



# Use of Artificial Intelligence (AI) in Recruitment and Selection

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**Abstract.** The purpose of this paper is to examine the use of artificial intelligence (AI) in recruitment & selection. Multiple case studies of AI tools used for recruitment and selection have been used. Organizations can increase recruiting and selection efficiency and have access to a wider candidate pool by implementing AI in HRM. Subjective factors like nepotism and favouritism are less likely to be used in the hiring and selection of personnel as a result of the implementation of AI in HRM. The implementation of AI in HRM may also have a favourable effect on employee growth, retention, and effective use of time. AI is a developing field of study. With real-world experience, most HRM apps have not accumulated enough machine learning capabilities. Some of these are not supported by science. As a result, only a small part of the population is now impacted by AI in HRM. The research investigates how AI can broaden the pool of candidates. It also improves our knowledge of how AI-based HRM tools might lessen biases in candidate selection, which is very crucial. It also explores a number of ways in which AI aids in the training, retention, and efficient use of workers.

**Keywords:** AI · Augmented intelligence · Autonomous AI · Chatbots

## 1 Introduction

Management and organizational methods are likely to change as a result of artificial intelligence (AI), which has the potential to transform society. AI is revolutionizing management approaches and changing how organizations make decisions. The tangible effects of AI are seen in customer outcomes like perceptions of service quality and customer happiness, core competencies and business operations like knowledge management. Such effects have been noted in emerging economies as well as industrialized ones [1]. Now that we've gotten that out of the way, this study will focus on AI's potential as an HRM tool. AI implementations in HRM-related problems like recruiting and selection are becoming more common.

The structure of the article is as follows. We start by reviewing the existing research. Then we discuss about the procedures. The potential for AI to alter HRM practices is then examined, and various proposals are developed. A section on discussion and consequences follows it. Conclusions are provided in the concluding part.

## 2 Literature Review

Prior studies have revealed that the interests of stakeholders, including owners, management, employees, governments, and trade unions, as well as situation-related factors, shape HRM policy [2]. Laws and societal norms, labour market conditions, worker characteristics, corporate strategies, and management philosophies are examples of situational influences [3]. In addition, there are economic, governance-related, and legal system factors [4].

Due to these numerous difficulties, these nations' progress would be greatly aided by efficient HRM [5]. It should come as no surprise that HRM systems are under changing pressure. For instance, HRM policies are closely related to social traditions in economies like India [6] and the Gulf States [7]. On the other side, they are under pressure to implement cutting-edge HRM procedures.

According to earlier studies, contact centers in the technology industry are particularly under pressure to adopt current HRM methods [8]. This can be attributable to a number of things, including work stress, a lack of advancement opportunities, working hours, and work-life balance. High employee turnover rates are a result of the repetitive and dull nature of the tasks [9, 10]. The intricacy of call centers necessitates a variety of abilities. They must find and keep workers who have the skills necessary to meet their particular needs. This emphasizes how crucial efficient HR procedures are.

## 3 Methodology

We have identified theoretical gaps and links with related literatures, as indicated by [11]. We have outlined our study questions in detail. The theoretical and practical value of research on AI's application to HRM is well established.

## 4 Selection of Cases

A multiple case study design requires that the cases represent the population and that the dimensions of theoretical interest vary [12]. But what sets apart a multiple case study is a substantive rather than statistical base [13]. Additionally, significant in the case selection process are logistical and economic factors [14]. Due to these limitations, we have only chosen instances of AI-based HRM applications for which secondary resources may provide adequate information. One of the many accepted data sources for case studies is archival data [12]. As a result, this study used secondary and archival data sources. We chose ten situations based on [15] suggestion.

Companies employing AI in HRM from different countries like Chile, China, Indonesia, Malaysia, Mexico, Peru, South Africa, the Philippines, and Vietnam are featured in the instances. Extreme technique and diversified method are two ways that we have merged [16]. Extreme case methodology served as the foundation for our process as it developed over time to accommodate new requirements and suggestions. When adopting the extreme case method, cases are chosen that have extremely high values for either the independent ( $X$  = traits of AI app developers or companies using AI) or dependent ( $Y$  = effective application of AI in HRM) variables [16]. The cases are extreme in the

sense that they are some of the early AI apps in HRM when it comes to the usage of AI in HRM (Y).

The businesses that have implemented AI applications in HRM might be viewed as role models. Best practices models and exemplary businesses have been identified as potential case study subjects by earlier scholars [15]. Other case selection techniques can be followed if researchers have knowledge of other elements that influence Y (outcome of interest = effective AI application in HRM) [16]. To choose certain examples, we employ a variety of case methods. The cases we've chosen include a wide range of app creation scenarios, such as specially designed AI applications for internal usage versus prepackaged AI products for retail sales.

Finally, it should be recognised that artificial intelligence is a developing technology. The majority of HRM apps lack a solid scientific foundation because they lack sufficient machine learning (ML) skills from real-world experience [17]. Thus, a lot of the apps might be seen as more of a "trial run". It has been stated that enterprises' adoption of AI in HRM is at a low readiness level. For instance, a survey by Deloitte in 2019 of 10,000 firms in 119 countries found that 22% of respondents were utilising AI in their organizations and 81% expected the use of AI to increase. Only 6% were "extremely ready" to confront the effects of AI on their workforces, though [18].

It's also important to note that, in comparison to other fields like emotion identification, Natural Language Processing (NLP) has improved its machine learning (ML) capabilities more over time [19]. Most of the apps examined in this study use NLP. These apps, however, are unable to adequately capture the huge and varied GS community. This is primarily due to the fact that ML algorithms for NLP were created for the English language, which is spoken by a relatively tiny percentage of users in these countries. For instance, just 10% of Indians are fluent in English [20]. A significant language family that is spoken in South Asian nations is the Indo-Aryan or Indic languages. Of the 409 million Internet users in India in 2016, 60% spoke an Indian language.

KPMG estimates that 93% of India's 326 million new Internet users will utilise local languages exclusively [21]. Likewise, 2,000 languages are spoken every day in Africa [22]. As a result, only a small part of the GS population is now impacted by AI in HRM.

## 5 Data Sources and Characteristics

Data sources and features Different aspects of data quality have been found. We examined the internal consistency of the data. As recommended by earlier scholars, we assessed various data points for the same time period. To verify internal consistency, the same data items have also been examined at various times. For instance, we examined the number of employees at Supahands for the beginning of 2017 (200), the middle of 2019 (over 3,000) [23], and the month of November 2019 (more than 5,000). Both the data's content and the source's credibility and reputation are crucial.

We used information from reliable third parties as well as from the websites of the organizations selected for the investigation to accomplish these goals.

The data's correctness and timeliness are equally important. We kept up with the most recent news stories pertaining to the instances we chose in order to make sure the age of the data was adequate. We also looked at the websites of the pertinent businesses

**Table 1.** Benefits of AI in HRM systems

“We have secured 2600 jobs for young people since our inception in 2011” [24]
“Candidates used to have a 15% drop off rate but with Jim it’s 3%” [25]
“We enable recruiters to easily receive valuable input by listening to candidates via recorded audio, video or via a live conversation. It provides a more accurate, human and emotional connection with the applicant.” [26]
“We asked ourselves how we could reduce recruiting time from 30 days to 3, with two hours [human time per candidate] instead of 20” [27]
“It [Deayea] has significantly reduced the number of mistakes made by our workers” [28]
“Our technology also helps us match the right job with the right agent. We have historical data on all our agents, so we know who is good at doing which particular type of work” [29]
“This [emotion recognition] technology is still a bit of a gimmick and is unlikely to be rolled out on a large scale in the next 3–5 years” [30]

to find the most recent data and information. We also kept track of developer and user interviews that were written up in newspapers and other publications. Table 1 provides some information opinions that are indicative of both the creators and consumers of AI-based HRM tools.

## 6 Findings and Conclusion

Prior studies have revealed that a variety of HRM inefficiencies may be related to organisational and institutional variables [31]. Thus, developing effective and efficient HRM policies and procedures is a crucial goal for MNCs operating. Specific scholars have proposed that rather than seeing it as inappropriate for modern HRM, the emerging economies may be more suited to some sorts of HRM practises [32]. Both in terms of output efficiency, such as the drop off rates during the application process, and in terms of input efficiency, such as the time and expenses associated with recruiting and selection, AI tools perform well.

Moreover, AI tools are economically effective. A new hiring typically costs a business \$3,900, and the process takes 27.5 days, according to Glassdoor [[www.glassdoor.co.uk/employers/blog/calculate-cost-per-hire/](http://www.glassdoor.co.uk/employers/blog/calculate-cost-per-hire/)]. Organizations can lower the cost of hiring by implementing AI in HRM. Talkpush costs a minimum of \$300 USD per month, which entitles users to 100 interviews at a cost of \$3 USD each. The price per interview is reduced to \$0.50 with high-volume packages. Deploying AI can thereby address the problems with cost-efficiency.

Organizations can decrease the time it takes to hire applicants by deploying AI in HRM. Organizations may often cut the time it takes to hire a candidate from 10 weeks to 2 weeks by automating the recruitment process. It is possible to shorten the selection process from two to three weeks to virtually immediately [33]. Talkpush leverages AI to make the hiring process faster, more conversational, and real-time. Every year, its conversational assistant Stanley processes over a million applicants. The procedure is

quickly transferred from a machine to a human using Talkpush's CRM. In addition to China and Macao, Talkpush had customers in Singapore, Malaysia, the Philippines, and Indonesia.

AI tools are effective at reducing defects as well. The ability to identify candidate fraud is a fundamental advantage of AI systems. The AIRA system, for instance, recognises a fake CV [27]. According to one estimate, 20% or more of the CVs submitted for jobs in the Indian IT sector are false [34].

Most growing economies lack a common identity like the U.S. social security number, which makes it challenging to examine the background of prospective employees and makes it harder to detect fraudulent practices. It can be challenging to uncover fraudulent operations in some nations [6]. A thorough background check can cost up to \$1000 per employee. Companies like Authbridge, ReZource, based in the US, and Supersoft Consultants send representatives to meet references provided by applicants. They investigate if the organisations that applicants claim to have worked for in the past actually exist. Even if fraudsters are detected in India, the punishment is not severe [35]. Thus, in developing countries, the ability of AI systems to detect frauds has a higher value addition.

AI tools have demonstrated a high level of production efficiency. For instance, Ajinga links recruiters, hiring managers, and prospects to improve hiring efficiency and application conversion rates. AI is the foundation of the Phenom Talent Experience Management platform. For candidates, recruiters, employees, and management, it attempts to boost personalization, automation, and accuracy. Phenom People and Ajing gather information from job boards and WeChat and put it into the applicant tracking system (ATS). Companies can set up a specific account on Ajinga to be used for branding and recruiting. Geolocational data is used by Ajinga.

Additionally anticipated is a high level of output efficiency from AI tools. This is crucial because, according to reports, the application process has an average drop-off rate of 80%. [36]. Users of Talkpush have the option of switching their interface from English to French, Spanish, Hebrew, Traditional Chinese, Mandarin Chinese, and more. Stanley, a chatbot for hiring, is accessible on Facebook Messenger and WeChat. Candidates are welcomed, given the option of selecting a job position, and subjected to work-specific questions. Recruiters can examine, assess, and process candidates by using the candidate data and responses. Text, audio, and/or video answers are available. Recruiters can communicate with candidates once their Stanley over WeChat interview is complete by using the Talkpush interface. WeChat can be used to conduct candidate interviews.

The use of resources is more effective with AI tools. For instance, humans can only take part when they are truly significant. A system developed by the Chilean business Artificial Intelligence Recruitment Assistant (AIRA) posts job openings on employment websites. It employs psychometric exams and reads and rates the resumes. Additionally, candidates are interviewed by video. Using indicators from emotion analytics, an applicant's performance is evaluated. The conversion of variables into numbers includes things like attention spans and facial emotions. The highest-ranked prospects are then interviewed in-depth by human recruiters following the conclusion of all these procedures [37].

A chatbot named Jim has been created by Singapore-based international bank DBS, which conducts business in numerous developing nations in Asia and the Middle East (Job Intelligence Maestro). Jim examines resumes, poses screening queries, gathers data on respondents' responses, and administers psychometric tests. It also provides basic information on issues like hiring timelines and professional advancement. Jim evaluates a candidate in eight minutes as opposed to the approximately 30-min time required by human-led systems. DBS made job offers to about one-third of the applicants who passed Jim's vetting, against only one-seventh under the old human-led system [38].

Young recruiters for Harambee, known as "feet on the streets," travel to underdeveloped townships and villages to make links with unemployed individuals. Some are invited to visit its headquarters to gauge their skills, interests, and analytical ability. Harambee enables them to build email accounts, CVs, and interview processes. It offers suggestions and details on how to get ready for the interviews, including what to wear and the kinds of questions that might be asked. Additionally, complimentary clothing is provided to candidates for the interview. Additionally, it offers work preparedness initiatives that address the concerns that employers have noted. Additionally, promising applicants can receive extra evaluation and career training at call centers or other similar facilities.

More than 7 million young people in South Africa who are unemployed will now be served by Harambee. Rwanda has been added to the expansion. Harambee has solid relationships with businesses. It begins by studying the talents that employers demand. The next step is to find people who are most likely to fit the position.

The business partners of Harambee advise us of the number of applicants they require and the anticipated hiring date. This method expands their pool of potential candidates by taking into account previously unconsidered demographics.

Harambee has lowered the financial obstacles that prevent firms from hiring unemployed kids. These disadvantaged demographic groups can now take advantage of opportunities that were previously not only unavailable but also unimaginable.

## 7 Concluding Remarks

We have established ideas that may act as a framework for future study on the application of AI in HRM in the setting of growing economies. AI-based HRM technologies are effective in achieving a variety of goals, including lowering expenses, hiring times, and resource usage. AI can be used to expand the amount and variety of criteria utilized in hiring. AI is likely to become a significant influence in the pursuit of HRM objectives including luring top talent, enhancing employee retention, and fostering leadership potential.

Due to formal (such as a high level of corruption and a weak rule of law), informal (such as the prevalence of nepotism), and economic (such as poor record keeping procedures) aspects, AI-based HRM technologies have a higher value addition. Other sorts of abuse in AI may be made possible by the circumstances that support supervisory actions that demoralize workers. AI will also be a powerful tool in the battle against unethical practices including favoritism, cronyism, and nepotism.

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