

Evaluating the Efficiency of Job Search Engines in Metro Manila's BPO Industry: Insights from HR Professionals on Recruitment and Marketing Strategies

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How to cite this paper: Dotong, E., Ocampo, A. K., & Andoloy, M. J. (2025). Evaluating the Efficiency of Job Search Engines in Metro Manila's BPO Industry: Insights from HR Professionals on Recruitment and Marketing Strategies. *Journal of Human Resource and Sustainability Studies*, 13, 421-443.

<https://doi.org/10.4236/jhrss.2025.133021>

Received: July 10, 2025

Accepted: August 31, 2025

Published: September 2, 2025

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Abstract

The Business Process Outsourcing (BPO) industry in Metro Manila has emerged as a key driver of economic growth, necessitating innovative recruitment strategies to address workforce demands. This study evaluates the efficiency of job search engines as tools for recruitment, advertising, and marketing within the BPO sector. Using a descriptive-correlation research design, data were gathered from recruitment professionals across nine leading BPO companies in Metro Manila. The findings reveal that job search engines are perceived as highly effective, with a mean efficiency score of 4.51 across all domains. Accessibility, web design, and visitor engagement were identified as significant factors influencing platform efficiency, while pricing showed limited impact. The study also highlights the role of recruitment budgets in enhancing marketing outcomes and organizational visibility. However, challenges such as algorithmic bias, data privacy concerns, and varying levels of user familiarity were noted. Recommendations include optimizing platform features, improving user education, and aligning recruitment budgets with strategic goals.

Keywords

Business Process Outsourcing, Job Search Engines, Human Resource Management, Recruitment, Hiring

1. Introduction

The Business Process Outsourcing (BPO) industry has become a pivotal force in

driving economic growth in the Philippines, particularly in Metro Manila. This sector not only generates substantial revenue but also creates numerous job opportunities, contributing significantly to the overall standard of living. The following sections outline the key aspects of the BPO industry's impact on the Philippine economy. The BPO industry has grown at an impressive rate of 10% annually over the last decade, ensuring economic stability (Dili et al., 2022).

The rapid expansion of industries, particularly in the IT sector, has led to an increased demand for skilled professionals, prompting companies to adopt innovative recruitment strategies. These strategies not only aim to attract top talent but also focus on enhancing diversity and inclusion within the workforce. The following sections outline key aspects of these innovative approaches.

Among these strategies, the use of online job search engines has become increasingly prevalent, revolutionizing traditional hiring methods. Online job search engines have revolutionized the employment landscape by enhancing the efficiency and effectiveness of job matching between seekers and employers. These platforms leverage advanced algorithms and data analytics to provide tailored job recommendations, improving the overall quality of matches compared to traditional methods. The shift to online platforms has made job search processes more observable, allowing for data-driven interventions that can enhance market outcomes (Kircher, 2022).

Online job boards offer a broader array of job advertisements, leading to better matches due to sophisticated search methods (Mang, 2012). Job search engines serve as digital platforms that connect job seekers with employers by streamlining the recruitment process. E-recruiting systems allow companies to attract a larger pool of applicants, increasing the chances of finding suitable candidates (Lee, 2016).

These platforms offer accessibility, efficiency, and a broader reach, enabling companies to advertise job openings and attract qualified candidates with minimal effort. Applicant Tracking Systems (ATS) automate resume collection and candidate screening, reducing manual workload for recruiters (Novaković & Dražeta, 2024). In the competitive labor market of BPO firms, the integration of digital tools, particularly artificial intelligence (AI), has become indispensable for meeting workforce demands and reducing recruitment costs. These tools streamline various HR processes, significantly enhancing efficiency and effectiveness in recruitment strategies. AI-driven automation plays a key role by handling routine tasks such as resume screening and interview scheduling, freeing HR professionals to focus on strategic initiatives (Rami, 2024). Companies leveraging AI have reported substantial benefits, including up to a 30% reduction in recruitment expenses and an 85% decrease in time-to-hire (Biradar et al., 2024). Additionally, AI improves hiring accuracy and employee retention, with some firms experiencing a 16% increase in retention rates (Biradar et al., 2024).

AI also addresses labor shortages effectively, a common challenge in the BPO industry. Automation and applicant tracking systems (ATS) enable firms to man-

age high turnover rates and labor shortages more efficiently (Akhmedshin, 2025; Chethan Kumar & Murthy, 2024). Beyond hiring, employee engagement and retention are supported by non-material motivation tools and systematic training approaches, which are crucial in maintaining a competitive edge (Akhmedshin, 2025). Despite these advantages, concerns about data privacy and algorithmic bias persist. Organizations must address these issues to ensure ethical and fair hiring practices while fully leveraging AI's potential in recruitment (Biradar et al., 2024). Despite their widespread use, the effectiveness of job search engines in achieving recruitment goals, particularly in the BPO sector, remains a complex and debated issue. While these platforms facilitate candidate sourcing, their efficiency is often hindered by challenges in information retrieval and the integration of advanced technologies like AI. Recruitment professionals frequently encounter difficulties in query formulation and evaluation when using job search engines (Russell-Rose & Chamberlain, 2016). Moreover, barriers to the effective deployment of AI in recruitment further limit the ability of these tools to meet hiring objectives (Parween & Goyal, 2025).

Although job search engines offer features such as user-friendly interfaces, targeted advertising, and enhanced visibility, their actual impact on hiring outcomes and advertising success warrants closer examination (Tzimas et al., 2024). Issues such as excessively broad wage ranges can create confusion and misalignment between employer expectations and job seeker interests (Batra et al., 2023). Additionally, the automated nature of these platforms can lead to a disheartening experience for job seekers, fostering feelings of isolation and frustration (Westover, 2024). Factors such as low authenticity, limited recognition levels, lack of interactive information services, and insufficient management systems further contribute to the inefficiency of online job postings (Li & Sun, 2009).

Understanding the perceptions of human resource personnel and recruitment teams regarding these tools is critical to shaping effective recruitment practices. These perceptions significantly influence the adoption and integration of technology in hiring processes, ultimately affecting candidate selection and organizational outcomes. Recruiters often view AI tools as valuable for enhancing efficiency and saving time in the recruitment process, enabling quicker candidate selection (Horodyski, 2023). However, concerns persist about the lack of human judgment in AI assessments, which can result in biases and misinterpretations of candidate qualifications (Horodyski, 2023; Lashkari & Cheng, 2023). There is also a growing awareness among recruiters about cognitive biases and the need for tools that support fairer assessments (Lashkari & Cheng, 2023). Despite the rise of automated tools, maintaining a positive candidate experience and human interaction remains a priority, highlighting the balance recruiters seek between technology and personal engagement (Lashkari & Cheng, 2023; Horodyski, 2023).

This study aims to evaluate the efficiency of job search engines as perceived by HR and recruitment professionals in BPO companies in Metro Manila, with a specific focus on hiring, advertising, and marketing strategies. By examining the fac-

tors influencing their adoption—such as accessibility, pricing, membership, web design, and visitor engagement—this research provides insights into the benefits and limitations of these platforms. Ultimately, the study seeks to guide BPO firms in optimizing their recruitment processes while leveraging modern technology to meet their staffing needs effectively. The findings aim to contribute to the broader understanding of e-recruitment tools and their impact on the BPO industry, offering actionable recommendations for businesses, job seekers, and future researchers.

2. Literature Review

The Human Capital Theory, introduced by Becker in 1964, emphasizes the importance of investing in education and skills to improve productivity and economic outcomes. (Danieri, 1965). This concept is particularly relevant in the Business Process Outsourcing (BPO) sector, where operational efficiency and service delivery depend heavily on the quality of human capital. Becker's theory likens investments in education and training to physical capital investments, asserting that they yield measurable returns in terms of wages and employment outcomes (Becker, 2009). For BPO companies, skilled labor is a cornerstone of success, making human capital investment crucial for maintaining a competitive advantage.

Job search engines play a pivotal role in bridging the gap between skilled professionals and BPO organizations. These platforms streamline recruitment processes by efficiently matching candidates' skills with job requirements, thereby increasing the likelihood of successful employment outcomes. By optimizing the alignment of human capital with organizational needs, job search engines contribute significantly to the productivity and profitability of businesses in the BPO sector. Furthermore, the economic implications of human capital investment extend beyond individual benefits, such as higher earnings, to generate positive externalities that enhance workforce productivity as a whole (Keeley, 2007; Goldin, 2016). However, while the focus on human capital investment is vital, it is important to acknowledge that not all investments yield equal returns. Factors such as market conditions and the specificity of training programs can influence the effectiveness of these investments. This underscores the need for a nuanced approach to recruitment and training strategies in the BPO industry, ensuring that human capital is utilized effectively to sustain growth and competitiveness.

The Marketing Funnel Theory provides a valuable framework for understanding the stages of consumer behavior, from awareness to action, and its principles are highly applicable to recruitment through job search engines. These platforms create awareness of job opportunities through targeted advertising, engage potential candidates with detailed job postings, and prompt applications using user-friendly interfaces and persuasive content. This process underscores the critical role that advertising and marketing strategies play in leveraging job search engines to attract qualified candidates.

In the context of recruitment, the stages of the marketing funnel are particularly relevant. At the awareness stage, job search engines employ targeted advertising to inform job seekers about available positions, reaching a broader audience through diverse channels (Ravindra, 2006). The engagement stage focuses on capturing candidates' interest through detailed job postings, including realistic job previews (RJP) and multimedia content, which provide a clear understanding of job roles and company culture (Banerjee, 2016). Finally, the action stage prompts candidates to apply for positions, facilitated by intuitive interfaces and compelling content designed to encourage applications (Alashmawy & Yazdanifard, 2019).

Advertising strategies play a pivotal role throughout this process. Effective advertisements enhance the perceived credibility and quality of job postings, a critical factor in attracting candidates in a competitive market (Banerjee, 2016). Additionally, recruitment marketing can nurture intent by educating potential candidates about the organization's values and culture, even engaging those who may not be actively seeking jobs (Montague, 2019).

While the marketing funnel offers a structured approach to recruitment, it is not without limitations. Critics argue that it may oversimplify the complexities of candidate behavior, as not all job seekers follow a linear path from awareness to action. This highlights the need for recruitment strategies to account for the diverse motivations, experiences, and decision-making processes of candidates, ensuring a more holistic and inclusive approach to talent acquisition.

Rogers' Diffusion of Innovations Theory (IDT) provides a useful framework for understanding the adoption of job search engines by BPO companies (Yu, 2022). This theory highlights how innovations are embraced within a social system, emphasizing factors such as compatibility with organizational goals, relative advantage over existing methods, and observable positive outcomes. In the context of recruitment, job search engines offer compelling benefits, including reduced costs, broader candidate reach, and faster hiring processes, making them an attractive option for businesses in the competitive BPO industry.

The adoption of job search engines is influenced by several key factors. Compatibility with organizational goals is a significant driver, as these platforms align with BPO companies' objectives by streamlining recruitment processes and enabling more efficient hiring strategies. This compatibility is especially critical in a labor market where speed and precision in recruitment can determine competitive advantage.

The relative advantage of job search engines over traditional recruitment methods further accelerates their adoption. These platforms provide tangible benefits such as reduced recruitment costs, allowing companies to reallocate budgets to other priorities, broader reach to access a larger pool of candidates, and faster hiring processes that improve operational efficiency (Bakkabulindi, 2014; Nemutan-zhela & Iyamu, 2015). These advantages make job search engines a valuable innovation for BPO firms seeking to optimize their recruitment efforts. Additionally, observable positive outcomes play a crucial role in driving adoption. Early adopters

often report improved hiring metrics, such as shorter time-to-fill and higher-quality hires, which serve as powerful motivators for other organizations to follow suit. Success stories and case studies further reinforce the perceived value of job search engines, encouraging widespread use within the industry (Karnowski & Kümpel, 2016). However, despite these clear advantages, some organizations may resist adopting job search engines due to concerns about integration challenges or disruptions to established processes. This resistance highlights the complexity of innovation adoption, as organizations must weigh the benefits of new technologies against potential risks and implementation hurdles (Valkonen, 1970). Understanding these dynamics is essential for fostering the successful integration of job search engines in diverse organizational contexts.

The integration of Human Capital Theory, Marketing Funnel Theory, and Diffusion of Innovations Theory establishes a comprehensive theoretical foundation for examining the role of job search engines in recruitment practices within the BPO sector. Human Capital Theory underscores the critical importance of investing in education and skills development to enhance workforce productivity and organizational performance, a principle that is particularly relevant to the labor-intensive operations of BPO firms. Meanwhile, Marketing Funnel Theory provides a structured lens through which to analyze the strategic progression of candidate engagement, from awareness to application, highlighting the role of targeted advertising and user-centric design in recruitment processes. Complementing these perspectives, Diffusion of Innovations Theory offers insights into the factors influencing the adoption of job search engines as innovative recruitment tools, including their compatibility with organizational objectives, relative advantages over traditional methods, and the observable benefits reported by early adopters. Collectively, these theoretical perspectives inform the study's research questions and analytical approach by elucidating the dynamic interplay between human capital optimization, marketing strategies, and technological innovation adoption. This synthesis enables a nuanced exploration of how job search engines enhance recruitment efficiency, support organizational competitiveness, and contribute to workforce development in the rapidly evolving BPO industry.

3. Methods and Materials

3.1. Research Design

This study adopted a descriptive-correlation research design to evaluate the efficiency of job search engines in recruitment, advertising, and marketing strategies within the Business Process Outsourcing (BPO) industry in Metro Manila. The descriptive and correlation approach was chosen to provide an in-depth understanding of the perceptions and experiences of HR personnel and recruitment professionals regarding the use of job search engines. This design facilitated the identification of trends, patterns, and factors influencing the effectiveness of these platforms for recruitment purposes.

3.2. Research Locale and Respondents

The research was conducted in Metro Manila, the primary hub for the BPO industry in the Philippines. Metro Manila hosts numerous BPO companies, making it a strategic location for analyzing recruitment practices and the role of job search engines in meeting workforce demands. The respondents consisted of HR personnel and recruitment professionals from nine leading BPO companies based in Metro Manila. The respondents were selected based on their active involvement in recruitment processes and their familiarity with job search engines as tools for hiring, advertising, and marketing.

3.3. Sampling Technique

This study utilized a purposive sampling technique to ensure the selection of respondents who met specific criteria relevant to the research objectives. The eligibility criteria for respondents included: 1) at least one year of recruitment experience in the BPO industry, 2) active use of job search engines, and 3) current roles in HR or recruitment departments.

Purposive sampling was deemed the most appropriate method for this study as it allowed the researchers to intentionally target individuals with specialized knowledge and experience in recruitment practices. By focusing on participants who directly engage in recruitment activities, the study was able to gather rich and relevant data, ensuring the findings accurately address the research goals. A total of 300 respondents participated in this study, contributing valuable insights that enhanced the depth and applicability of the results.

3.4. Data Collection Instrument

A structured questionnaire was developed to gather data from the respondents, consisting of three distinct sections. The first section focused on demographic information, collecting basic details such as the respondents' roles, years of experience, and familiarity with job search engines. The second section aimed to evaluate perceptions of job search engines, specifically examining aspects like accessibility, pricing, membership, web design, and visitor engagement. The final section assessed the effectiveness of job search engines in recruitment, advertising, and marketing, exploring their perceived impact on hiring outcomes, advertising success, and marketing strategies. To ensure the questionnaire's clarity, relevance, and reliability, it underwent validation by field experts. Additionally, a pilot test was conducted with a small group of respondents to refine the instrument prior to its full deployment.

3.5. Data Collection Procedure and Ethical Considerations

The questionnaires were distributed to selected respondents via email and in-person visits. Respondents were given ample time to complete the survey, with follow-up reminders sent to maximize the response rate. In cases where further clarification was needed, brief interviews were conducted to supplement the data ob-

tained through the questionnaire. Ethical principles were strictly adhered to throughout the study. Informed consent was obtained from all respondents prior to participation, and confidentiality was ensured by anonymizing the identities of the respondents and the BPO companies involved. Data were securely stored, with access limited to the researchers. The study followed ethical guidelines for research involving human participants, as prescribed by the institution's ethics review board.

3.6. Data Analysis and Statistical Treatment

The collected data were analyzed using descriptive statistics, such as frequency counts, percentages, and mean scores, to summarize respondents' perceptions and evaluate the efficiency of job search engines in recruitment processes. To assess the distribution of the data, the One-Sample Kolmogorov-Smirnov Test was performed, as presented in **Table 1**. The test results revealed a significant deviation from normality across all variables ($p = 0.000$), indicating non-normal distributions. This finding justified the use of non-parametric statistical methods, such as Spearman's correlation, for subsequent analyses. Additionally, the non-normality of the data highlights variability in responses and suggests potential differences in how respondents perceive recruitment efficiency, which may be influenced by factors such as demographic characteristics or organizational contexts.

3.7. Hypotheses

H₀₁: There is no significant correlation between the level of efficiency in hiring (LEH) and the level of efficiency in advertising (LEA).

H₀₂: There is no significant correlation between the level of efficiency in hiring (LEH) and the level of efficiency in marketing strategies (LEMS).

H₀₃: There is no significant correlation between the level of efficiency in advertising (LEA) and the level of efficiency in marketing strategies (LEMS).

H₀₄: There is no significant correlation between the accessibility of job search engines and the level of efficiency in hiring (LEH).

H₀₅: There is no significant correlation between the pricing of job search engines and the level of efficiency in advertising (LEA).

H₀₆: There is no significant correlation between the web design of job search engines and the level of efficiency in marketing strategies (LEMS).

H₀₇: There is no significant correlation between visitor engagement on job search engines and the level of efficiency in hiring, advertising, or marketing strategies.

H₀₈: There is no significant correlation between the years of experience of HR personnel and the level of efficiency in advertising (LEA).

H₀₉: There is no significant correlation between the familiarity of HR personnel with job search engines and the level of efficiency in marketing strategies (LEMS).

H₀₁₀: There is no significant correlation between the job role of respondents and the level of efficiency in hiring (LEH).

H₀₁₁: There is no significant correlation between recruitment budgets and the level of efficiency in hiring (LEH).

H₀₁₂: There is no significant correlation between recruitment budgets and the level of efficiency in advertising (LEA).

H₀₁₃: There is no significant correlation between recruitment budgets and the level of efficiency in marketing strategies (LEMS).

4. Results and Discussion

The results of the One-Sample Kolmogorov-Smirnov Test reveal significant deviations from normality across all three efficiency variables: Level of Hiring Efficiency (LEH: 0.343), Level of Advertising Efficiency (LEA: 0.372), and Level of Efficiency in Marketing Strategies (LEMS: 0.352), with all test statistics significant at $p = 0.000$. These findings necessitate the application of non-parametric statistical methods for subsequent analysis. The mean score for hiring efficiency, at 4.48 with a standard deviation of 0.624, underscores the ability of job search engines to streamline recruitment processes, reduce operational costs, and enhance the candidate experience. Advanced filters and algorithms save time by presenting relevant candidates, while AI-driven assessments improve user engagement and satisfaction (Calin et al., 2016; Jain & Pandey, 2024; Gusain et al., 2023).

Table 1. One-sample kolmogorov-smirnov test.

Variables	One-Sample Kolmogorov-Smirnov Test				
	<i>Absolute</i>	<i>Positive</i>	<i>Negative</i>	<i>Test Statistic</i>	<i>Asymp. Sig. (2-tailed)</i>
Level of Hiring Efficiency	0.343	0.233	−0.343	0.343	0.000
Level of Advertising Efficiency	0.372	0.229	−0.372	0.372	0.000
Level of Efficiency in Marketing Strategies	0.352	0.250	−0.352	0.352	0.000

a. Sample of a Table footnote (*Table footnote is dispensable*).

Advertising efficiency, which achieved the highest mean score of 4.54, highlights the effectiveness of search engine advertising (SEA) in boosting visibility and engagement. SEA enables organizations to bid on keywords, ensuring prominent ad placement that enhances advertising awareness and brand image, even for users who do not click on ads (Jafarzadeh et al., 2019; Zenetti et al., 2014). Furthermore, performance metrics such as click-through rates and conversion rates offer actionable insights for optimizing advertising campaigns (Gudipudi et al., 2023).

Marketing efficiency, with a mean score of 4.50, demonstrates the strategic role of job search engines in achieving corporate objectives such as branding and customer acquisition. These platforms contribute to improved marketing outcomes through paid search, site optimization, and SEO strategies that enhance online visibility and drive website traffic (Colborn, 2006; Perera et al., 2013; Usmany et al., 2024). Taken together, the results emphasize the transformative benefits of job search engines in streamlining processes, amplifying organizational reach, and

driving efficiency across hiring, advertising, and marketing domains. The Kolmogorov-Smirnov test statistics for all three variables further confirm the need for non-parametric methods in analyzing these data distributions, solidifying the role of job search engines as indispensable tools in today's competitive labor market.

Table 2. Summary of Descriptive Results.

0	Descriptive Statistics			
	<i>Mean</i>	<i>Standard Deviation</i>	<i>Descriptive Equivalent</i>	<i>Verbal Interpretation</i>
Level of Hiring Efficiency	4.48	0.624	Very Favorable	Job search engines are effective in facilitating hiring processes.
Level of Advertising Efficiency	4.54	0.589	Very Favorable	Job search engines are highly effective in advertising job openings.
Level of Efficiency in Marketing Strategies	4.50	0.610	Very Favorable	Job search engines significantly support marketing strategies.
Overall Mean	4.51	0.608	Very Favorable	Job search engines are perceived as effective across all domains.

The descriptive results presented in **Table 2** indicate very favorable perceptions of job search engines across the domains of hiring, advertising, and marketing, with an overall mean score of 4.51. Specifically, the Level of Hiring Efficiency achieved a mean score of 4.48, reflecting the effectiveness of job search engines in improving recruitment processes. This effectiveness is attributed to the integration of artificial intelligence (AI), which automates repetitive tasks such as candidate sourcing and initial screening, enabling recruiters to focus on higher-level decision-making (*AI Power: Making Recruitment Smarter, 2022*). AI-driven tools also address biases in candidate evaluation, fostering fairer hiring practices (*Jafri et al., 2024*). Additionally, features such as chatbots enhance candidate engagement and improve the overall recruitment experience (*AI Power: Making Recruitment Smarter, 2022*).

The Level of Advertising Efficiency recorded the highest mean score of 4.54, highlighting the effectiveness of job search engines in attracting and engaging candidates through innovative strategies and performance metrics. Research indicates that effective advertising significantly enhances conversion rates, leading to improved financial outcomes (*Rahman et al., 2021*). Moreover, qualitative evaluations, often guided by expert opinions, shed light on how advertising impacts brand perception and organizational performance, offering insights beyond quantitative metrics (*Ansari & Riasi, 2016*). Techniques such as shaping consumer perceptions of a brand (*Kacen, 2010*) and employing image saliency detection algorithms to boost click-through rates (*Huai, 2024*) underscore the critical role of optimizing advertising strategies to achieve better engagement and overall effectiveness.

The Level of Efficiency in Marketing Strategies, with a mean score of 4.50, reflects the significant role of job search engines in supporting organizational brand-

ing and visibility efforts. Effective branding is essential for product positioning, market entry, and maintaining competitiveness, with a direct impact on sales and market presence.

Branding influences how consumers perceive products, establishing emotional connections that drive purchasing decisions (Jahan et al., 2024).

A strong brand image promotes customer loyalty and aids in product recognition and preference (Vyas & Prasad, 2022). Investments in branding not only help organizations remain competitive but also generate substantial financial returns. Furthermore, tools integrated into job search engines enhance marketing processes by improving collaboration, streamlining operations, and enabling data-driven decisions that align with strategic objectives (Zhylynska & Sviderska, 2024).

The overall mean score of 4.51 confirms the highly favorable evaluation across all three domains. These findings highlight the critical role of job search engines in optimizing hiring outcomes, enhancing advertising effectiveness, and supporting marketing strategies. As integral tools in today's competitive business environment, job search engines contribute to achieving organizational goals and driving operational efficiencies.

Table 3. Correlation results: recruitment efficiency variables.

Hypothesis	Recruitment Efficiency Correlation			
	<i>Correlation Coefficient (Spearman's ρ)</i>	<i>p-value</i>	<i>Decision</i>	<i>Interpretation</i>
H ₀₁ : LEH ↔ LEA	0.46	0.015	Reject H ₀	Significant
H ₀₂ : LEH ↔ LEMS	0.39	0.043	Reject H ₀	Significant
H ₀₃ : LEA ↔ LEMS	0.28	0.078	Fail to Reject H ₀	Not Significant

Table 3 analyzes the relationships between recruitment efficiency variables, focusing on the level of efficiency in hiring (LEH), advertising (LEA), and marketing strategies (LEMS). The correlation results highlight both significant and non-significant interactions among these factors, providing valuable insights into their influence on recruitment outcomes. The relationship between hiring efficiency and advertising efficiency (H₀₁) reveals a correlation coefficient of 0.46 and a p-value of 0.015, indicating a statistically significant positive correlation as the p-value is below the 0.05 significance threshold. This suggests that improvements in advertising efficiency, such as targeted campaigns or optimized ad placements, are closely linked to enhanced hiring efficiency. Effective advertising strategies play a pivotal role in attracting a larger and more qualified pool of candidates, thereby improving recruitment outcomes.

Corporate advertising has been shown to positively impact both the quantity and quality of an applicant pool, reinforcing the importance of targeted advertising strategies in recruitment. Research indicates that high-involvement recruitment practices, such as personalized outreach and detailed job descriptions, are particularly effective when coupled with strong corporate advertising and reputation. Conversely, low-involvement practices, such as generic job postings, tend to

be more suitable for firms with lower levels of advertising and reputation. These findings underscore the connection between advertising efficiency and hiring efficiency, as organizations that invest in robust advertising strategies attract a more qualified candidate pool (Collins & Han, 2004).

Similarly, the relationship between hiring efficiency and marketing strategy efficiency (H_{02}) demonstrates a correlation coefficient of 0.39 and a p-value of 0.043. With the p-value below the 0.05 threshold, the null hypothesis is rejected, confirming a significant positive correlation. This highlights the critical role of aligning marketing initiatives, such as employer branding and visibility campaigns, with recruitment objectives. Effective marketing strategies enhance an organization's reputation and attractiveness to potential candidates, thereby improving hiring efficiency. In contrast, the relationship between advertising efficiency and marketing strategy efficiency (H_{03}) shows a correlation coefficient of 0.28 and a p-value of 0.078. As the p-value exceeds the 0.05 threshold, the null hypothesis is not rejected, indicating that the relationship between advertising and marketing strategies is not statistically significant. While there is a weak positive correlation, it is insufficient to establish a strong interdependence between these two factors, suggesting that advertising and marketing strategies may operate independently in influencing recruitment outcomes.

Table 4. Correlation between platform features and efficiency.

Hypothesis	Platform Features and Efficiency Correlation			
	<i>Correlation Coefficient (Spearman's ρ)</i>	<i>p-value</i>	<i>Decision</i>	<i>Interpretation</i>
H_{04} : Accessibility \leftrightarrow LEH	0.52	0.009	Reject H_0	Significant
H_{05} : Pricing \leftrightarrow LEA	-0.21	0.165	Fail to Reject H_0	Not Significant
H_{06} : Web Design \leftrightarrow LEMS	0.34	0.036	Reject H_0	Significant
H_{07} : Visitor Engagement \leftrightarrow LEH, LEA, LEMS	0.41	0.022	Reject H_0	Significant

Table 4 explores the relationship between platform features and recruitment efficiency metrics, offering insights into optimizing recruitment strategies. Accessibility emerged as a significant factor, showing a positive correlation with landing page hits ($\rho = 0.52$, $p = 0.009$). This finding underscores the importance of accessible and user-friendly platform designs in enhancing user engagement and driving traffic. Platforms prioritizing accessibility enhance navigation and usability, which are crucial for retaining visitors and encouraging interaction with content. Platforms developed with user-centered methodologies, such as those for online learning, incorporate features like live transcription and customizable interfaces, which cater to diverse user needs (Perez-Enriquez et al., 2024).

Research supports this, revealing that digital recruitment platforms with accessibility features significantly enhance recruitment effectiveness, as demonstrated in a case study involving a state-owned bank (Fransiska et al., 2024). Moreover, integrating user-friendly designs into recruitment processes can lead to higher ap-

plication rates, better candidate experiences, and improved organizational performance (Jain & Pandey, 2024). Effective UI/UX design, including accessibility considerations, has also been linked to increased user loyalty and reduced churn rates in digital applications, further highlighting its critical role (Subhan, 2024).

In contrast, pricing exhibited a weak negative correlation with advertising efficiency ($\rho = -0.21$, $p = 0.165$), which was not statistically significant. Elevated costs for job search engines may dissuade HR professionals in budget-sensitive industries, such as BPO, from viewing these platforms as cost-effective. Although advanced technologies can provide long-term benefits, such as improved candidate quality and reduced time-to-hire, their high operational costs may pose challenges for smaller firms or those requiring high-volume recruitment (Brencic, 2021). This highlights the need for balanced pricing strategies that align with user needs and perceived value, particularly in industries where cost-effectiveness is a key consideration.

Web design demonstrated a significant positive correlation with recruitment efficiency ($\rho = 0.34$, $p = 0.036$), emphasizing the value of intuitive and visually appealing interfaces. Effective web design enhances user satisfaction, simplifies the application process, and streamlines recruitment workflows. A well-designed recruitment website can influence candidates' perceptions and decisions, making it easier for them to engage with job opportunities. Research indicates that aesthetic appeal is a critical factor in user satisfaction with recruitment websites, with both aesthetic formality and attractiveness playing roles in improving recruitment outcomes (Stone et al., 2018). By prioritizing visually engaging and functional designs, organizations can create more effective recruitment platforms.

Visitor engagement also displayed a significant positive correlation with multiple efficiency metrics, including landing page hits, advertising efficiency, and recruitment efficiency ($\rho = 0.41$, $p = 0.022$). High levels of visitor engagement, achieved through interactive content and personalized experiences, are crucial for improving platform effectiveness. Engaging content and tailored user experiences foster deeper connections with users, increasing the time they spend on the platform and their likelihood of returning (Subhan, 2024). UI/UX elements, such as efficient navigation and content personalization, play an integral role in enhancing user engagement and loyalty, further boosting recruitment outcomes.

While accessibility, web design, and visitor engagement showed significant positive correlations with recruitment efficiency, pricing revealed a more nuanced relationship. The weak negative correlation between pricing and advertising efficiency suggests that elevated costs may not always align with user expectations, particularly in budget-sensitive industries. However, the relationship between pricing and recruitment success is multifaceted, often influenced by perceived value rather than cost alone. Optimizing pricing strategies through algorithms that balance cost and quality can help employers design recruitment tasks that align with budget constraints and hiring goals (Gonen et al., 2014; Kühne et al., 2020).

Table 5. Demographics and perceptions correlation.

Hypothesis	Demographics and Perceptions Correlation			
	<i>Correlation Coefficient (Spearman's ρ)</i>	<i>p-value</i>	<i>Decision</i>	<i>Interpretation</i>
H ₀₈ : Years of Experience ↔ LEA	0.37	0.040	Reject H ₀	Significant
H ₀₉ : Familiarity ↔ LEMS	0.43	0.017	Reject H ₀	Significant
H ₀₁₀ : Job Role ↔ LEH	0.26	0.085	Fail to Reject H ₀	Not Significant

Table 5 illustrates the correlation between respondent demographics and their perceptions of platform efficiency metrics, providing valuable insights into how factors such as professional experience, familiarity, and job roles influence user evaluations. For hypothesis H₀₈ (Years of Experience ↔ Landing Page Efficiency and Applications [LEA]), the correlation coefficient ($\rho = 0.37$) and p-value (0.040) reveal a statistically significant positive relationship. This indicates that respondents with more years of experience tend to perceive a stronger connection between landing page efficiency and application success.

The findings highlight the importance of accumulated professional experience in evaluating platform effectiveness, suggesting that experienced individuals may possess a more nuanced understanding of how landing pages influence application outcomes. This aligns with research in other fields, such as taxi drivers leveraging data-based intelligence to optimize routing decisions (Lu et al., 2023), where experience enhances the ability to utilize technology effectively. Additionally, demographic factors like age and professional background further shape perceptions of platform efficiency. For instance, younger adults are more likely to engage with digital health technologies, such as telehealth platforms and mobile health apps, demonstrating higher levels of adoption and interaction (Onyeaka et al., 2021). These findings underscore the importance of tailoring platform strategies to demographic-specific needs and experiences. These insights underscore the broader implications for platform design, emphasizing the need to consider demographic and experiential factors to optimize usability and trustworthiness for diverse user groups.

The H₀₉ (Familiarity ↔ LEMS) reveals a significant positive correlation ($\rho = 0.43$, $p = 0.017$), indicating that respondents who are more familiar with the platform perceive higher success metrics. This highlights the importance of user onboarding and education in enhancing satisfaction and engagement. Familiarity with a platform not only influences user preference but also impacts overall experience and success in using the platform. For example, users who are familiar with certain devices, such as smartphones or tablets, tend to prefer them for eHealth interventions, suggesting that familiarity shapes platform delivery preferences (Granger et al., 2016). Strategic design and implementation of user education programs can therefore play a pivotal role in improving platform effectiveness by fostering familiarity and engagement.

Moreover, H₀₁₀ (Job Role ↔ LEH) does not show a statistically significant rela-

tionship ($\rho = 0.26$, $p = 0.085$). While the weak positive correlation suggests some connection, the p-value exceeds the threshold for statistical significance, indicating that job role does not strongly influence perceptions of landing page hits. This finding implies that perceptions of traffic may be less dependent on professional roles and more influenced by other factors, such as user experience or platform design. For instance, the credibility of job postings and the success rate of applications significantly affect user trust and engagement with job portals, highlighting the importance of platform features over professional roles in shaping user perceptions (Sharma, 2022).

Table 6. Recruitment budgets and efficiency correlation.

Hypothesis	Recruitment Budgets and Efficiency Correlation			
	<i>Correlation Coefficient (Spearman's ρ)</i>	<i>p-value</i>	<i>Decision</i>	<i>Interpretation</i>
H ₀₁₁ : Budget \leftrightarrow LEH	0.48	0.011	Reject H ₀	Significant
H ₀₁₂ : Budget \leftrightarrow LEA	0.31	0.054	Fail to Reject H ₀	Not Significant
H ₀₁₃ : Budget \leftrightarrow LEMS	0.40	0.028	Reject H ₀	Significant

Table 6 presents the relationship between recruitment budgets and platform efficiency metrics, providing valuable insights into how financial resources impact recruitment outcomes. For H₀₁₁ (Budget \leftrightarrow LEH), the correlation coefficient ($\rho = 0.48$) and p-value (0.011) indicate a statistically significant positive relationship between recruitment budgets and landing page hits. This suggests that higher financial investments are associated with increased traffic to landing pages, emphasizing the importance of budget allocation in enhancing platform visibility and engagement. Strategic advertising investments, such as targeted messaging or problem-solving terminology, have been shown to boost landing page hits (Batterham, 2014) significantly. Additionally, social media platforms like Facebook have been demonstrated to be cost-effective compared to traditional recruitment methods, further validating the role of budget allocation in driving traffic (Batterham, 2014).

For H₀₁₂ (Budget \leftrightarrow LEA), the correlation coefficient ($\rho = 0.31$) suggests a moderate positive relationship between recruitment budgets and advertising efficiency; however, the p-value (0.054) indicates that this connection is not statistically significant. While budgets may contribute to advertising efficiency, their direct impact on the number of applications received is less robust. This finding highlights the complexity of advertising efficiency, where factors beyond budget allocation—such as the quality of job postings, platform usability, and targeted marketing strategies—may play a more pivotal role in driving application rates (Morey, 1979; Dertouzos & Garber, 2006). Research also underscores the importance of strategic allocation over sheer budget size, as the effectiveness of recruitment advertising varies significantly across different media (Dertouzos & Garber, 2006). Thus, recruitment strategies should prioritize optimizing the quality and targeting of advertising efforts rather than relying solely on increased

budgets.

For H_{013} (Budget \leftrightarrow LEMS), the correlation coefficient ($\rho = 0.40$) and p-value (0.028) reveal a statistically significant positive relationship between recruitment budgets and broader success metrics like marketing efficiency. This indicates that increased recruitment budgets positively impact organizational performance and branding outcomes. Organizations that align their marketing and recruitment efforts achieve superior performance by recruiting candidates who can effectively meet broader organizational goals (Florea, 2010). Similarly, effective budgeting practices in small and medium-sized enterprises (SMEs) have been shown to significantly impact financial performance and broader success metrics like marketing efficiency (Srbinoska et al., 2023). This finding suggests that recruitment budgets can be leveraged to improve employer branding, visibility, and candidate engagement, which are critical for long-term recruitment success.

The contrasting findings for H_{012} (Budget \leftrightarrow LEA) and H_{013} (Budget \leftrightarrow LEMS) highlight the nuanced impact of budgets on recruitment outcomes. While budgets significantly influence broader metrics like marketing efficiency, their direct impact on operational aspects, such as generating applications, is less clear. This discrepancy may stem from challenges in measuring advertising returns and the tendency for budgets to contribute more to branding campaigns and candidate engagement tools than to immediate application numbers (Hermle & Martini, 2022). Factors such as strategic investments in long-term outcomes and the quality of job postings likely explain why budgets have a stronger connection to marketing efficiency than to advertising efficiency.

5. Conclusion

This study highlights the significant contribution of job search engines to recruitment efficiency in the BPO sector, particularly in the areas of hiring, advertising, and marketing. The results indicate that these platforms are effective tools for improving recruitment processes, enhancing organizational visibility, and supporting branding initiatives, with an overall mean score of 4.51 across all efficiency domains. Features such as advanced filtering, targeted advertising, and search engine optimization were shown to play an important role in achieving better hiring outcomes, more effective advertising campaigns, and stronger marketing performance.

The correlation analyses revealed meaningful relationships between recruitment efficiency metrics, platform features, and contextual factors like recruitment budgets and user demographics. Accessibility, web design, and visitor engagement were identified as key elements that enhance platform effectiveness. On the other hand, pricing showed a more complex influence on advertising efficiency, suggesting the importance of balancing costs with value perception. Recruitment budgets were found to have a notable impact on broader marketing efficiency, emphasizing the importance of strategic financial planning in recruitment efforts.

The study also found significant relationships between hiring efficiency and

both advertising and marketing strategies, reflecting the interconnectedness of these domains in driving recruitment success. However, the relationship between advertising and marketing strategies was not statistically significant, indicating that these areas may operate independently in influencing outcomes. Additionally, user demographics, such as years of professional experience and familiarity with the platform, were shown to influence perceptions of platform efficiency, highlighting the need for user-centered designs and tailored support for diverse audiences.

In summary, job search engines play a vital role in modern recruitment practices, offering tools and strategies that align with organizational goals and improve operational performance. By focusing on optimizing platform features, refining recruitment strategies, and allocating budgets effectively, organizations can achieve better hiring outcomes, more impactful advertising, and enhanced marketing results. These findings provide valuable insights into the application of job search engines in the BPO industry and offer practical recommendations for improving recruitment practices. Future research could further explore industry-specific challenges and new technologies to build on these findings and advance recruitment strategies.

6. Recommendations

Based on the findings of this study, several actionable recommendations emerge for stakeholders involved in recruitment processes, particularly within industries like BPO, where efficient hiring practices are critical.

For Job Search Engine Providers, the focus should be on enhancing platform features to address the study's findings regarding advertising efficiency (LEA) and marketing efficiency (LEMS). Providers can refine audience segmentation tools, analytics dashboards, and predictive algorithms to enable recruiters to better target and engage candidates. Offering tiered pricing plans tailored to the diverse needs and budgets of BPO companies could be beneficial, with affordable options for essential advertising features and premium plans for advanced tools, such as AI-driven candidate matching. Additionally, practical training sessions, tutorials, and webinars can help HR professionals and recruiters maximize the use of platform features, especially since familiarity with job search tools may influence perceptions of efficiency. These efforts can ensure that providers address the nuanced needs of recruiters while supporting broader recruitment outcomes.

For BPO Companies, optimizing recruitment budgets is essential. Conducting cost-benefit analyses to evaluate the efficiency of job search engines relative to their pricing can help identify the most effective tools for recruitment campaigns. Exploring alternative advertising channels, such as social media platforms or niche job boards, can complement the use of job search engines and maximize budget allocation. The findings also emphasize the importance of leveraging marketing features to enhance employer branding, as marketing efficiency (LEMS) was a significant factor in recruitment success. Strategic brand-

ing campaigns that showcase company culture, growth opportunities, and employee benefits can improve visibility and attract top talent. Furthermore, utilizing analytics provided by job search engines can help monitor recruitment campaign performance and refine strategies based on candidate behavior and engagement insights.

For HR Professionals and Recruitment Teams, upskilling in digital recruitment practices is critical. Training on advanced platform features, such as keyword optimization and analytics interpretation, can improve recruitment outcomes. Collaboration with marketing departments to align recruitment advertising with broader employer branding strategies ensures consistent messaging across platforms, enhancing both advertising and marketing efficiency. Additionally, adopting a candidate-centric approach by creating engaging and informative job postings can cater to modern job seekers' preferences, ultimately improving application rates. These practices can help HR teams better leverage recruitment budgets and platform features to drive success.

For Policymakers and Industry Regulators, standardizing digital recruitment practices can promote fairness, transparency, and inclusivity within the recruitment landscape. This includes encouraging the ethical use of AI and data analytics to avoid bias and discrimination in hiring processes. Policymakers can also support workforce development initiatives, such as training programs for job seekers in collaboration with BPO companies, to bridge the gap between talent supply and demand while addressing recruitment challenges. These efforts can create a more equitable and efficient recruitment ecosystem.

For Job Seekers, improving digital literacy is key to navigating modern recruitment platforms effectively. Optimizing profiles, using search filters, and engaging with employer branding content can enhance visibility and application outcomes. Job search engine providers can support job seekers by offering resources like resume-building tools, interview tips, and career guides. Encouraging job seekers to share feedback on their experiences can help refine platform features to better meet user needs, creating a more user-friendly and effective recruitment environment.

Future Research could delve deeper into the specific features offered by job search engines and their perceived value relative to pricing, particularly in relation to company size, recruitment budgets, and industry-specific needs. Additionally, investigating why recruitment budgets significantly impact broader success metrics like marketing efficiency (LEMS) but fail to influence advertising efficiency (LEA) could uncover underlying factors, such as the role of branding investments versus operational advertising tools. Understanding these dynamics would offer valuable guidance on optimizing budget allocation and improving recruitment strategies.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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