A REVIEW OF TECHNOLOGY IN RECRUITMENT: QUALITY AND EFFICIENCY

Khurram Saeed Surahio
MBA Finance
Khurramsaeedsurahio@gmail.com
Pir Taj Rashdi
MA Sociology University of Sindh Jamshoro
Rashditaj@yahoo.com
Rimsha Nadeem
Institute of Commerce and Management
University of Sindh, Jamshoro
Rimi.nadeem@gmail.com

Abstract
The purpose of this study was to investigate the impact that Technology-Assisted Recruitment (TAR) tools have on the quality of recruitment and how they have an influence on the degree of efficiency. The research was conducted with reference to banks in Karachi city. Increasing the frequency with which human resource management makes use of emerging technological trends has resulted in an increase in the efficiency of a variety of operations that it carries out, and the selection of applicants is not an exception. This article discusses different TAR technologies, including applicant tracking systems (ATS), artificial intelligence (AI), and personal assistants (PA), with the purpose of analyzing the influence these tools have on time-to-hire, candidate-job fit, and recruiting success. A survey was conducted of fifty human resource professionals working for various banks. These individuals were chosen for this research by using a standardized questionnaire. For analyzing the data that was gathered, both inferential and descriptive statistics were used. Based on the findings, it is evident that the use of TAR tools in the recruitment process has a favorable influence on the reduction of time, the quality of applicants, and the overall experience that candidates have throughout the recruiting process. On the other hand, concerns around equal opportunity in recruiting and bias in algorithmic processes were also brought up. This leads to the conclusion that it is essential to incorporate the usage of TAR tools in order to improve the process of recruiting while also advocating morally appropriate standards for such systems.

Keywords: Technology-Assisted Recruitment, Applicant Tracking Systems (ATS), Artificial Intelligence (AI),

Introduction
The application of technology in human resource management (HRM) has transformed recruitment practices, with organizations increasingly shifting from traditional methods to technology-driven solutions (Chamorro-Premuzic et al., 2016). These advancements help manage large applicant pools, a persistent challenge in modern recruitment, while promoting bias-free decision-making (Guchait et al., 2014). Technology-Assisted Recruitment (TAR) involves utilizing tools such as Artificial Intelligence (AI), Applicant Tracking Systems (ATS), and other innovations to streamline hiring processes, improve decision-making, and enhance candidate experience (Binns, 2020). The integration of information technology into various aspects of life has significantly influenced recruitment practices, increasing productivity through digital tools (Gelles et al., 2018). However, one key benefit of TAR is the improvement of hiring quality through data-driven analysis. By reducing human error in manual screening processes, AI can efficiently sift through extensive applicant data to identify the most suitable candidates for a given position (Harrison et al., 2017). For instance, AI solutions can assess resumes and conduct video interviews to evaluate candidates' soft skills, such as communication, which might be overlooked in traditional recruitment methods (Chamorro-Premuzic et al., 2016). Predictive analytics within TAR also allows organizations

to forecast candidate performance and their potential to generate sustainable returns, further enhancing recruitment strategies (Dastin, 2018).

The efficiency of recruitment processes is another significant advantage of TAR, as it reduces the time and effort spent on repetitive tasks like application evaluations and interview scheduling. This allows recruiters to focus on higher-level tasks, such as employer branding and candidate engagement, while intelligent systems handle more routine activities (Guchait et al., 2014). Empirical studies indicate that the use of CPR (computerized personnel records) and TAR tools significantly enhances the efficiency of recruitment by decreasing both the time and cost per hiring decision (Guchait et al., 2014). Despite these advantages, there are limitations associated with TAR, particularly regarding fairness and ethical considerations. Research suggests that candidates value face-to-face interviews for their sociability and personal touch, qualities that AI systems currently cannot replicate (Langer et al., 2019). Addressing these concerns requires the development of TAR systems that incorporate a human-in-the-loop approach, emphasizing transparency and responsibility in decision-making (Gilliland, 1993). Additionally, organizational readiness and proper training in HR practices are essential for effectively implementing these tools (Gelles et al., 2018). Poor implementation or failure to consider the potential risks could result in suboptimal hiring decisions, underscoring the need for strategic deployment.

Significance of the study

This research explores the impact of technology-assisted recruitment (TAR) on hiring quality and efficiency in the banking sector. TAR tools like Applicant Tracking Systems (ATS), artificial intelligence (AI), and chatbots help manage large applicant pools, reduce administrative burdens, and allow human resource professionals to focus on strategic tasks like decision-making and candidate engagement. Automation and process efficiency within TAR are also examined, with algorithms like Natural Language Processing (NLP) and Natural Language Generation (NLG) enhancing productivity and identifying the best-fit candidates. TAR tools also enhance the quality of hiring decisions by providing objective insights to mitigate biases in recruitment, leading to more informed and equitable hiring practices. The study highlights the need for transparent, well-designed systems that ensure fairness and maintain the confidence of candidates and recruiters, ultimately driving organizational success.

Objectives of the study

1.This study aims to evaluate the impact of technology-assisted recruitment tools (TAR) on improving recruitment efficiency in the banking sector, with a particular focus on reducing time-to-hire and administrative burden.

2. The paper seeks to explore the role of TAR tools in enhancing the quality of hires, specifically examining their effectiveness in improving candidate-job fit and identifying the most suitable candidates.

3. This study assesses the perceived role of TAR tools in mitigating human bias in the recruitment process, while also promoting fairness and diversity in candidate selection.

4.study intends to explore the relationship between the use of TAR tools (such as ATS, AI, and chatbots) and the reduction in time-to-hire, as well as the contribution of these tools to overall recruitment efficiency.

Participants

A total of 50 HR professionals and recruitment managers from various banks in Karachi participated in the study. The participants were selected using a non-probability convenience

sampling technique, ensuring a diverse representation of both junior and senior professionals. The study was conducted in accordance with ethical guidelines. Participants were informed of the study's purpose, and their consent was obtained before survey administration. The confidentiality and anonymity of participants were ensured by not collecting any personally identifiable information.

Statistical Analysis
Descriptive statistics (mean and standard deviation) were calculated to analyze the responses to the survey statements. Pearson's correlation coefficient was employed to assess the relationship between the use of TAR tools and time-to-hire, with values closer to 1 indicating a stronger positive relationship. Regression analysis was performed to examine the impact of TAR tools (ATS, AI, and Predictive Analytics) on recruitment efficiency. The regression model included the following independent variables: use of ATS, AI, and Predictive Analytics. The dependent variable is recruitment efficiency and is operational as time-to-hire reduction.

Discussion
This study explored the impact of Talent Acquisition and Recruitment (TAR) tools on the efficiency, quality, and fairness of recruitment processes in the banking sector. The results provide significant insights into the effectiveness of TAR tools such as Applicant Tracking Systems (ATS), Artificial Intelligence (AI), and predictive analytics in improving recruitment outcomes. The findings of this study provide significant insights into the impact of Technology-Assisted Recruitment (TAR) on recruitment efficiency and quality in the banking sector. Overall,
 The results reveal that TAR tools are highly effective in reducing time-to-hire, enhancing hiring quality, and mitigating bias. These findings align with previous research demonstrating the advantages of technology in recruitment processes, specifically in terms of efficiency, quality, and fairness (Binns et al., 2019; Brown & Green, 2021). Table 2 shows that HR professionals rated TAR tools positively in reducing time-to-hire, with mean scores consistently above 4. This suggests that TAR, particularly automation tools like Applicant Tracking Systems (ATS) and Artificial Intelligence (AI), significantly expedite the recruitment process. These results are consistent with those of previous studies, which emphasize the time-saving benefits of automation in recruitment (Müller & Mertens, 2020). The reduction in administrative burdens and quicker recruitment processes, as noted in the study, further underscores the efficiency gains that TAR brings to the recruitment process. The positive ratings for the use of TAR tools in decreasing administrative tasks are particularly notable, as these tools minimize manual work and free up HR personnel to focus on more strategic tasks (Williams et al., 2022). Table 3 highlights that respondents felt TAR tools contributed to improving the quality of candidates hired and ensuring a better candidate-job fit. The positive mean scores indicate that the use of TAR tools not only speeds up the recruitment process but also enhances its effectiveness in selecting the most suitable candidates. This finding supports existing literature that highlights the role of technology in refining recruitment practices, ensuring better alignment between candidates' qualifications and job requirements (Sullivan, 2019). Furthermore, the use of predictive analytics and AI-based tools has been shown to improve hiring accuracy by analyzing vast amounts of data to match candidates with job positions more effectively (Hussain et al., 2021). Table 4 reveals a moderate level of confidence among respondents regarding the effectiveness of TAR tools in mitigating bias. While TAR systems were considered helpful in reducing human bias and enhancing diversity, the mean scores for these items were slightly lower than those for

efficiency and quality. This suggests that while TAR tools are recognized for their potential to reduce bias, HR professionals may still harbor concerns regarding their complete effectiveness. These concerns are not unusual, as biases embedded in algorithms and the data, they are trained on can sometimes perpetuate existing prejudices, even in automated systems (Cowgill et al., 2021). However, as the industry continues to evolve, advancements in TAR tools are expected to address these limitations, with a focus on improving algorithmic fairness and transparency.

Furthermore, Table 5 demonstrates a strong positive correlation between the use of ATS, AI, and chatbots and the reduction in time-to-hire. The data indicates that the more frequently these tools are used, the shorter the recruiting periods tend to be. This finding reinforces the idea that the integration of AI and automation in recruitment processes significantly accelerates hiring timelines. Previous studies have similarly found that the use of ATS and AI tools leads to faster and more efficient candidate sourcing and screening, thus reducing recruitment delays (Aguinis et al., 2019; Binns et al., 2019). The regression analysis presented in Table 6 confirms the significant impact of ATS, AI, and predictive analytics on hiring efficiency. The results indicate that ATS has the greatest impact on recruitment effectiveness, followed by AI and predictive analytics. This outcome aligns with previous findings that suggest ATS systems are particularly effective in streamlining candidate sorting and tracking, while AI and predictive analytics provide valuable support in optimizing candidate selection (Kaufmann & Kübler, 2020; Williams et al., 2022). Given the substantial t-values and the low p-values, these results reinforce the importance of integrating technology into recruitment practices to improve efficiency and outcomes.

Limitations

There are also some limitations in the present study, although it offers insights with great research implications for scholars and practitioners of tomorrow. Firstly, the authors have expectedly restricted the empirical context to 50 HR professionals and recruitment managers, which however, may not be enough to give a comprehensive idea of Pakistan's industries/ organizations. Further, the research can only document current formal recruitment modes and techniques and does not consider changes that occurred to recruitment technologies in the past years. Additionally, data sources come from the self-reported survey and thus, effects like social desire or recall bias might be present. Thus, the exclusion of one half of the population from the study, that is, the constituent of rural or less urbanized areas of Pakistan reduces the external validity of the study.

Conclusion

The study highlights the pivotal role of technology-assisted recruitment (TAR) tools in improving the recruitment process and the quality of human resource selection within the banking sector in Karachi, Pakistan. The research reveals that tools such as Applicant Tracking Systems (ATS), Artificial Intelligence (AI), and predictive analytics contribute significantly to enhancing the efficiency and accuracy of recruitment processes, aligning with global trends. However, the study also uncovers concerns regarding potential biases within these systems, underscoring the necessity of periodic monitoring and updates to maintain fairness. These findings suggest that while TAR tools are integral to the modern evolution of recruitment practices in Karachi's banking sector, further research and development are crucial to fully realizing their potential. Additionally, targeted training strategies for HR professionals are vital to effectively utilize and manage these tools. The future impact of TAR in the banking sector will depend on addressing these challenges and refining these

systems to ensure they meet the sector's specific needs while promoting equitable and efficient hiring practices.

Practical Implementations

This study's results have practical implications for HR professionals in the banking sector. Organizations should consider adopting or expanding their use of TAR tools, particularly ATS and AI, to enhance recruitment efficiency and improve the quality of their hiring decisions. While the perceived benefits of bias reduction are encouraging, HR departments should remain vigilant and regularly assess the fairness of their TAR systems to avoid unintended biases. Training HR staff to work alongside these tools effectively will also be crucial for maximizing their potential and ensuring a seamless integration with traditional recruitment practices.

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Table 1: Demographic Information of Participants

Demographic	f (n=50)	(%)
Gender		
Male	30	60%
Female	20	40%
Age Range		
18-30 years	15	30%
31-40 years	20	40%
41-50 years	10	20%
51+ years	5	10%
Years of Experience		

Demographic	f (n=50)	(%)
1-5 years	10	20%
6-10 years	15	30%
11+ years	25	50%

The study involved 60% male and 40% female HR professionals, with 40% aged 31-40, and 50% having 11+ years of experience, providing insights from both junior and senior professionals.

Table 2: Impact of TAR on Recruitment Efficiency in the Banking Sector

Statement	Mean	Standard Deviation
TAR significantly reduces the time-to-hire.	4.5	0.7
Recruitment processes are quicker with the use of TAR tools.	4.3	0.8
Automation through TAR has decreased administrative burden.	4.4	0.6

The participants, on average, rated TAR tools positively in reducing time-to-hire, as indicated by their mean scores of 4.3 or higher.

Table 3: Perceived Impact of TAR on Hiring Quality

Statement	Mean	Standard Deviation
TAR tools improve the quality of candidates hired.	4.1	0.8
Using TAR tools results in better candidate-job fit.	4.3	0.7
TAR helps in identifying the most suitable candidates.	4.2	0.8

Table 3 indicates that TAR tools significantly improve hiring quality, with mean scores exceeding 4 indicating enhanced selection accuracy and better fit.

Table 4: Perceived Role of TAR in Bias Mitigation

Statement	Mean	Standard Deviation
TAR tools reduce human bias in the recruitment process.	3.8	0.9

Statement	Mean	Standard Deviation
Algorithms in TAR systems ensure fairness in candidate selection.	3.9	0.8
TAR enhances diversity by focusing on skills and qualifications.	4.0	0.7

The scenario results show slightly lower levels of confidence by the respondents towards how effectively TAR tools eliminate bias, although they are moderately convinced of efficiencies brought by TAR.

Table 5: Correlation Between TAR Use and Time-to-Hire

TAR Tool Usage (X)	Time-to-Hire Reduction (Y)	Pearson's r
ATS	0.85	0.87
AI	0.79	0.82
Chatbots	0.70	0.78

The investigation identified a positive association between the use of ATS, AI, and chatbots with the length of time-to-hire, indicating that more usage results in shorter recruiting periods.

Table6 : Regression Analysis: TAR's Impact on Hiring Efficiency

Independent Variable	B	Standard Error	Beta	t	p
Use of ATS	0.45	0.08	0.55	5.63	0.000
Use of AI	0.38	0.10	0.50	3.80	0.001
Use of Predictive Analytics	0.25	0.12	0.30	2.08	0.045

The regression analysis shows that the application of ATS, AI and predictive analytics enhance recruitment efficiency ($t < 0.05$). The analysis revealed that ATS has the greatest level of impact on hiring effectiveness, closely followed by AI and predictive analytics.