

The Relationship between Digital HR Tools Usage and Recruitment Efficiency in Sulaymaniah Private Sector

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Abstract

This study uses a quantitative research framework to identify the relationship between digital human resource (HR) tools usage on private-sector recruitment efficiency in Sulaymaniyah. The population is HR practitioners and employees directly affected or engaged in recruitment operations in technology, healthcare, retail, and education businesses within Sulaymaniyah. A stratified sample sampling technique yielded 100 participants, representing individuals exposed to digital HR interfaces and payroll operations. Data were collected from a structured questionnaire, distributed through electronic and hard copies. The questionnaire had three sections that consist of demographic information, digital HR tool usage and recruitment efficiency. The validity of instruments was assessed through expert judgment, construct validity through factor analysis, and criterion-related validation was employed through correlations between measures. Validation through Cronbach's Alpha, test-retest protocols, and analyses for inter-rater reliability ensured reliability. Revision to items followed the pilot test among 15 participants. Data collected were processed in SPSS to describe sample and patterns for tool utilization through descriptive statistical measures (means, standard deviations, frequencies). Inferential analyses of Pearson's correlation and regression were used to identify the relationships and predictive value of digital HR usage for outcomes in recruitment. This research provides an official approach to digital HR innovations enhancing recruitment processes in emerging market contexts.

Keywords: Recruitment Efficiency, Private Sector Organizations, Quantitative Research, Stratified Sampling, Questionnaire Survey, SPSS Analysis

Introduction

The transformation of human resource management (HRM) has become a crucial a key element in addressing the changing nature of modern business (Milhem et al., 2024). In the

digital era, HRM innovation is becoming increasingly important in leading companies to greater efficiency and productivity (Poulose et al., 2024). HRM technology encompasses various technological solutions required to process human capital data, such as staffing or employee assessments. This technology can be used to automate HRM processes (Suwaji et al., 2024).

The importance of HRM technologies is crucial in terms of improving organizational performance and productivity. Many research initiatives have highlighted this important aspect. One study has investigated how HRM departments strategize, recruit and select employees to acquire quality talent, indicating that strategic HRM could significantly contribute to driving organizational development (Arfin, 2022). Furthermore, related analysis focuses on human resource management (HRM) in driving organizational development (Wahyuni et al., 2022).

Strategic engagement of HRM helps organizations achieve their goals. Moreover, the role of HRM has gained strategic importance in helping organizations achieve their goals (Wang et al., 2021). In this present time of digitalization, the concept of digital transformation has become a focal point across various industries, including HRM. Digital transformation involves leveraging digital technologies to modernize traditional business processes and enhance efficiency and effectiveness. According to Khlutkova (2022), organizations can utilize tools like advanced analytics and new integrated systems to optimize their HR management. In addition, electronic unlocks unprecedented opportunities for innovation and the development of novel business models. For instance, advanced tracking systems are being used to support supply chain visibility (Wang et al., 2021). Digitalization also helps companies build global connections with internal and external stakeholders, resulting in a more connected business environment (Kalininskaya, 2024).

The workplace and human resource management have seen several changes as a result of digital technologies. Many hiring, training, and performance review procedures may now be completed more rapidly and accurately online because of the swift development of online applications and systems. Evidence-based decision-making, made possible by big data and data analysis, may raise worker welfare and productivity. Türk (2023). Numerous strategic and operational dimensions of HR management are being significantly impacted by digital transformation. The effectiveness of the applicant selection process is increased by technologies like automated recruiting tools and HR information systems. Employees may now obtain training thanks to digital learning systems, which promote a culture of lifelong learning. Digital communication tools enhance employee engagement, foster collaboration, and support remote work. These advancements lead to improved decision-making, more efficient operations, and increased job satisfaction (Poulose et al., 2024).

As digital technology becomes more common in human resources and hiring, identifying its use in different areas is important. Private businesses in Sulaymaniyah face growing competition to find talented workers. Therefore, knowing how digital HR tools enhance hiring processes is crucial. While other regions have advanced, there's little local research on these tools' use in businesses. The research will help us understand how digital HR tools simplify hiring, boost hiring success, and aid strategic HR management in Sulaymaniyah. These

insights will benefit those aiming to modernize HR functions and remain competitive in the digital age

Literature Review

Digital HR tools relate to an entire range of technology-facilitated applications and platforms for managing various HR activities more effectively and efficiently. They cover cloud HR systems, recruitment software, performance management platforms, employee engagement tools, as well as people analytics applications. Digitalization of HR has attracted significant prominence over the last period of years due to the advancement of information technology, leading to the organizations' capability to automate back-end functions, track the performance of employees in real-time, as well as make smarter choices supported by data-driven metrics. Cloud HR systems provide HR professionals with the facility to automate activities like payroll management, performance appraisal, recruitment, as well as talent management (Bondarouk & Ruel, 2009; Marler & Fisher, 2013).

The coming-of-age of SMAC technologies (cloud, mobile, analytics, and social) has once again revolutionized the HR function. The technologies have made it possible for organizations to better communicate, automate procedures, and apply analytics to make HR decisions (Shofiana et al., 2025). As data has only continued to accumulate, people analytics has been useful, and HR units have been able to rely on data to make better recruitment, employee turnover, and overall workforce planning (Angrave et al., 2016).

A range of significant theories and models can be applied to studying the dynamics of technological HR tools and organizational cultures. The Technology Acceptance Model (TAM) by Davis (1989) is used for studying the adoption of technology by organizations. The model is of great use in studying technological HR tools because it can be applied to understanding why employees or even HR people resist or adopt new technologies.

The Socio-Technical Systems Theory (STST) theory by Trist & Bamforth (1951) is another theory that can be applied. The theory posits that the success of an organization lies in balancing both the people-oriented (social) and technology-oriented (technical) systems. Applied to the context of digital HR solutions, the theory emphasizes that there needs to be harmony between the technology elements (HR software, cloud infrastructure) and people elements (collaboration, employee engagement, employee development).

Previous studies have analyzed the confluence between digital HR tools and the cultures of organizations. Digital tools have the potential to reshape HR through improved operating efficiency, enhanced decisions, as well as enhanced leveraging of human assets, according to Marler and Fisher (2013). The effects of digital tools on the cultures of organizations are more multifaceted. Some studies illustrate that it is possible to strengthen the cultures of organizations with the help of digital tools through enhanced collaboration, transparency, as well as more adaptive workplace spaces (Cappelli, 2019). Other evidence, on the other hand, indicates that technological change can undermine prevailing cultures, especially where the workers are not appropriately equipped or where the tools are poorly embedded into existing workplace practices (Kotter, 1996).

Specifically, people analytics applications have been revealed to have a significant influence on HR practice and company culture. Angrave et al. (2016) argue that organizations make data-driven choices that drive recruitment, employee engagement, as well as performance through the use of people analytics. They point to the risk of data overuse to the detriment of social as well as cultural determinants of employee behavior and motivation

Establishing a recruiting procedure focused on abilities is a crucial requirement for businesses to maintain their competitiveness. The effectiveness of the recruiting process has a significant impact on the whole staffing process, beginning for both occupations and organizations (Armstrong, 2011). Since hiring new employees is crucial to acquiring highly skilled human capital, this problem has received more attention in recent years (Breaugh and Starke, 2000), as seen by the volume of published research and the range of subjects covered.

According to Saks (2005), early research projects looked at things like the function of realistic job previews, conventional sources, and techniques for hiring, or the traits and actions of recruiters. To deepen the comprehension of the complexities involved in the recruitment process, recent studies have explored additional critical elements, such as post-hiring outcomes and timing of recruitment (Breaugh, 2008). However, many problems remain unanswered, and it is challenging to make any conclusions due to numerous methodological flaws.

The process of finding and luring a pool of individuals with the qualities and abilities needed for open positions and organizational requirements is referred to as recruiting. This group's presence will make it possible to choose the candidates who best fit the requirements. Recruitment efficiency refers to the effectiveness and timeliness of the recruitment process in attracting, selecting, and onboarding qualified candidates while optimizing organizational resources. Following prior studies in human resource management, recruitment efficiency is measured through four key dimensions i) Time-to-Fill: The average duration from job posting to candidate acceptance. Shorter durations indicate higher efficiency, ii) Cost-per-hire: The total cost incurred in recruiting a candidate, including advertising, recruiter fees, and administrative expenses. Lower costs reflect higher efficiency, iii) Quality of hire: The performance, retention, and fit of newly hired employees, assessed through performance ratings, turnover within the first year, and supervisor evaluations and iv) Candidate experience and satisfaction: The perceived quality of the recruitment process from the candidate's perspective, measured through surveys and feedback forms. Positive experiences suggest an efficient and well-managed recruitment process (Tasheva, 2024).

The hiring process is a two-way match: businesses must find and hire candidates who have the necessary qualifications, while candidates seek to catch the interest of their ideal employers (Baroukh and Kleiner, 2002). A successful hiring process depends heavily on the labor pools' attributes, including size, qualifications, expectations of candidates, and incentives for work. According to a study of 621 recent college graduates in the United States, the desire to work for the government was predicted by viewing the government as a kind of civil service (Doverspike et al., 2011). People who valued job stability higher were more likely to wish to work for the public sector, according to Lewis and Frank's (2002) examination of General Social Survey data from the US between 1989 and 1998. Additionally, those who are more inclined to be helpful and supportive of others, as well as members of marginalized

groups like women, minorities, or veterans, expressed a greater interest in positions in the government. The authors come to the conclusion that with every generation, the pool of possible applicants for positions in the public sector is getting smaller.

The quantity and level of experience of recruiters are another element that significantly affects how well the hiring process goes. The human resources department, especially in large firms, is in charge of implementing the recruiting strategies, while managers at various levels are in charge of lesser ones. Research conducted 22 multinational subsidiaries in Romania, which showed that HR departments are significantly understaffed relative to overall workforce size. According to Kerekes et al. (2012), one HR professional typically serves 105 workers. This presents a higher number than the average of 64 workers per HR staff member observed in a sample of 286 multinational corporations from 11 CEE countries (Poor, 2012). In addition, compromising few HR-focused staff, public companies are frequently criticized for their rigidity, tardiness, and inability to draw in skilled workers.

Maintaining a continuous and systematic hiring process, even when there are no immediate vacancies, is essential for organizations to stay connected to the industry and build a connection with potential candidates. A lack of effective human resource planning, which fails to anticipate workforce needs early, often results in reactive recruitment efforts that only intensify when positions become vacant. For organizations aiming to achieve high performance, proactive and strategic workforce planning is crucial. The relationship between the use of digital HR tools in improving recruitment efficiency of its impact on the independent variable (digital HR tools) on dependent variables (Recruitment efficiency) is shown in the theoretical framework below (Figure 1).

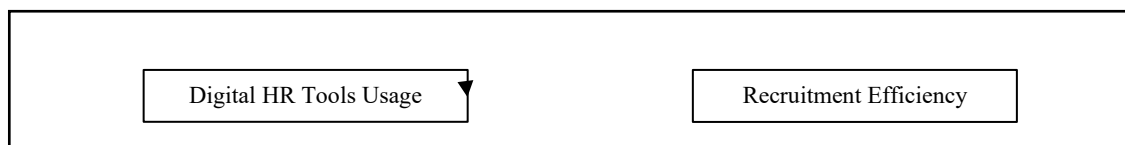


Figure 1: Conceptual Framework of the Study

Methodology

A quantitative research approach was employed to investigate the relationship between digital human resource (HR) tools usage and recruitment efficiency in the private sector of Sulaymaniyah. The researcher chose a structured survey as the main way to collect data because it would let them get standardized information that was directly related to the research goals. The study utilized a cross-sectional methodology to gather participants' perceptions and experiences at a specific moment, thereby ensuring uniformity among respondents and reducing temporal fluctuations that could obscure the assessment of digital tool impact.

The target population consisted of HR professionals and employees in Sulaymaniyah who are either directly engaged in recruitment processes or affected by its outcomes. To obtain a representative sample, a stratified sampling method was utilized, selecting participants from four primary sectors: technology, healthcare, retail, and education. A total of 100 people filled out the survey. This method ensured that all levels of the private sector were well represented while also maximizing the diversity of viewpoints.

The research instrument comprised a structured questionnaire segmented into three sections: (1) demographic data (age, gender, job title, and years of HR/recruitment experience); (2) the usage of digital HR tools (types of tools employed, frequency of use, and perceived ease of use); and (3) the perceived impact on recruitment efficiency (speed, cost reduction, quality of hires, and overall satisfaction). Expert review ensured content validity, exploratory factor analysis confirmed construct validity, and criterion-related validity was established by correlating survey responses with established benchmarks. Reliability was evaluated through three methods: internal consistency (Cronbach's $\alpha > .70$ for each section), test-retest stability over a two-week period, and inter-rater agreement (Cohen's κ for dual-rated items).

Data collection was conducted via electronic (email with survey link) and paper-based questionnaires, organized in collaboration with HR departments to enhance accessibility and promote participation. Participants were notified of this study's purpose, assured of confidentiality, and provided their informed consent. A small pilot study ($n = 15$) took place before the full rollout. During this time, the clarity of the items and the length of the survey were tested. Items that didn't do well were changed or taken out before the main study started.

Data analysis was conducted using SPSS, employing descriptive statistics such as means, standard deviations, frequencies, and percentages. As well as characterized the sample and encapsulated the patterns of digital tool utilization. Pearson's correlation coefficients were used to look at the links between digital tool usage and recruitment efficiency metrics. Multiple regression analyses were used to find out what factors affect recruitment outcomes. All hypotheses were evaluated at $\alpha = .05$, and the five-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree," enabled the quantification of attitudes and perceptions. This combination of thorough instrument validation, systematic sampling, and in-depth statistical analysis is what makes the study's methods strong.

Results

The descriptive statistics as in Table 1 show data from 100 respondents. The gender distribution (mean = 1.58) shows a slightly higher number of male respondents than women. The mean age category is approximately 2.49, placing the majority of respondents in the 25-34 age group. Industry and occupation variables show modest variation in the sample, with mean values approximately at the midpoint of coded categories. With regard to whether digital tools are or are not being used, a mean score of 1.47 (1 = Yes, 2 = No) implies nearly half of respondent companies utilize digital tools. Looking at the variable for total experience, one finds most respondents have between 1-3 years of experience.

Table 1

Frequency descriptive test for demographic distribution

Variable	Mean	Median	Standard Deviation
Gender (1=Male, 2=Female)	1.58	2.00	0.496
Age (1=Under 25, 4=45+)	2.49	2.00	1.03
Industry (Categorical, 1-5)	3.00	3.00	1.42
Position (Categorical, 1-6)	2.70	3.00	1.30
Use of Digital HR Tools in Hiring (1=Yes, 2=No)	1.47	1.00	0.502

Accordingly, Table 2 shows that independent samples t-test yielded a significant difference in recruitment efficiency between digital HR tool users and non-users, $t(98) = 41.4$, $p < 0.001$. It shows that digital HR tool users have higher levels of recruitment efficiency than non-users. Broadly, it suggests a strong and statistically significant effect, pointing towards the positive effects on recruitment performance from digital HR tools usage in the sample.

Table 2

Group comparisons on recruitment efficiency by digital tool use (t-tests)

Variable	Group	N	Mean	Median	SD	SE
Recruitment Efficiency_Avg.	1 (Digital Tool Users)	53	4.62	4.80	0.339	0.047
	2 (Non-users)	47	2.50	2.40	0.101	0.015

Consequently, the correlation analysis presented in Table 3 demonstrates a strong and statistically significant association between the use of digital HR tools and recruitment efficiency ($r = -0.973$, $p < .001$). Although the coefficient is negative, this pattern is a direct result of the reverse coding used for the digital HR tool variable, where a lower value indicates usage (1 = Yes) and a higher value indicates non-usage (2 = No). When interpreted substantively, the finding clearly indicates that digital HR tools usage achieves higher levels of recruitment efficiency than those that do not. This finding is consistent with the extensive body of literature that states that digitalization increases the speed, accuracy, and effectiveness of recruitment processes. The relationship strength indicates that digital tools are not only auxiliary but the most important ones in changing the recruitment processes. Their application can enable HR teams to optimize candidate screening, minimize administrative efforts, and enhance response times, all which can benefit the hiring processes of the company by making them more efficient. The result also supports the strategic importance of HR digitalization in the private sector of Sulaymaniyah. In a rapidly competitive labour market, the capability to make decisions quicker and more data-driven through the use of technology adds a definite operations edge to the organizations. In general, the findings confirm the hypothesis that the incorporation of digital HR tools has a beneficial effect on the organizational performance in terms of improved recruitment.

Table 3

Pearson Correlation Between Use of Digital HR Tools and Recruitment Efficiency

Variables	Pearson's r	df	p- value
Use of Digital HR Tools & Recruitment Efficiency	-0.973	98	< .001

In conclusion, the nature of the relationship depicts the implementation of digital HR tools usage as being highly correlated with enhanced recruitment performance in Sulaymaniyah's private sector. The finding confirms the prominent role digital HR tools usage take in streamlining hiring processes as well as validates the assumption digital HR tools make a positive contribution towards organizational performance.

Discussion and Recommendation

The findings of this study demonstrate a clear positive relationship between digital HR tools and recruitment efficiency in Sulaymaniyah's private sector. Organizations that use digital HR systems reported significantly better performance in hiring speed, cost management, and candidate quality. These results highlight that digitalization is not merely a procedural improvement but a strategic enabler, allowing HR professionals to shift focus from administrative tasks to strategic workforce planning, consistent with prior research (Marler & Fisher, 2013; Suwaji et al., 2024).

The observed strong association between digital HR usage and recruitment efficiency also aligns with the Technology Acceptance Model (TAM). Companies that embraced technologies such as applicant tracking systems (ATS), AI-driven screening tools, and digital onboarding platforms achieved measurable advantages over manual processes, confirming that perceived ease of use and usefulness directly affect adoption and outcomes (Davis, 1989; Manuti & de Palma, 2022; Cappelli, 2019). These findings suggest that organizations that strategically integrate digital HR tools can gain a sustainable operational edge in talent acquisition.

Interestingly, the study found no significant differences between users and non-users regarding concerns such as system interruptions, resistance to change, or data security issues. This neutrality implies that operational challenges of digital HR usage are not unique to early users but are experienced across organizations, reflecting broader organizational readiness and cultural factors, as Kotter (1996) emphasizes. This insight underscores that successful digital transformation depends as much on organizational culture, infrastructure, and change management as on technology itself.

The reliability of the constructs, as evidenced by Cronbach's Alpha values (technological tools $\alpha = .722$; recruitment effectiveness $\alpha = .793$; issues $\alpha = .823$), ensures that the measures used accurately reflect organizational realities, reinforcing confidence in the findings (Nunnally & Bernstein, 1994).

From a theoretical perspective, the results support Resource-Based View (RBV) and Human Capital Theory, indicating that digital recruitment capabilities constitute strategic assets that can enhance competitive advantage (Barney, 1991). Companies leveraging these

tools are better positioned to attract, retain, and develop talent, thereby strengthening organizational adaptability and growth. This is consistent with evidence from technologically advanced European contexts, where digital HR usage has been linked to higher HR performance and productivity (Universidad de Navarra, 2024).

Demographically, the majority of participants were aged 25–34, a cohort typically more digitally literate. This likely contributed to the high levels of acceptance and satisfaction with digital HR systems, illustrating the role of workforce characteristics in technology usage. Yet, the limited variation in responses regarding challenges may suggest either lower digital maturity or organizational cultures not fully leveraging digital HR capabilities, echoing findings in Angrave et al. (2016).

Overall, this study bridges a critical knowledge gap in regional HR scholarship, demonstrating that even in an emerging labor market like Sulaymaniyah, digital HR usage delivers tangible benefits. It contributes to global HRM theory by providing empirical support for TAM and socio-technical system theories (STST) in a non-Western context, thereby enhancing the generalizability of these frameworks across diverse cultural and economic settings (Trist & Bamforth, 1951).

Interestingly enough, though efficiency is enhanced, descriptive analysis between tool users and non-users on recruitment matters (DV7 to DV11) indicates no statistical difference in perceived concerns such as system interruption, change resistance, or issues of data security. This neutrality suggests that operational concerns are relatively consistent regardless of digital usage. This is an affirmation of the findings of Khlutkova (2022) that while digital transformation is for the good, its downsides, particularly on change management and infrastructure capacity, cross both adopters and non-adopters. It also validates Kotter's (1996) assumption that digital success depends not only on technology but also on organizational culture and readiness.

The internal reliability reported through Cronbach's Alpha on every construct—use of technological tools ($\alpha = .722$), recruitment effectiveness ($\alpha = .793$), and issues ($\alpha = .823$) verifies the measures' reliability. This has adhered to methodological requirements (Nunnally & Bernstein, 1994) and ensures that the measures accurately reflect true organizational realities.

In demographic terms, the analysis identified the majority of participants as being between 25 and 34 years of age, a cohort more technologically savvy and responsive to digital technologies, potentially explaining the high levels of satisfaction with digital HR systems. However, the limited diversity of responses to challenge-related questions might show either overall low digital maturity or a lack of organizational culture among respondents that has still not pushed digital capabilities to the limit a refrain in research by Angrave et al. (2016).

This study examined the contribution of the usage of digital HR tools to private sector recruitment effectiveness in Sulaymaniyah. The findings provide categorical evidence of a positive effect of digital HR tools usage on recruitment performance metrics like cost and time-to-hire and overall effectiveness. The users of digital HR tools also demonstrated

statistically superior recruitment effectiveness than the non-users, as the theoretical prescriptions stated.

The high and negative correlation between tool usage and recruitment inefficiency attests to how e-tools ease recruitment and enable HR departments to be strategic. The fact that there was no difference between adopters and non-adopters in perceived challenges suggests that part of the operational challenges is universal to any company regardless of the level of a firm's digital maturity i.e., technical issues, resistance, or security.

This indicates that digital transformation enhances performance without eradicating implementation challenges with respect to culture and structure. The results do however confirm that digital HR systems remain a prime catalyst of HR modernization and strategic recruitment, specifically in new labor markets like Sulaymaniyah.

Sulaymaniyah's private companies must adopt digital recruitment tools like applicant tracking systems, AI-driven screening, and e-onboarding in order to boost hire quality and stay competitive. They must also invest in technical training for HR staff to enable smooth technology usage and counter resistance. To address frequent issues about security, customization, and cost, organizations must work with HR tech vendors and update in-house policies. Finally, beyond mere automation, businesses must leverage recruitment analytics tracking metrics such as time-to-hire and quality-of-hire in order to enable predictive hiring and align talent decisions with business outcomes.

Conclusion

For overall, this study examined the contribution of the usage of digital HR tools to private sector recruitment effectiveness in Sulaymaniyah. The findings provide categorical evidence of a positive effect of digital HR tools usage on recruitment performance metrics like cost and time-to-hire and overall effectiveness. The users of digital HR tools also demonstrated statistically superior recruitment effectiveness than the non-users, as the theoretical prescriptions in accordance with TAM and RBV would logically dictate. The highly degrading correlation between tool usage and recruitment inefficiency attests to how e-tools ease recruitment and enable HR departments to be strategic. The fact that there was no difference between adopters and non-adopters in perceived challenges suggests that part of the operational challenges is universal to any company regardless of the level of a firm's digital maturity i.e., technical issues, resistance, or security. This indicates that digital transformation enhances performance without eradicating implementation challenges with respect to culture and structure. The results do however confirm that digital HR systems remain a prime catalyst of HR modernization and strategic recruitment, specifically in new labor markets like Sulaymaniyah.

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