

SWOT ANALYSIS OF GENERATIVE ARTIFICIAL INTELLIGENCE IN RECRUITMENT

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Keywords:	Abstract
Generative Artificial Intelligence (GenAI), Large Language Models (LLMs), Recruitment, SWOT Analysis.	One of the most complicated and time-consuming tasks is to hire human resources due to less demand and more supply. As for every job opening, on average more than 1 applicant is unemployed and 100 applications are received. The life of human resources personnel has become more tedious in reviewing all resumes to find the correct match concerning job descriptions. Similarly searching for job openings suitable to their skill set, educational qualifications and experience is the major difficulty faced by the applicant. The growth of technological advancements like Generative Artificial Intelligence (GenAI) / Large Language models (LLMs) has completely transformed the recruitment process. This paper focuses on the Strengths, Weaknesses, Opportunities and Thread (SWOT) analysis of GenAI/LLMs in recruitment.

1. Introduction

Recruitment is the process of identifying and selecting the best candidate based on the job description of an organisation or company. It follows a set of procedures, from posting the job opening to onboarding the candidates. Traditionally, recruitment was done manually by advertising the job in the newspaper. Candidates sent their application through the post, and then the recruiter manually verified it to find the best match. It was time-consuming and labour-intensive due to the manual process. The advancement of technology has led to the use of computers and the Internet in the recruitment process. Software platforms like Naukri, indeed, LinkedIn etc. has increased the speed of recruitment just by posting jobs on these platforms; candidates can apply directly for as many jobs with no time. The recommendations for the job are made based on the keywords that match the previous job applied. Resume screening and skill extraction are done using Natural language processing to reduce the time and effort of the recruiter.

The rapid growth of technology from the Internet era to the Artificial Intelligence era has revolutionised even the recruitment domain. The use of machine learning and deep learning greatly improved the hiring process. With the advent of GenAI / LLMs like ChatGPT and Ollama, Gemini achieved human-level proficiency in Question Answering, Text Generation, Text Translation etc. It has a wide range of applications in finance, education and recruitment. Researchers are working on different use cases of LLMs in recruitment resume screening, skill extraction and assessment of person-job fit.

We first explored the history of recruitment from tradition to AI models. Section 2, discusses the review of Literature in the field of GenAI in recruitment. Section 3 focuses on the SWOT Analysis of LLMs in recruitment.

2. Literature Survey

In the global job market, applicants apply from various regions with different languages and formats. Hamit Kavas et.al., 2024 [4], proposed a “human-in-loop” Multilingual Curriculum Vitae (CV) matching using LLMs. To calculate applicants' relevancy scores based on job description and CV. It also Justifies the recruiter through a score report. If the CV is of low quality, it reduces the accuracy of the score report. Even LLM-generated CV suffers from fabrication problems. To overcome this problem Yingpeng Du et.al.,[5] proposed LLM-based recommendations by utilising explicit (skill, interest) and implicit features (behaviours) to increase the accuracy of generated meaningful CVs. The recruiter utilises the LLMs to generate Interview Questions based on the specific role of the job K. Navarra et.al., 2023[7].

Takashi Nakano et.al., 2024 [1], conducted an empirical study to analyse LLMs such as ChatGPT to automate the recruitment of software engineers across the globe by gathering profiles of 3,657 over 4 years from 2019 to 2023 with two counterfeit profiles with location swapping. The LLM selected a candidate from a specific country, reflecting an implicit bias. Donghyeok Lee et.al., 2024 [2] proposed strategies to reduce bias induced by LLMs. especially, Gender Bias in recruitment by generating high-quality synthetic data to train the model. To further enhance the fairness of the model various fairness metrics and methods were proposed by Dena F. Mujtaba et.al., 2024 [6].

Arushi Jain et.al., 2024 [3], proposed Smartflow- A Artificial Intelligence based Robotic Process Automation to cope with changing user interfaces for form filling, applying job applications etc. It analyses the visual element of the user interface and converts it to textural representation to generate responses and execute the task.

3. SWOT Analysis

The Strength, Weakness, Opportunity, and Strength (SWOT) analysis of the GenAI and LLMs for recruitment is listed below in Table 1.

Strength ● Knowledgebase [4] ● Personalized insights [3,5] ● Real-Time [3] ● Multilingual [1,4]	Weakness ● Hallucination [5] ● Ethical [10] ● Misinformation [2,5]
Opportunities ● Easy of work [3] ● Globalisation [1,4] ● Upskilling [8]	Threat ● Job Loss [8,9] ● Bias [2] ● Privacy [10]

Table 1: SWOT Analysis of GenAI and LLMs in Recruitment

3.1 Strength

- a. **Knowledgebase:** The large language models (LLMs) are trained on over a billion tokens from various domains across the Internet. LLMs can understand and process information accurately in a wide range of applications [4].

- b. **Personalized insights:** The Recruiter can fine-tune the LLMs according to the recruitment norms of the organisation. It provides a summary of the candidate by extracting the skill through screening the resume and doing analysis to find the best fit [3,5].
- c. **Real-time:** Time is crucial in the recruitment process. Once a job is posted, the recommendation should reach the candidate instantly without any delay. Resume modification based on the job description, resume screening, and skill extraction is done in real-time using LLMs [3].
- d. **Multilingual:** LLMs are trained in diverse languages and can understand, process and generate content in multiple languages. This feature has accelerated the recruitment process, paving the wave for globalisation by operating under different regions and languages [1,4].

3.2 Challenges

- a. **Hallucination:** The LLMs are trained on a very large Multilanguage, multidomain dataset. It intends to generate context irrelevant or inconsistent or fabricated responses. This leads to misleading recommendations for candidates and poor hiring decisions by the recruiter. To overcome this, the model has to be trained on high-quality domain-specific datasets and includes rigorous validation mechanisms [5].
- b. **Ethical:** Based on the bias in the training dataset can lead to discrimination based on race, gender or socioeconomic status. Additionally, lack of transparency due to its Black Box in nature. Strict ethical guidelines and regular audits to maintain accountability [10].
- c. **Misinformation:** Many open Source and commercial LLMs are free to everyone, candidates can generate a resume using LLMs by just prompting. It will generate a resume that matches the job description even though the candidate does not know a particular skill. One of the major challenges is to identify the content generated by LLMs or not [2,5].

3.3 Opportunities

- a. **Easy of Work:** Irrespective of the candidate or recruiter just a prompt is required to do the job [3].
- b. **Globalisation:** The advancement of technology has removed the barrier in the search for talent across the globe to select the most suitable candidate for the required position irrespective of geography. The LLMs have trained on regional compliance and cultural adoption while leveraging multilingual capability [1,4].
- c. **Upskilling:** The employee needs to upgrade or acquire new skills to remain competitive in evolving job demands. Upskilling technology like LLMs retains a job with a better position [8].

3.4 Threat

- a. **Job Loss:** Automation of recruitment processes may reduce the need for traditional Human Resource roles. Over-reliance on LLMs for hiring could displace human recruiters and intensify unemployment in the human resource sector. In the United States of America around 80% of the workforce with at least 10% of the work tasks is affected by LLMs [8,9].
- b. **Bias:** Prejudices in training data impact LLMs' decision-making, lead to discriminatory hiring processes for gender and racial candidates and may be unfairly excluded from certain roles due to historical biases in training data [2].
- c. **Privacy:** The candidate's resume contains personal and sensitive data that raises concerns about confidentiality and misuse. There may be chances of data breaches and violation of privacy laws [10].

4. Conclusion

The growth of technology has transformed the recruitment process from traditional to Artificial Intelligence. The Advent of Gen AI / LLMs has brought many opportunities and challenges. Understanding the strengths, weaknesses, opportunities and threats of using LLMs in recruitment organisations and candidates can enhance competitiveness.

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