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## Analysis of the Problem of fire Qualification Information and Employment Information Due to Incomplete Information in the Job Search Process

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### Abstract

*This study analyzes the problems of fire qualification information websites and job search websites due to incomplete information in the job search process and suggests an improvement plan. It has been confirmed that the main reason for the cost of job searching is incomplete information required for a job search and job search through existing analysis. As a result, it is suggested to construct a smooth information system for economic entities and to provide easy access to information by mitigating the incompleteness of information. Based on this, analysis of the problems of Korean qualifications in the firefighting realm reveals that there is a qualification holder information and a job information site, and a qualification holder management system is established but only information of either qualification acquisition information or employment information is provided. In addition, it is easy to access information through a qualification acquisition information and employment information site via the Internet, but there are inconveniences that qualification acquisition information and employment information are dualized. In order to improve this, it is necessary to build a new customized integrated qualification management system that covers existing Q-net qualification acquisition information and worknet employment information.*

**Keywords:** Job search, Firefighting realm, Q-net, Worknet, Incompleteness of information

### 1. Introduction

If the job searching and hiring activity between firefighting qualification holders and their employers is not smooth, it may hinder the positive functions of the society to pose a risk to public safety because qualification holders have to cope with too much information and cost for job searching to display their job abilities adequately and employers are forced to increase their hiring cost in search of qualification holders even though it may decrease the productivity of their companies.

The job search theory is a theory established by G. J. Stigler and J. J. McCall et al in the 1960s. According to Stigler, the prices or wages are distributed if a market is not fully centralized. A consumer (or supplier) searches for a supplier (or consumer) who offers the most favorable price conditions, which is called "search." J. J. defines "search" as an activity in which uncertainty exists and the cost of gathering information makes unemployed resources productive [1].

It is difficult for an organized market to be established for labor which is a service of low homogeneity because its prices are different between its suppliers and consumers and information regarding its quality or transaction conditions is not thoroughly exchanged. Therefore, transaction entities need search activities, which incur costs in general. These activities are called "job search." [2] In other words, the job search theory explains the job search activity of workers in terms of the balance between the marginal benefit (MB) and the subsequent marginal cost (MC) in job search.

In the job search theory, workers have a certain level of the asking wages that they want to receive but they do not know where the jobs are that pay such wages due to incomplete information in the labor market. Thus, workers continue job search until they can receive their asking wages. Job search is accompanied by a lot of information and cost and it can be divided into search by employer and search by employer.

According to the searches by workers, a job seeker searches for the most favorable condition of wages on offer when choosing a job. In this search process, opportunity costs are considered, including the cost of time lost while entry into a job is delayed, the cost of transportation, the communication expense and the advertisement fee. These kind of costs are investment costs. The net profit is generated by the investment activity of investigation. In this case, the net profit can be seen as the difference between the income obtained as a result of the search for work and the income when you do not search. When searching for a job, a worker will continue to search if the marginal expected return is greater than the additional cost of a search period. It would be the most reasonable decision and optimal choice when the marginal cost equals the marginal expected return when it comes to choosing a job.

According to the searches by employers, employers also need to search to fill vacancies in a company. If it is hard to fill unfilled employment with the present wage level, employers should increase the wage or bring down the level of requirements for hiring. Like this process of searching, the level of demand which has differences between employees and employers can adjust gradually over time. When the employers decide to finish their searches, they consider the cost by reducing the hire level and additional candidates rather than finishing when there is a candidate who the employer is satisfied with. Besides, they compare the decline in production associated with maintaining unfilled vacancies or giving overtime payments to decide a dead line for searches. These costs can be seen as costs for searching which arise due to searches by employers.

On the other hand, there are many studies on the causes that incur job search costs among the existing researches [2-9]. Based on these researches, this study views the main cause that incurs job search costs as incompleteness of information needed for job searching and hiring. Therefore, the purpose of this study is to analyze the problem of fire qualification and employment information caused by the incompleteness of information and to suggest an improvement plan.

As a way to alleviate the incompleteness of information, it is mostly suggested that an efficient information system for economic parties be established [2][4,5][10-12] and that easy access to information be given [4,7][9,10][12] among others. Among these researches based theoretically on the job search theory, there are researches on the qualification system such as "A Study on the Fire Protection' Licensing System in Korea: With a Focus on Government Licensing" and "Improvement Plan of Korean Qualifications of Fire Sector: Focusing on Monopoly" by Ha-Sung Kong (2018; 2016)[13,14], "Vision and development plan of qualifications system" by S. H. Kang et al. (2003)[15], "Economic effect of qualifications" (an empirical study on the income and labor migration performance of qualification holders) by S. H. Kim et al. (2010)[16] and "Effects of Vocational Training and Qualification Acquisition of the Youth on Their Transition to the Labor Market" by S. J. Park (2004)[17]. There are studies mostly on the general aspects of qualifications systems but there are no existing studies specific to firefighting qualification holders. In order to develop the existing research from H. S. Kong (2018; 2016), this study will analyze the available information about exams for individuals intending to acquire firefighting qualifications and the employment information system for the individuals with firefighting qualifications and the companies which employ those individuals, from the perspective of information incompleteness based on the job search process.

## **2. Problems of obtaining information about firefighting qualifications and employment information due to incomplete information**

### **2.1 Limitation of Information Caused by Information Either on Hiring Only or Job Searching Only**

There are websites that provide job information and qualification holder information. Therefore, an information system is established for those who search for jobs or qualification holders. However, these websites provide one-sided information only such as information about qualification holders only or information about jobs only, resulting in limitation of information.

There is a state-run job information website operated by the Korea Employment Information Service under the Ministry of Employment and Labor, providing job information. In this case, there is incompleteness of information because this website does not provide information about qualification holders. [18] On the other hand, there is a website operated by Human Resources Development Service of Korea. It is called Q-net and this website provides information about acquiring qualifications. In addition to the information about acquiring qualifications, job information is also provided here. However, the job information here is only a brief introduction to the career and prospects and the information is not the latest information. It can be said that the job information system is not properly constructed for qualification holders. [19]

It is different in Australia. There is Fire Protection Association Australia, which administers and manages qualifications. This association also provides information in regard to job searching of qualification holders to companies that are members of the association through telecommunication networks, such as telephones. [19][20]

### **2.2 Two Different Sources of Information about Getting Qualifications and Getting Jobs**

There are websites which provide information about getting qualifications and information about getting jobs. Therefore, it is easy to access such information on the internet. Still, there is inconvenience because two different sources are used to provide information about getting qualifications and getting jobs.

The use of two different sources for information about getting qualifications and getting jobs does not give easy access to the information for companies or qualification holders. In other words, information about getting qualifications is provided by Q-net, whereas information about getting jobs is provided by a website called Worknet. They are not linked to each other, either. Therefore, there are inconveniences that qualification holders have to experience because they have to visit a couple of websites instead of one. This way of using two sources of the information system makes it inconvenient to access the information because the information between companies and qualification holders is incomplete. In other words, qualification holders who have acquired qualification through Q-net can obtain job information only if they have information about Worknet, which provides information about companies such as the level of wages, working conditions and responsibilities of the company workers. The same phenomenon occurs when companies offer jobs to qualification holders [18,19].

It is different in Australia. Fire Protection Association Australia is the qualification authority in Australia. This association both educates people about getting qualifications and provides them with job information. [20][21] In this way, information about getting qualifications and jobs is provided by the single-window system. Therefore, it is easy for qualification holders to access information about jobs in Australia.

## **3. Improvement Plan of Firefighting Qualification Information and Employment Information**

In order to facilitate access to information between companies and people with qualifications, it is necessary to establish an integrated, up-to-date qualification and employment information system, such as the Australian firefighting qualification system benchmarked in Korea. Currently, information about getting qualifications is provided by Q-net, whereas information about getting jobs is provided by Worknet. They are not linked to

each other, either. Although Q-net provides job information about jobs, it does not provide detailed information. It only provides information such as a brief introduction to careers and prospects. It is not even up-to-date information, which makes it hard for qualification holders to be provided with complete information[19]. In addition, the job information provided by Worknet includes many types of jobs that are not related to qualifications, which makes it inconvenient for qualification holders to access the information[18]. Therefore, it is necessary to establish a new customized, integrated qualification and job information system that encompasses information about getting qualifications currently provided by Q-net and job information currently provided by Worknet.

In addition, the integrated qualification and job information system needs to be established after identifying what information is required by both the qualification holders and the companies. This assumes that companies and qualification holders provide complete information needed to build the integrated qualification and job information system.

#### **4. Conclusions**

The purpose of this study is to analyze the problem of fire qualification and employment information caused by the incompleteness of information and to suggest an improvement plan. It is confirmed through existing researches that the main cause that incurs job search costs is incompleteness of information needed for job searching and hiring. As a result, it is suggested as a way to alleviate the incompleteness of information that an efficient information system for economic parties be established and that easy access to information be given. The analysis of the problems in the firefighting qualification system on the basis of these suggestions first shows that there is limitation of information resulting from provision of one-sided information only such as information about qualification only or information about jobs only even though an information system is established as there are websites that provide job information and qualification holder information. In addition, there is inconvenience resulting from the use of two different sources for information about getting qualifications and getting jobs even though it is easy to such information on the internet as there are websites that provides information about getting qualifications and getting jobs. In order to improve this, it is necessary to identify the information required by both the qualification holders and companies and establish an integrated, up-to-date qualification and job information system by obtaining complete information necessary for establishing the integrated qualification and job information system. In other words, it is necessary for the individuals with firefighting qualifications that there is a member registration, self-introduction letter, and search functions for job openings, company information and event information. Especially, it is necessary to provide information on various job seminars and self-development seminars in the event information search. On the other hand, for companies, it is recommended to provide applications for job openings, as well as company information, job information, academic background and career information, such as name, address, department name, and specified major and career.

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