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A Study on Priorities for Utilization of AI Recruitment System

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***Abstract*— Digital transformation not only improves efficiency with automation but also enables new forms of innovation and creativity by replacing analog manual process with a digital process. The transformation in the recruitment process can be seen as automatic selection of applicants using AI. It has yet to be verified whether the recruitment with automation is reliable enough to replace traditional hiring methods. However, as more and more corporations are utilizing AI based recruitment system, research on the priority of the characteristics in the system is needed to maximize the utilization of AI recruitment system. In this research, the research model was designed to find the priority of factors affecting utilization of AI-based recruitment system with variables of TOE framework.**

Keywords—AI Recruitment System, Artificial Intelligence, Recruitment Procedure Law, Priority, Hiring Process

I. INTRODUCTION (*HEADING 1*)

Digital transformation not only improves efficiency with automation but also enables new forms of innovation and creativity by accommodating information and communication technology to replace analog manual process with a digital process or by replacing old digital technology with new digital technology. With the arrival of hyper connectivity with the Internet of Things and entering the super intelligence phase with big data analysis, it is now possible to replace the role of people in more work. Selecting the right people for the job in corporate management will be fundamental to enhancing corporate competitiveness [1].

It has yet to be verified whether the AI recruitment system is reliable enough to replace traditional hiring methods. However, if the AI recruitment system can be included in the existing recruitment process, it will be necessary to examine the priority of the system utilization because a number of companies are introducing recruitment system using artificial intelligence techniques and there are many advantages with this system.

To derive priorities, we selected three categories of TOE framework as factors and selected four TOE-related variables from each of those factors as sub-factors. After setting up the research model, a questionnaire was created for AHP (Analytic Hierarchy Process) to derive a priority to maximize utilization based on the association between variables.

II. THEORETICAL BACKGROUND

A. Artificial Intelligence and Recruitment

Human intelligence is embodied in a cognitive system centered on the brain, and human intelligence is an ideal model of artificial intelligence [2]. Recently, a new type of AI concept has emerged that mimics the human cognitive system. Such artificial intelligence is being researched and developed in various fields of study and industry based on cognitive systems. Thus, as artificial intelligence creates opportunities for new services, its importance in the social, economic and public sectors is increasing [3].

Advances in artificial intelligence to automatically perform a selection procedure to change the human resources management strategy, the company AI-based recruitment can be an effective method for Human Resource Management [4]. In the U.S., 50 of Fortune 500 companies, including Unilever and Hilton Hotels, implemented the recruitment process using artificial intelligence [5]. Although the efficiency of the AI recruitment system has not yet been academically verified, its utilization in the field of personnel placement and human resources recruitment will increase, and the company's cost-cutting and objective evaluation methods will have a lot of influence on fair personnel culture.

AI interview is a way for AI, not a person, to determine job performance ability and job suitability based on big data. The non-contact evaluation method allows applicants to take the test anywhere without any space constraints as long as they have a laptop, headset, or microphone equipped with a web camera or a PC equipped with a web camera.

B. Recruitment Procedure Act in Korea

The official name of recruitment procedure act in Korea is the Act on the Fairness of Recruitment Procedures. Recently, the revision was approved by the National Assembly on March

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28, 2019 and has been in effect since July 17, 2019. Korea's hiring scandal at public institutions has been revealed. On September 30, 2019, the Board of Audit and Inspection of Korea announced the results of its audit of the hiring of non-regular workers and the transition to regular workers conducted on five public institutions, including the Seoul Transportation Corporation and Incheon International Airport Corporation. According to the audit results, 333 out of 3,348 full-time workers (10.9 percent) of the five institutions were found to be related to their relatives [6].

The Recruitment Procedure Act was revised to ensure fairness in the hiring process and protect the rights and interests of job seekers, not only public institutions but also private companies. The purpose of the plan is to provide job seekers with fair employment opportunities by providing a basis for discipline in hiring irregularities of private companies, and to ensure that job-oriented fair hiring practices are established so that conditions unrelated to their duties, such as appearance, family relations and regions of origin, do not affect their employment status.

C. *Technology, Organization, and Environment (TOE) Framework*

Tornatzky and Fleischer [7] suggested TOE framework that addressed the factors (i.e. measurement in the three categories of the technical context, organizational context and environmental context) affecting innovation decision making of firm level. Organizational factors mean the characteristics that the organization has, and technological factors include both internal and external technologies that the firm faces. External environmental factors mean the area of business activity, which includes industries, competitors, resource suppliers, and governments to which companies belong [10].

D. *Analytic Hierarchy Process*

AHP was founded by Thomas L. Satty in the early 1970s. As one of the multi-criteria decision-making methodologies developed by L. Satty, it considers both quantitative evaluation criteria and qualitative evaluation factors of decision makers. For the AHP model design goes through four stages. The first step is to structure the unstructured decision-making problem hierarchically, and the next step is to perform a pairwise comparison between attributes in the same hierarchy. In the third step, the relative weight of each attribute is calculated, and reliability is verified by considering the consistency ratio. Total weight in order to find the best alternative to the last step to derive the final priority. AHP has the advantage of using and processing both arithmetic quantitative information and qualitative information that considers the long experience or intuition of experts in key decision-making [8].

III. RESEARCH DESIGN

This paper is in deriving the priority of factors affecting the utilization of AI recruitment system using AHP. We use the three categories of the TOE framework as factors, and the sub-factor wants to adopt hierarchy in the model of the TOE's variables that have affected users' satisfaction or intentions in the preceding study. Subsequently, a survey item is produced with an operational definition of the corresponding variable, and a double comparison of each factor is performed.

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