

Research on the Application of Artificial Intelligence Technology in Corporate Recruitment

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Abstract: With the continuous advancement of artificial intelligence (AI) technology, an increasing number of enterprises have integrated it into the field of human resource management, presenting both new opportunities and challenges. AI technology can assist the human resources department in more efficiently processing and analyzing large amounts of data during the recruitment process, thereby optimizing recruitment procedures and enhancing the overall organizational efficiency and employee satisfaction. The aim of this study is to provide valuable guidance and reference for enterprises to effectively utilize AI technology in recruitment efforts. Initially, this article outlines the current application of AI technology in corporate human resource management. Subsequently, through specific cases, it conducts an in-depth analysis of the practical application of AI in the recruitment process. Finally, a comprehensive evaluation of the cost-effectiveness and applicability of AI technology in recruitment is presented.

Keywords: Artificial Intelligence, Corporate Recruitment, Human Resource Management, Applied Research.

1. Introduction

Artificial intelligence, abbreviated as AI, is a significant branch of computer science dedicated to researching and developing theories, methods, techniques, and application systems capable of simulating, extending, and expanding human intelligence. The core objective of this technology lies in endowing machines with human-like thinking and behavioral abilities, encompassing various aspects such as learning, reasoning, knowledge representation, planning, perception, and natural language understanding.

From a broader perspective, artificial intelligence is a technical means of exhibiting human intelligence through ordinary computer programs [1]. This intelligence manifests in diverse forms, including understanding complex concepts, performing advanced reasoning, acquiring new knowledge, solving thorny problems, achieving self-improvement and optimization, and even demonstrating creative and emotional understanding abilities in certain situations. The implementation of AI relies on massive data and algorithmic support. As an essential branch of AI, machine learning enables machines to learn from large amounts of data and continuously improve their performance through algorithms [2]. This learning process can be supervised, unsupervised, semi-supervised, or reinforced, depending on the type of problem and data being processed. Additionally, artificial intelligence involves multiple subdomains such as Natural Language Processing (NLP) and Computer Vision (CV). NLP technology allows machines to understand and generate human language, enabling natural communication with humans, while CV technology gives machines the ability to "see" and recognize information in images [3].

Currently, various industries are facing new opportunities and challenges, and significant progress has been made in AI development and research in many sectors [4]. With the continuous advancement of AI technology, companies have realized its broad applicability in production and management. In corporate recruitment, the application of artificial intelligence is triggering changes in traditional recruitment

models. By utilizing AI technology, companies can more efficiently screen resumes, evaluate candidates, predict employee performance, and optimize the recruitment process to improve recruitment quality [5]. Based on this, this article takes Company Z as an example to deeply explore how to effectively utilize artificial intelligence technology to improve the quality of human resource management.

2. Application of Artificial Intelligence Technology in Recruitment

Company Z, an internet company in China, is well-established for its cutting-edge technology and excellent products. In the field of human resources, Company Z has also demonstrated its innovative spirit by successfully applying artificial intelligence technology to the recruitment process, achieving a dual improvement in recruitment efficiency and quality. This article uses Company Z as an example to illustrate how the company applies artificial intelligence technology to its recruitment efforts.

2.1. Processes of Applying Artificial Intelligence Technology in Recruitment

As shown in Figure 1, Company Z's AI recruitment system covers the entire process from job posting to final hiring, mainly including four steps:

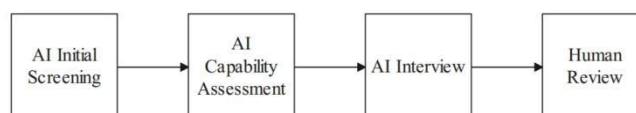


Figure 1. Flowchart of Company Z's Artificial Intelligence (AI) Recruitment Process

Initial AI Screening: Company Z utilizes AI technology to widely post job information on various social media and recruitment platforms, automatically collecting online resumes from applicants. Through a pre-set algorithm, the AI system can efficiently and accurately conduct an initial screening of the received resumes, quickly selecting

candidates who meet the job requirements, significantly saving the time and effort of the human resources department.

AI Ability Assessment: Candidates who pass the initial screening will proceed to the next round of ability assessment. Company Z innovatively adopts a series of online games to evaluate various abilities of candidates. These games, designed by professional game development companies, aim to comprehensively and objectively assess candidates' key abilities such as logical thinking, problem-solving, and team collaboration. Through this step, Company Z can more accurately identify talents with the required abilities.

AI Interview: After the ability assessment, outstanding candidates will be invited to participate in an AI interview. This step takes the form of a video interview where candidates need to answer a series of questions while being comprehensively evaluated by the AI system. The AI system can not only analyze candidates' language expression and body language but also evaluate key qualities such as communication skills and self-confidence. After the interview, the AI system will generate a detailed evaluation report, providing strong decision support for the recruitment team.

Manual Re-examination: The final round is the manual re-examination, which aims to evaluate candidates' performance and adaptability in the actual work environment. Candidates will be invited to Company Z's office to interact with employees and participate in simulations of actual work tasks. Through this step, Company Z can more intuitively understand the candidates' actual abilities and potentials, thereby making wiser hiring decisions.

2.2. Technical Analysis of the Application of Artificial Intelligence Technology in Recruitment

From the above case, we can understand that Company Z has widely applied AI technology in its recruitment process, which is undoubtedly leading in the industry. As a renowned internet company, when facing 500 job applications, Company Z needs to screen out the most suitable 20 candidates and send them offer letters. If the traditional recruitment model is used to complete this process, the complexity and challenge can be imagined. However, by taking the lead in introducing AI technology, Company Z not only uses AI for automated processing of daily recruitment affairs but also deeply integrates it into the entire recruitment process, successfully simplifying this tedious task and achieving scientific and precise selection. This initiative has greatly shortened the recruitment cycle of new employees and saved a lot of resources for the company.

Upon closer observation of Company Z's recruitment process, we can discover two notable characteristics:

Firstly, Company Z utilizes AI technology to achieve precise job and talent matching. To accomplish this, the

company demands highly detailed job and candidate profiles, relying on a vast amount of resume data and evaluation results for simulation training. Currently, its AI matching model mainly consists of three parts: the first is artificial rules formulated based on expert opinions and business experience, primarily used to evaluate candidates' basic qualities; the second is an industry and talent knowledge graph constructed from resumes and other HR data, focusing on assessing candidates' professional skills; and the third is a machine learning model trained on long-term user behavior and evaluation data, which tends to interpret user behavior. This trifecta model enables Company Z to conduct a deep analysis of jobs and candidates from multiple dimensions, quickly identifying the most suitable talent.

Secondly, Company Z employs AI technology to provide a feedback mechanism throughout the recruitment process. For many applicants, submitting a resume often feels like throwing it into a black hole, receiving no response. However, at Company Z, the situation is vastly different. The company sends AI-generated feedback documents to each applicant, including their performance in game sessions, video interviews, job matching degree, reasons for mismatch, and career development suggestions. This approach not only allows applicants to timely understand their application status but also provides them with invaluable career guidance and advice. This thoughtful service not only enhances applicants' favorability towards Company Z but also further elevates the company's overall image.

2.3. Comparative Analysis of the Application of Artificial Intelligence Technology in Recruitment

The effectiveness of artificial intelligence technology in the recruitment field has become widely known, and its intelligent and efficient characteristics have brought unprecedented convenience to enterprises. However, when adopting new technologies, cost consideration is always a top priority. After all, the introduction of any technology requires considering the ratio of input to output. In the recruitment process, the main cost expenditure of enterprises is concentrated in two key links: talent attraction and selection. These two links are crucial to the success of recruitment. Currently, the application focus of AI technology is on the selection link. Through intelligent screening and evaluation, it has brought significant benefits to enterprises, not only improving the accuracy of selection but also saving time and labor costs.

2.3.1. Cost Comparison of AI Technology in Recruitment

Table 1 compares the costs of traditional recruitment methods with those using artificial intelligence at Company Z:

Table 1. Recruitment Cost Comparison Table

Traditional Recruitment				
Cost Items	Labour Costs	Time cost	Material Costs	Total Cost
Recruitment Team Salary	¥15,000/month (3*¥5000/person)	-	-	¥15,000/month
Interviewer's Time Cost	¥100/hour (10 hours/week)	¥4,000/month	-	¥4,000/month
Job Fair and Event Fees	-	-	¥10,000/quarter	¥40,000/year (¥3,333/month)
Interview Venue Rental and Equipment	-	-	¥2,000/month	¥2,000/month
Advertising and Promotion Expenses	-	-	¥5,000/month	¥5,000/month
Resume Processing and Mailing	-	¥2,000/month (manual processing time)	¥1,000/month	¥3,000/month
Traditional Recruitment Subtotal	¥15,000/month	¥6,000/month	¥11,333/month	¥32,333/month
AI Recruitment				
Investment and Maintenance of Ai System	¥4,000/month	-	-	¥4,000/month
Optimize Recruitment Team Compensation	¥10,000/month (2 people* ¥5,000/person)	-	-	¥10,000/month
Interviewer Time Cost (Reduction)	¥50/hour (5 hours/week)	¥2,000/month	-	¥2,000/month
Advertising Optimization Cost	-	-	¥3,000/month	¥3,000/month
Online Platform Usage Fee	-	-	¥1,000/month	¥1,000/month
AI Recruitment Subtotal	¥14,000/month	¥2,000/month	¥4,000/month	¥20,000/month

Cost Analysis:

1) Human Cost: The traditional recruitment team consists of 3 people with a total monthly salary of ¥15,000, while the artificial intelligence recruitment team has 2 people with a total monthly salary of ¥10,000.

2) Time Cost: Artificial intelligence recruitment reduces the time cost of interviewers.

3) Material Cost: Artificial intelligence recruitment reduces the need for physical venues, paper resumes, etc., through online platforms, thereby reducing material costs accordingly.

4) AI System Investment and Maintenance: With a monthly cost of ¥4,000, it significantly reduces the total cost of artificial intelligence recruitment.

Therefore, the total cost of artificial intelligence recruitment is significantly lower than that of traditional recruitment. While specific circumstances (such as recruitment scale, system selection, etc.) may vary in practical applications for enterprises, overall, artificial intelligence recruitment has clear advantages in cost-effectiveness.

2.3.2. Comparison of Time in Recruitment Using AI Technology

Table 2 shows the comparison of recruitment time between artificial intelligence recruitment adopted by Company Z and traditional recruitment methods used in the past:

Table 2. Comparison Table of Recruitment Time

RM	ARPT (min)	TRST (hrs)	IC	AIT (hrs/p)	TIT (hrs)	ETC (days)
Traditional Recruitment	5	42	50	1	50	14-21
AI Recruitment	1	8	25	0.5	12.5	7-10

Notes:

-RM: Recruitment method used (e.g., traditional or AI-based).

-ARPT (min): Average time taken to process each resume in minutes.

-TRST (hrs): Total time required for resume screening in hours.

-IC: Number of interviews conducted.

-AIT (hrs/p): Average time taken for each interview in hours

per person.

-TIT (hrs): Total time spent on all interviews in hours.

-ETC (days): Estimated total duration of the recruitment cycle in days.

(1) Traditional Recruitment:

1) Average resume processing time: Assuming it takes 5 minutes for recruiters to carefully review the content and details of each resume.

2) Total resume screening time: 500 resumes × 5 minutes/resume = 2500 minutes, which converts to 42 hours (assuming 8 hours of screening per workday, it would take approximately 5 working days).

3) Number of interviews: Approximately 50 candidates are selected from 500 resumes for interviews.

4) Average interview time: Assuming each interview takes 1 hour.

5) Total interview time: 50 candidates × 1 hour/candidate = 50 hours (multiple working days may be required to complete all interviews).

6) Estimated total recruitment cycle: The entire process, from posting the job to candidate onboarding, may take between 14 to 21 days, depending on the interview scheduling and onboarding preparation.

(2) AI Recruitment:

1) Average resume processing time: Utilizing AI tools for rapid screening, assuming it takes only 1 minute per resume.

2) Total resume screening time: 500 resumes × 1 minute/resume = 500 minutes, which converts to 8 hours (can be completed within 1 working day).

3) Number of interviews: After initial AI screening, approximately 25 candidates are selected for interviews (reduced number due to AI pre-screening).

4) Average interview time: Since AI has already conducted a preliminary evaluation, interviews can be more focused, assuming each interview takes 0.5 hours.

5) Total interview time: 25 candidates × 0.5 hour/candidate = 12.5 hours (may require 1 to 2 working days to complete all interviews).

6) Estimated total recruitment cycle: The entire recruitment process may be shortened to 7 to 10 days due to improved efficiency in resume screening and interviewing.

2.3.3. Efficiency Comparison of AI Technology in Recruitment

Table 3 compares the efficiency of traditional recruitment methods used in the past with the artificial intelligence recruitment adopted by Company Z:

Table 3. Recruitment Efficiency Comparison Table

Recruitment Efficiency Indicators	Traditional Recruitment	AI Recruitment
Resume Screening		
APT	5	1
TST	42 (≈5 working days)	8 (≈1 working day)
NSC	50	25
Interview Arrangement		
AAT	10	5
TAT	8 (≈1 working day)	2 (≈0.5 working day)
Interview and Evaluation		
MIT	1	0.5
TIT	50 (≈6-7 working days)	12.5 (≈2 working days)
EDT	10 (≈1.5 working days)	5 (≈1 working day)
Hiring Notification and Onboarding Preparation		
ANNT	1	0.5
TNNT	15 (≈2 working days)	7.5 (≈1 working day)
CPWT	2-4	2-4
TRC	16-25	8-13

Notes:

- APT: Average Processing Time per resume (minutes)
- TST: Total Screening Time (hours)
- NSC: Number of candidates after Screening
- AAT: Average Arrangement Time per candidate (minutes)
- TAT: Total Arrangement Time (hours)
- MIT: Mean Interview Time per candidate (hours)
- TIT: Total Interview Time (hours)
- EDT: Evaluation and Decision-making Time (hours)
- ANNT: Average Notification and Negotiation Time per candidate (hours)
- TNNT: Total Notification and Negotiation Time (hours)
- CPWT: Candidate Preparation Time for Work (weeks)
- TRC: Total Recruitment Cycle (days)

Analysis and explanation:

1) Resume screening: Traditional recruitment requires more time to manually process each resume, while AI recruitment can significantly reduce this time.

2) Interview scheduling: The AI system can automatically schedule interviews more quickly, reducing the time and cost of manual coordination.

3) Interview and evaluation: Due to the initial screening by AI, AI recruitment requires less interview time, and the evaluation and decision-making process is also faster.

4) Employment notice and onboarding preparation: AI recruitment can also save time in the notification and negotiation process, but the onboarding preparation time is the same for both, as it mainly depends on the candidate's personal situation and company processes.

From the above comparison, it can be seen that under the same conditions, AI recruitment can significantly improve

efficiency in all aspects, thereby shortening the overall recruitment cycle. This means that companies can fill job vacancies faster, reduce recruitment costs, and potentially benefit from new employees' work earlier.

3. Applicability Analysis of AI Technology in Recruitment

Regarding the application prospects of artificial intelligence (AI) technology in recruitment, we can delve deeper into three dimensions:

1) Advantages of AI Recruitment in Large and Medium-sized Enterprises: Firstly, AI recruitment technology is particularly suitable for larger enterprises. Considering that these enterprises usually receive a large number of job applications, the use of AI technology can efficiently screen out candidates who truly meet the job requirements, thereby significantly improving recruitment efficiency and effectiveness. In addition, larger enterprises often have more comprehensive recruitment processes and IT systems, as well as stronger financial and technological foundations, enabling them to better utilize advanced AI modules to optimize the recruitment process.

2) The Value of AI Recruitment in Junior Position Screening: Secondly, AI recruitment technology also demonstrates its unique advantages when dealing with "low-threshold, high-competition" positions. These positions typically have relatively low requirements for applicants but attract a large number of candidates. In such cases, AI technology can quickly screen a large number of applicants through simple algorithmic models, saving businesses considerable manpower and time costs. These positions mainly include low-threshold jobs such as sales and service personnel, as well as highly competitive positions for recent graduates or interns. However, AI technology may not be suitable for recruiting senior positions, as candidates for these roles often expect direct communication with the decision-making level of the enterprise.

3) The Role of AI Recruitment in Promoting the Digitization of Human Resources: Finally, it's worth mentioning that the application of AI recruitment technology places high demands on the digitization of human resources. With remote recruitment becoming increasingly common, the contactless recruitment process has become a trend. In this process, human resource workers need to digitize every step from resume screening to offering employment notifications. Only in this way can the entire recruitment process proceed smoothly and achieve true contactless recruitment. Digital human resource management not only improves work efficiency but also makes the recruitment process more flexible and efficient, aligning with the concept of modern office work.

4. Conclusion

With the rapid development and widespread application of artificial intelligence technology, the integration of human resource management and AI technology is becoming increasingly close. More and more enterprises are actively utilizing the power of AI to enhance the efficiency and quality of their human resources departments. The introduction of AI technology not only automates daily human resource tasks, significantly reducing the workload, but also provides rich data support and analysis, making human resource decisions more objective, scientific, and precise. This has notably

improved enterprises' abilities to attract, cultivate, and retain talent, injecting new vitality into their development. Although there are still some challenges and issues to address in practical applications, AI recruitment has become a recognized trend in the industry. With continuous technological innovation and improvement, AI recruitment is believed to bring more convenient, efficient, and personalized recruitment experiences to businesses and job seekers, pushing human resource management to new heights.

References

- [1] Jin Jiaqin. Digital Scholarship and Its Paradigm Change in the Era of AI 2.0 [J]. Library Journal, 2023, 42(391): 10.
- [2] Zheng Yonghe, Zhou Danhua, Zhang Yonghe, et al. ChatGPT from the Perspective of Computational Education: Connotation, Themes, Reflections, and Challenges [J]. Journal of East China Normal University (Educational Sciences Edition), 2023, 41(7): 91.
- [3] Zifan C, Haiyan Y. Evolution of Artificial Intelligence Generated Content (AIGC) and Its Application Scenarios in Library Smart Services [J]. Library Journal, 2023, 42(384): 34.
- [4] Ma Lecun, Zhan Xina, Zhu Qiyu, et al. Research on the Innovation and Development of GLAM's Digital and Intelligent Integration Driven by AIGC [J]. Journal of Agricultural Library and Information Science, 2023: 1-13.
- [5] Zhang Qi, Lin Jiayi, Chen Lu, et al. Human Resource Management Driven by Artificial Intelligence Technology: Theoretical Research and Practical Application [J]. Journal of University of Electronic Science and Technology of China (Social Sciences Edition), 2023, 25(1).