

ABSTRACT

The recruitment process is one of the most important activities in human resource management (HR), where organizations strive to find the most qualified candidates to fill vacant job positions. Along with the increasing number of job applicants, the main challenge faced is the limited time in assessing each incoming Curriculum Vitae (CV), which can generally only be read by recruiters in a short time, around 6-8 seconds. This causes potential errors in evaluating candidates who actually have high potential. To overcome these challenges, the application of data science in the recruitment process is an increasingly relevant solution. Advanced data-driven approaches, such as machine learning and artificial intelligence, can increase efficiency and accuracy in candidate selection. One of the latest innovations that can be applied is the use of Knowledge Graph (KG), which functions to model the relationship between applicant attributes and job position requirements. By connecting various relevant entities in recruitment, KG can improve candidate matching more accurately. In addition, the application of Large Language Model (LLM) and Retrieval-Augmented Generation (RAG) in data extraction from unstructured CVs allows the candidate screening process to be carried out automatically and faster. This study proposes the implementation of KG, LLM, and RAG to accelerate and improve the recruitment process, reduce reliance on manual evaluation, and make it easier for HR to manage the increasing volume of applicants. With this approach, the recruitment process can run more effectively, efficiently, and on target, and can improve the candidate experience and accelerate the matching of suitable candidates with available positions.

Keywords: *recruitment, recruitment efficiency, knowledge graph, large language models, retrieval-augmented generation*