Squares	Variation Ratio
Between Columns	608.5	4	304.25	3.548105
Error	171.5	16	85.75	
	780	19		

N=20	T= 200	Correction factor 2000	SST= 780	SSC= 608.5	SSE= 171.5

Calculated Value = 3.548; Table value = 3.01 ⇒ **Calculated Value > Table Value.**
Therefore, **Reject H0**. Therefore, there is a significant difference in the effectiveness and outcomes of HR-related tasks between AI-based systems and human HR executives.
Thus, it can be concluded that AI **cannot** completely replace H. R. executives.

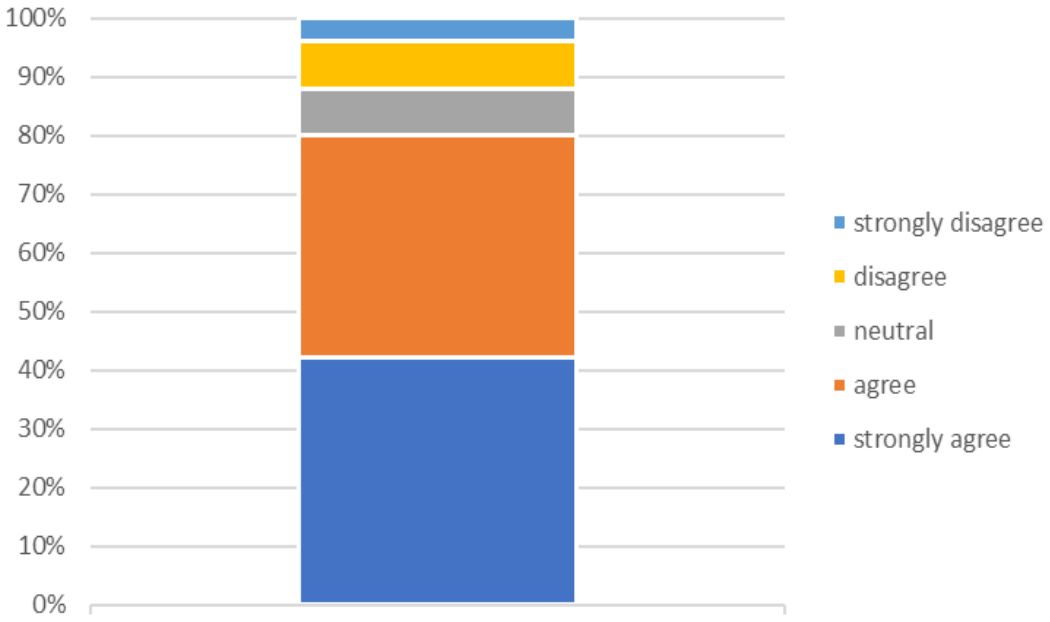
INFERENCES

From the survey, the following are the advantages of using AI in the selection process are - Time-saving, neutralises potential bias, filter candidates who meet organisation's requirements, etc. The significant setbacks of using AI in the selection process as expressed by samples are - Data privacy & security issues, Reliability still a factor of concern, and lack of factors such as creativity, emotions, decision making ability, etc.

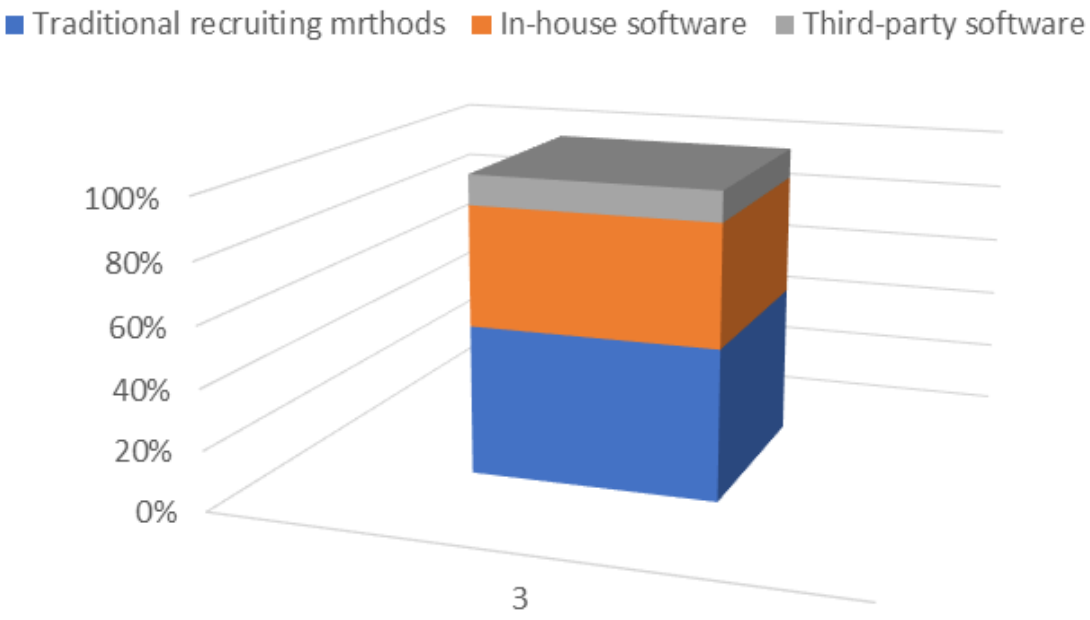


A majority of the samples strongly agree on effectiveness of AI in Resume screening, aptitude test but sceptic about its implications in interview and onboarding process.

This pie chart shows Familiarity and Implementation of AI in the selection process. It can be inferred that a majority are familiar with AI in this sector but only 40% of the samples have it implemented in their organisation



This bar chart shows the perception of respondents towards use of AI in workforce analysis and determining vacancies. About 80% agree/ strongly agree that AI can perform these functions.



This bar chart shows the percentage of people using a method of recruitment among - Traditional, In-house software & Third-party softwires. The result is that 50% of the respondents use traditional ways of recruitment, 40% use in-house software and the remaining 10% use third-party software. It is evident that AI is not implemented in a significant number of organisations, reasons for which could be high instalment costs, Lack of Data privacy,

Possibility of data bias, lack of reliability, etc. The main reason could be that AI is in its initial phase and its penetration could take a couple of years

CONCLUSION

This study on the role of Artificial Intelligence (AI) in Human Resources practices, specifically focusing on the selection process, underscores the transformative potential that AI brings to the field of recruitment. The findings of this study reveal that AI technologies offer a multifaceted approach to reshaping and optimising the selection process in unprecedented ways.

By automating and enhancing various stages of recruitment, AI has demonstrated its capacity to streamline operations, reduce biases, and improve the overall efficiency of candidate evaluation. The utilisation of AI-powered tools in the selection process has paved the way to identify the most suitable candidates while also ensuring a more equitable and unbiased selection procedure. Nonetheless, it is essential to approach the implementation of AI in HR practices, particularly in the selection process, with careful consideration. Ethical considerations, transparency, and human oversight remain paramount to prevent unintended biases and ensure that AI-driven decisions align with the organisation's values. Furthermore, the effectiveness of AI tools may vary based on the industry, organisational context, and the quality of data used for training. But it is clear that AI cannot replace HR executives completely. It is certain that AI is helpful and adds to the efficiency in the organisation functions but it must be kept in mind that AI should only compliment the workforce to accomplish organisational goals and the former cannot be substituted with the latter.

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QUESTIONNAIRE

A study on the role of AI in H. R. Practices with special reference to the Selection process.

(Ratings: 1- Strongly Agree; 2- Agree; 3- Neutral; 4- Disagree; 5- Strongly Disagree)

1. Name
2. Name of the Organization
3. Role (Human Resources/ Talent Acquisition)
4. Do you use traditional recruitment screening, in-house recruitment software or third-party recruitment system?
   Traditional Recruitment Method / In-House Recruitment Software / Third-Party Recruitment Software / Other:
5. Are you familiar with the implementation of Artificial Intelligence in the recruitment and selection process?
   Familiar and being implemented / Familiar and not being implemented / Not Familiar / Other:

(Ratings: 1- Strongly Agree; 2- Agree; 3- Neutral; 4- Disagree; 5- Strongly Disagree)

6. Select appropriate reason(s) you think AI is not being implemented in the selection process (in general). (Rate each of the factors)
   Data privacy and security issues / Algorithmic bias and fairness concerns / False predictions / AI Hallucination / AI being in its initial stage /Reliability still a matter of concern / Resistance from employees and applicants
7. At how many stages of the recruitment and selection process do you think AI based software be used? (Rate each of the factors)
   Resume Screening / Aptitude test / Shortlisting / Interview process / Onboarding
8. What do you think are the benefits conferred by using AI in the recruitment process? (Rate each of the factors)
   Time saving / Cost effective / Avoid irrelevant applications /Neutralizes potential Bias / Filter resume according to the Job Description ·
9. AI can be used for workforce analysis and determining job vacancies automatically. (Key)
10. AI would ease the process of selection of candidates. (Key)
11. AI has the potential to completely replace H. R. executives in the future (Key)
12. What do you think AI lacks which humans do not? (Rate each of the factors) ·
    Human Emotions / Creativity / Decision making ability / Failure to detect Potential fraudulent candidates / Personality assessment / Judgement skills / Failure to detect Potential misrepresentation of facts in the Resume
13. Feedbacks for the Researchers (if any)

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