Chatbots Vs. Human Recruiters: Perceived Effectiveness of AI In Candidate Screening and Engagement

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Abstract- ***This study investigates the perceived effectiveness of AI chatbots in recruitment across three industries: Consulting, Information Technology (IT), and Manufacturing. A quantitative approach was used, combining descriptive statistics, correlation analysis, and hypothesis testing based on responses from 60 professionals. Results indicate that while AI is generally trusted for efficiency, bias reduction, and candidate screening, significant inter-industry differences exist. IT professionals exhibit greater skepticism, likely due to deeper awareness of AI limitations, while Consulting and Manufacturing professionals report higher confidence in AI's utility. The study also reveals a strong preference across industries for a hybrid recruitment model that integrates both AI tools and human oversight. These findings offer practical insights for organizations seeking to balance technological efficiency with human judgment in modern hiring practices.***

I. INTRODUCTION

In today's digital era, Artificial Intelligence (AI) is transforming industries worldwide, with Human Resource Management (HRM) being no exception. AI-powered chatbots are increasingly used in recruitment to automate tasks such as resume screening, candidate communication, interview scheduling, and initial assessments. These tools enhance efficiency, reduce recruiter workload, and improve the candidate experience through consistent, 24/7 interaction.

However, the growing reliance on AI in hiring has raised concerns about its limitations. Chatbots lack emotional intelligence, contextual understanding, and the ability to assess soft skills and cultural fit which are critical aspects of effective recruitment.

This research investigates the role of AI chatbots in recruitment, examining their effectiveness, industry perception, and the level of trust they generate. It seeks to determine whether AI can operate independently or is best utilized alongside human judgment to ensure fairness, transparency, and humane decision-making in hiring.

II. RESEARCH OBJECTIVES

1. Evaluate the effectiveness of AI chatbots in candidate screening across different industries.
2. Compare AI chatbots and human recruiters in assessing soft skills and cultural fit.
3. Assess the effectiveness of hybrid recruitment models that integrate AI chatbots with human recruiters.

III. LITERATURE REVIEW

1. Effectiveness of AI Chatbots in Candidate Screening Across Different Industries

AI chatbots have transformed recruitment by automating resume screening, interview scheduling, and responding to FAQs, improving efficiency and candidate experience (Koivunen et al., 2022; Swapna & Arpana, 2022). They perform well in industries like tech, customer service, and retail, where high-volume and repetitive tasks dominate (Rathore, 2023). However, they often struggle to handle complex candidate profiles in creative or leadership roles. Limitations include difficulty understanding emotional cues, cultural nuances, and potential biases in decision-making (Chen, 2023; Albassam, 2023).

2. Comparison of AI Chatbots and Human Recruiters in Assessing Soft Skills and Cultural Fit

While AI chatbots are efficient and consistent in initial screening, they struggle to assess soft skills, interpersonal communication, and cultural fit (Chen, 2023). Human recruiters excel in evaluating these aspects, drawing on their emotional intelligence and contextual understanding (Rathore, 2023). AI may also mirror biases from training data and can make interactions feel impersonal, which may harm candidate engagement and employer branding (Albassam, 2023).

3. Effectiveness of Hybrid Recruitment Models Integrating AI Chatbots with Human Recruiters

Hybrid recruitment models, where AI handles routine tasks and humans focus on engagement and decision-making, combine the best of both worlds (Haapakorpi et al., 2022). This approach enhances efficiency while ensuring critical assessments, like soft skills and cultural fit, are done by human recruiters. However, challenges remain, such as ensuring data privacy, maintaining candidate trust, and effectively blending automation with human insight (Rathore, 2023).

IV. RESEARCH METHODOLOGY

This study used a quantitative approach, collecting data via a structured Google Forms questionnaire. Out of 150 forms shared, 100 responses were received. After filtering for recruitment involvement and balancing industries, the final sample included 60 respondents, 20 each from Manufacturing, IT, and Consulting. The questionnaire featured closed-ended and Likert-scale questions on industry background, AI recruitment experience, and chatbot effectiveness. Data analysis involved means, correlations, and t-tests to compare groups.

Limitations: The sample size was limited to 60, reducing generalizability. Response rates varied by industry, and mid-level and executive professionals predominated, with fewer senior leaders like GMs participating. This may affect the representativeness of perspectives across organizational levels.

V. DATA INTERPRETATION AND ANALYSIS

The study analyzed responses from 60 participants across three industries—Consulting, IT, and Manufacturing—on various aspects of AI chatbot usage in recruitment.

1. Descriptive Analysis

The table below shows the average ratings (on a 5-point Likert scale) for each measured variable across the three industries:

Variable	Consulting	IT	Manufacturing
AI Effectiveness in Screening	4.05	3.55	4.1
Retention & Performance	2.75	2.7	3.1
Promotes Diversity	3.95	3.6	3.9
Reduces Bias	4.75	4.15	4.7
Evaluates Soft Skills (AI)	3.65	3.6	3.6
Understands Cultural Fit (Human)	4.15	4.05	4.25
Human Personalization	3.9	3.6	3.95
Trust in AI Future	3.85	3.6	4.15
Hybrid Model is Best	4.9	4.15	4.75

The data shows that Consulting and Manufacturing have the highest trust in AI screening and hybrid models ("Hybrid Model is Best" rated at 4.9 and 4.75). Participants expressed moderate trust in AI's evaluation of soft skills (~3.6), while human recruiters were rated higher for cultural fit (above 4.0), emphasizing the value of human judgment. Manufacturing respondents showed the highest trust in AI's future (4.15), and across sectors, human personalization and cultural fit were consistently valued.

2. Correlation Analysis

The following table displays the Pearson correlation coefficients for selected variable pairs across industries:

Correlation Pair	Consulting	IT	Manufacturing
AI Shortlisting ↔ Retention	0.04	0.29	0.37
Reduces Bias ↔ Promotes Diversity	0.28	0.74	0.24
Reduces Bias ↔ Hybrid Model is Best	0.16	0.59	0.38

The strongest correlation appeared in IT between "Reduces Bias" and "Promotes Diversity" (r = 0.74), suggesting AI's perceived role in inclusive hiring. In Manufacturing, a moderate correlation between AI screening and retention (r = 0.37) highlights AI's role in effective candidate-role matching. Positive correlations across sectors between bias reduction and hybrid model preference support the balanced approach of combining AI with human oversight.

3. Hypothesis Testing

- H_1: There is a significant difference in perceived AI chatbot effectiveness across industries.
- H_0: There is no significant difference in perceived AI chatbot effectiveness across industries

An independent sample t-test was conducted on composite effectiveness scores.

Industry Comparison	t-value	p-value	Interpretation
Consulting vs IT	2.88	0.0077	Significant difference
Consulting vs Manufacturing	0.72	0.478	Not significant
IT vs Manufacturing	-2.38	0.0242	Significant difference

Results show no significant difference between Consulting and Manufacturing, but IT professionals rated AI effectiveness lower than both. This supports H_1, suggesting perceptions of AI vary by industry, likely due to IT professionals' deeper understanding of AI's limitations.

FINDINGS

- High ratings (81%-82%) for AI effectiveness in screening, especially in Consulting and Manufacturing. IT professionals rated this lower (71%), likely reflecting deeper AI awareness.
- AI chatbots rated moderately for soft skills (72%-73%), confirming limitations while human recruiters rated high for cultural fit (81%-85%) and personalization (72%-79%), showing their strength in interpersonal assessment.
- The "Hybrid Model is Best" received the highest approval (83%-98%), highlighting broad support for combining AI and human recruiters.Strong positive correlations with bias reduction and diversity promotion further support hybrid approaches.

Practitioner Insight

After presenting the findings to a hiring manager from the IT industry, they explained that IT professionals tend to be more cautious about AI due to their deeper understanding of its technical limitations such as biases and challenges in assessing interpersonal qualities. This feedback aligns with the data, where IT respondents rated AI effectiveness lower than other industries. It highlights that while AI is appreciated for streamlining recruitment, human judgment remains crucial for evaluating soft skills and cultural fit.

CONCLUSION

The study finds that AI chatbots are generally effective in recruitment, but trust varies by industry. IT professionals are more cautious due to their deeper knowledge of AI's limits, while Consulting and Manufacturing show greater confidence, especially for efficiency-focused tasks. Human recruiters remain essential for assessing soft skills and cultural fit, where AI still lags.

RECOMMENDATION

It is recommended that organizations implement a hybrid recruitment model. AI chatbots should be used for early-stage tasks such as resume screening and initial filtering to enhance efficiency. However,

human recruiters should remain involved in later stages, particularly when assessing interpersonal qualities and team compatibility. This balanced approach will help organizations achieve both speed and quality in hiring.

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