

KRIVET

2006 Research Abstracts

Foreword

Korea Research Institute for Vocational Education (KRIVET) was established in 1997 with contributions from the government. Since then, KRIVET has carried out educational research and development works in all areas of vocational education and training including policy-oriented research on national basis in the areas of vocational education and training programs, vocational qualification systems, and career guidance.

In this knowledge-based society, human resource is the key factors to accomplish global prosperity, and it is critical to have better understanding of the importance of investment in TVET to support human resources development around the world.

In this sense, this year's compilation of research abstracts deals with issues including lifelong vocational education and training, HR policy, evaluation and qualification system to share the results of our researches. The areas of research have been broadened and deepened compared to last year's researches and it presents variety of KRIVET's interest, competencies and responses to the recent changes in the world of TVET.

Exchange of Information is one of the most critical factor for successful research and development. It is hoped that the present compilation of 21 research abstracts published by KRIVET research fellows in 2006 will contribute to the increase of collaboration and the exchange of valuable ideas in vocational education and training.

권대봉

Prof. Dr. Dae-Bong Kwon
President, KRIVET

Contents

1. College to Work Transition and Human Resources Development of Youth(II) · 1
2. Building the Support System for Sectoral Human Resource Development(II): Exploring the sectoral HRD policies for the Financial and Design Industry · 5
3. Policy Measures for Higher Education Development from the Human Resources Development Perspective · 9
4. Research and Projects Based on the Innovation of Human Resources Policies · 15
5. A Study on Improving Projection Methods of the Labor Market · 21
6. National HRD Budget System · 25
7. Military HRD and Industry–Military Cooperation ·
8. Developing a Program that Supporting Employment Connect the Discharged Soldiers and the Small and Medium–sized Enterprises · 27
9. Case Study on the Learning Infrastructure in Small and Medium Enterprises · 29
10. A Study on the Introduction of Job Rotation · 31
11. An Innovative System for HRD at Regional Level · 33
12. A Vocational Training Demand Survey · 35
13. A Study on the Innovative Evaluation System for Vocational Training · 37
14. The Relationship between the Index of Enterprise Human Resource Development and Enterprise Credit Level · 39
15. Performance Analysis on the National Authorization System of Private Qualifications · 41
16. A Plan for a New Qualifications System in the Knowledge and Information Era · 45
17. Occupational Research on Health and Medical Industry · 51
18. Koreans' Occupational Consciousness and Work Ethics · 55
19. Development of Employment Service Excellence Standards · 57
20. Careers of Korean Ph.Ds with Degrees of Foreign Countries and the HRD Policy of the Highly Skilled in Korea · 61

1. College to Work Transition and Human Resources Development of Youth(II)

Chang-kyun Chae · Young-sup Choi · Ho-young Oh · Seung-bo Kim ·
Joon-pil Ok · Jae-ho Chung

This study attempts to develop a comprehensive analysis of the entire process of activities taking place from corporate employment to training of new college graduates, based on a large-scale survey of enterprises.

Chapter 3 analyzes the satisfaction levels and requirements for college education, based on evaluations made by new graduate employees and corporate personnel managers. The major findings are summarized as follows:

First, the index of satisfaction among new graduate employees with their college education was, on the average, 3.09 on a 5-point scale.

Second, the overall basic vocational ability level of college graduates at the time of graduation was, on average, 3.28 on a 5-point scale.

Third, corporate personnel managers responded that corporate expectations were not being met by any of their newly employed graduates from junior colleges, or universities.

Fourth, all corporate personnel managers and new college graduate employees had the same opinion in that colleges should aim to foster vocational abilities rather than learning skills.

Fifth, in terms of the extent of deviation from basic vocational abilities identified by corporate personnel managers, it was revealed that new employees from junior colleges, liberal arts, and science/engineering colleges were 0.70, 0.63, and 0.62, respectively.

Sixth, it was revealed by the corporate personnel managers that technical ability, especially the abilities in major study areas, was considered less important than generic skills, such as problem-solving, human relations, communication, and organizational understanding abilities, although science and engineering college graduates did not fully agree. Most of these factors were rated high in the extent of deviation from the present level. On the other hand, all corporate personnel managers did not place emphasis on foreign language abilities, irrespective of junior college or university graduate status; foreign language ability was considered less important than other basic vocational skills.

The following are the results and implications of Chapter 4 on the corporate employment situation:

First, the regression analysis of corporate employment scope decision factors showed that the rate of job creation was proportional those of market competitiveness, new technology introduction, and owners' management intervention. On the other hand, the job creation rate was not proportional to the existence of labor unions, the level of salaries, and enterprise size. In terms of industry type, the service industry exhibited a relatively high rate of job creation,

compared to that of the manufacturing industry.

Second, the estimate of wage functions for new employees in 2005, and the logistic analysis of full-time employment or otherwise among large enterprises suggested that enterprises primarily take into consideration AAT scores, namely academic backgrounds, rather than efforts made during college attendance, with the exception of their consideration of overseas training experiences. This means that enterprises are currently placing little trust in college education or in the younger population's efforts in vocational ability development after college entrance, and are overly dependent on latent faculties expressed in scholastic performance prior to college life.

Chapter 5 intensively analyzed the problem of ranking colleges, an activity that influences the corporate employment of new employees.

Firstly, no remarkable change was found in the ranking of colleges during the period of analysis, and it was found that the differences in educational conditions did not affect the ranking of colleges considerably.

Secondly, a high correlation was found between general college ranking and college ranking within each major. However, each major showed different characteristics. In the fields of humanities, social sciences, science and engineering, college ranking in the major study area was highly related to general college ranking, while the field of education exhibited a somewhat low correlation rate, with the correlation between college ranking and major ranking being the lowest in the major of medicine.

Third, there were considerable differences in wages between provincial and metropolitan area college graduates: The average monthly pay of provincial graduates was 1.7477 million won, which was 11.5% lower than that of the 1.9752 million won paid on average to metropolitan area graduates. On the other hand, provincial graduates exhibited 262.70 points on the AAT, 13.82% lower than the 304.90-point average found among metropolitan area graduates, which may be considered an individual ability index. This suggests that the differences in AAT scores, to a considerable extent, accounts for the difference in wages between provincial and metropolitan college graduates.

Fourth, the estimate of hierarchical linear models suggested that 12.2% of wage changes among graduates could be explained by inter-college variations. More specifically, this means that 12.2% and 87.8% of the differences in individual wages were caused by those in colleges and in graduate colleges, respectively. When controlling for other factors, wage discrimination for provincial college graduates was 2.61% in general, 2.21% among males and 3.76% among females. This suggests that considering the average monthly wage difference of 13.0% between provincial and metropolitan area graduates, differences in wages are due to a large degree by productivity disparities.

Chapter 6 examined the prevailing conditions and accomplishments of field training and internship which are regarded as one of the major means of connecting colleges to enterprises. The following are the major results of the analysis:

First, the prevailing conditions do not appear to be very promising for field training and internships, with the study revealing that little active participation was found in field training or internships. Over the past three years, roughly 20% of

enterprises and 27% of new employees, participated in the field training. Also, approximately 10% of new employee respondents took part in the internships, revealing a lower rate of participation.

Second, field training was conducted substantially among large enterprises compared to small enterprises.

Third, field training was not revitalized among small enterprises, although the case study in the clock industry suggested that if the employers' association actively intervened, it was possible to develop and implement a successful field training system.

Fourth, the participants in internships appeared to have been superior in quality to those in field training. There were, in fact, considerable differences in the characteristics of participants in field training and internships. Field training programs attracted high participation rates from among junior colleges and the colleges of engineering, medicine, art, and physical education compared to universities and humanities colleges and from among colleges with low average AAT test scores, whereas internships revealed the reverse trends.

Fifth, internships were more substantially conducted than field training programs. These were predominantly driven by large enterprises, and were run for the small number of excellent students who were selected. They gave them training directly associated with practical duties for a long period of time. On the contrary, field training was mainly led by colleges as part of the curricula but was not systematically supervised. It was treated rather neglectfully by enterprises and run over short periods of time.

Sixth, internships appeared to be more effective than field training programs in terms of the characteristics of participants and/or the faithfulness of the programs. This was confirmed in practice in terms of the wages earned by the ones who have experienced the programs. In conclusion, field training and internships actually had minus and plus correlations with wages, respectively. However, most of these effects are discounted when selection bias is controlled.

Chapter 7 analyzed the conditions and characteristics of training given to new employees by enterprises. The following describes the major results and implications of the analysis:

First, it was revealed that it took roughly 8.36 months for new employees to acquire the sufficient abilities required to perform the duties of their current posts after employment, indicating it was highly necessary for enterprises to train their new employees. Training was given to new employees by 72.9% of the enterprises that employed college graduates in 2005. Training costs were found to be around 2.486 million won per new employee.

Second, logistic analysis, with training as a dependent variable, was made in order to confirm the differences in characteristics between those enterprises who offer trainings to new college graduate employees and those who do not. The findings suggested that business types, or the existence of labor unions, had little influence on the potential for training, while the possibility of training was found to be highly, and positively correlated to the size of the employer company and the gap between college education and corporate expectations.

Third, a probit analysis was made in order to confirm what factors determine the participation of new college graduate employees. The findings showed that there

was a higher possibility of participation in corporate training among males, graduates of colleges in metropolitan area, graduates of universities, and people with excellent college credits or high AAT scores. It was also found to be the result of the gap between college education and corporate expectations, and attachment to large enterprises.

Fourth, training was found to bear some fruits. To eliminate the problem of selection bias, an estimate was made through Heckman's two-step sample selection model, which showed that training was effective in the order of the mentoring characterized by face-to-face and one-to-one education and by the summons (collective) training, with e-learning, however, having little impact.

2. Building the Support System for Sectoral Human Resource Development(II): Exploring the sectoral HRD policies for the Financial and Design Industry

Young-Sub Choi · Me-Rhan Kim · Ju-Hong Min · Hyang-Jin Jung

1. Background of Research and Macro-economic Situation of the Financial and Design Industry

A. Background of research

Nowadays it is well known that competitiveness of the service industry is a critical factor for enhancing the global competitiveness of the Korean economy. Therefore, a systematic human resource development(HRD) policy that meets the specific characteristics of the service industry is of critical importance.

The service industry consists of different sub-industries, and is as much affected by the rapid changes in technology and market as the manufacturing industry. Thus, it is important to develop HRD policies that suit each sub-industries' needs. There is a urgent need to transform the government-driven, and manufacturing industry-skewed HRD system into the one that promotes active participation of the private sector and approaches each sub-industry singly.

This study analyzes and considers HRD strategies for the financial industry and design industry as the key sub-industries that enhance competitiveness within the service industry.

B. Macro-economic situation of the financial and design industry

Financial industry and design industry are very different in terms of labor market characteristics and industrial structure. Therefore, the direction and strategies for HRD should be distinct.

Structurally, the two industries are similar in that both are knowledge-based service industries, and are strategic industries with great forward and backward linkage effect. But there are also differences. The financial industry is experiencing fierce global competition, and is in the midst of a domestic M&A wave. On the other hand, the design industry is divided into two types, small & medium sized designing firms(called 'design production') and 'design teams' within large firms.

The workforce in these two service industries are relatively young and highly educated, and are composed of a higher ratio of female workers compared to those of the manufacturing industry or the rest of the service industry. In terms of employment and wage level, the financial industry's internal labor market is developed with priority given to male-permanent workers. Meanwhile, the design industry has a relatively high turnover rate.

2. Current Status and Strategies for HRD in the Financial Industry

A. Current status and major issues

With globalization and mega-merging of the financial industry, global competitiveness has become critical for growth. Firms need workers with advanced industry-specific skills such as cash management and complex financial management service skills. They also face the task of training specialists who can develop and utilize new financial technologies. Along with this need for upside adjustment exists the need to downsize the traditional part of the industry.

B. Policy agenda for building a shared HRD

There is a necessity to expand investment and establish a industry-wide cooperation system in order to build a comprehensive system for the fostering and management of finance workers.

C. Suggestions for sectoral HRDC

Compared to other industries, labor unions in the financial industry play relatively weighty roles, and the industry and the government is more willing to provide financial support for HRD. Thus, it seems possible to establish a cooperative body at the industry level using the following three approaches. (1) enlargement and extension of the tripartite commission finance industry committee into a sectoral cooperative entity for HRD, (2) development of a 'finance workforce network center' under the government-led financial hub policy, and (3) joining of forces in an all-out effort to mediate the standpoint of three parties (labor, management and government).

3. Current Status and Strategies for HRD in the Design Industry

A. Current status and major issues

The Korean design industry is similar to that of the US in that it is dominated by large firms in terms of market structure and employment ratio. Considering that creativity and diversity are key competitive factors in the design industry, it is necessary to enhance the industry's competitiveness by promoting small and medium sized firms like those in Europe.

With the advancement of the design industry, a deficiency of highly-skilled specialists' skill-mismatch is deepening. However, the high ratio of female workers and freelancers and high turnover rate are discouraging firms for making investments for HRD. This problem is especially severe in small and medium sized design firms compared to the ones affiliated with large corporations.

B. Policy agenda for building a shared HRD

There is a need to continuously update and upgrade the quality of education and training system and curriculum based on workplace-demanded skills. In the long-term, this standardized education and training curriculum should be transformed into the high-quality specialized curriculum.

C. Approaches for building a sectoral HRDC

The establishment of a design industry coalition can be attempted in the long term by first composing and operating sectoral HRDCs within the design industry. Secondly, the foremost goal of each SHRDC should be to educate and train workers, and specific plans to achieve this goal should be worked out in cooperation with education and training institutes and government institutions. Thirdly, an analysis on the gap between the workplace and education and training curriculum should be conducted to reform training curriculum to meet workplace demands. Training programs to upgrade the skills of employed workers in each design field should also be planned and carried out.

3. Policy Measures for Higher Education Development from the Human Resources Development Perspective

Sung-Joon Paik · Seung-Bo Kim · Jae-Sik Jun

Social changes such as globalization, aging, social polarization, and (massification) of higher education, along with the progress of the knowledge-based society, demand fundamental reform in higher education from the viewpoint of human resources development. Higher education in Korea, which has problems of one-type development model, lacks of adults' lifelong learning, decent quality of education, however, has not responded properly to these changes. This study was attempted to identify new roles and functions of Korea's higher education for the human resources development in the 21st century's knowledge-based society and to suggest policy tasks for realizing them.

1. Social Changes around Higher Education

Higher education has played a very crucial role in the process of social and economic development and will continue its role in the future. While the main strategy for economic growth in the past was quantity-based input-oriented, it now became knowledge-based. Therefore, higher education is expected to have greater effect on changes in economy and society in the future. As the human resources development in higher education has become more crucial, higher education institutions need to develop and provide various programs from academic education at graduate schools to technical training at 2-year colleges. These changes in education regard several important issues.

First, the importance of higher education as a growth engine of national economy is expected to be more emphasized as the knowledge-based economy develops rapidly and as the industrial structure constantly changes. Individual, organizational and national competitiveness leads to higher knowledge and advanced skills through higher education institutions. Demands for education and R&D in higher education institutions will continue to increase very rapidly. The functions and roles of higher education institutions will be redefined and new educational programs will be designed to respond to different manpower demands of changed industrial structure.

Second, development of information and communication technology(ICT) will induce fundamental changes in education and R&D system of higher education institutions. Thanks to Internet, it will become more popular to take courses in other colleges and universities, while traditional face-to-face learning-teaching activities will be reduced.

Third, changes in labor market, economy, and society, demand globalization of higher education. Rapid development of ICT and transportation made it possible to expand international exchanges of students and faculty members and to develop joint programs on education and R&D among interested countries. As the higher

education market becomes more globalized, it is necessary to develop a higher education system which can be shared by countries around the world.

Fourth, aging society also require quick response of higher education institutions. Decrease in age cohort of 18-year olds will exacerbate the problem of enrollment shortage. Higher education institutions should make restructuring efforts to put scarce resources in the areas in need of more manpower. Also, they need to develop and provide programs of re-education & training for adult workers and to make its results officially recognized in labor market and society.

Fifth, (massification) of higher education requires higher education institutions to provide various education programs both quantitatively and qualitatively.

2. Problems of Korean Higher Education from the Viewpoint of HRD

Human resources trained in higher education institutions during the period of 1960's~1980's made great contribution to Korea's economic growth. In development period, when mass-production was the key to success, higher education institutions needed to develop a pool of standardized professionals and technicians. However, in knowledge based society higher education institutions are facing serious challenges.

In order to train world class human resources to compete in the knowledge-based economy, Korean higher education system should solve three main problems: inefficiency in higher education operation, low quality, and paradigm transition. Inefficiency problems come from unnecessary national regulations, premodern governance system, and lack of linkage between higher education and labor market. Some examples are market distortion caused by government regulations for college entrance examination, profit-seeking in private universities due to weakening of non-distribution constraint, and mismatch between school curriculum and demand from workplace.

International comparisons on indices measuring the quality of higher education such as professor-students ratio demonstrate that higher education in Korea still remain in the stage of mass production. In general, transition from quantitative expansion to qualitative enhancement requires increase in beneficiary's contribution. In Korea, however, large portion of higher education budget is supplied by the students and their parents.

With respect to the paradigm transition, Korean higher education system still has old paradigm designed mainly for the age cohort of 18-22 year-olds and uses e-learning as a tool for mass production through standardized education programs. These three main problems, which exist in duplicative and synchronized ways, are threatening the future of higher education in Korea.

3. Key Issues in Human Resources Development in Higher Education

From national and social perspectives, as the importance of HRD increases, higher education system with both know-how and HRD infrastructure should play crucial roles as the bases of HRD operation. Higher education's three traditional roles are education, research and community service. It is necessary to discuss whether the

higher education is functioning properly in changing social environments from the viewpoint of HRD.

Key issues on HRD in higher education include the dilemma between low quality of undergraduate education and difficulty in enhancing R&D performance. The low quality of undergraduate is caused by financial subsidy policy oriented to R&D performance at graduate school level. Moreover, the difficulty in enhancing R&D performance is due to the burden of undergraduate education, lack of system's capacity of training top quality professionals, institutional obstacles to invite foreign brains, and poor education facilities and equipment. To overcome these problems, it is required to strengthen undergraduate education by balancing liberal arts with science education, for providing major studies, and for restructuring higher education institutions into research-oriented, education-focused and technology-centered institutions.

Regarding HRD in the area of 'R&D,' it is pointed out that despite the sharp increase in the number of articles, the research productivity in Korea is far behind compared to that in advanced countries. Also, Korea still faces several problems: lack of research funding, limited research base, and inefficient allocation & utilization of human resources. Industry-university corporation also has problems of mistrust among enterprises, universities, and government and role conflicts between government and enterprises. To solve these problems, it is necessary to make policy environments for conducting interdisciplinary joint research and inviting foreign brains and to prepare more strong research infrastructure.

'Community services' of higher education in post-industrial knowledge-based society include lifelong learning, regional innovation, school-industry corporation, and increase in externality through development of higher education as a industry. It is necessary to put more emphasis on policies for regional innovation and to make visa process easier to induce foreign brains, which will consequently increase the competitiveness of Korean higher education.

4. Trends of Higher Education Reform in Other Countries

Regarding analyses on higher education reform policies of 7 countries (Japan, U.S., U.K., France, Germany, Finland, China), EU suggests the following implications: 1) it is required to make an overall review on roles and functions of several types of higher education institutions, and relationships between higher education institutions, governments and enterprises; 2) it is necessary to redefine roles & functions of higher education institutions according to their types and characteristics, and to design systematic linkages and corporation relationships among themselves; 3) it is recommended to strengthen real working relationships between higher education institutions and enterprises, and to improve linkages between higher education institutions and regional stakeholders for regional and national economic development; 4) for easy access to higher education for adult learners, it is necessary to develop new education curriculum and programs, to change school management scheme such as student enrollment and course-taking, and to increase financial aids to adults; 5) for the quality improvement of higher education, it is required to introduce strict and fair evaluation systems and to develop world class high quality universities; 6) it is recommended to further attempt internationalization of

curriculum, mutual recognition of degrees by academic field, exchange of professors and students, joint research, and joint degree programs through corporation with other countries and international organizations.

5. Higher Education Development Policies for HRD in the Knowledge-based Society

Based on the above analyses, 7 major policy directions and specific policy tasks are identified: 1) diversification and specialization of higher education institutions: diversification of higher education institutions, diversification of provision of higher education services, establishment of systematic corporative relationship among various higher education institutions, development of elite institutions by higher education institution type, and strengthening of universities' role in national research system; 2) restructuring of departments and programs in higher education institutions and strengthening of industry-university corporation: design and operation of education & R&D programs specialized by the type of higher education institutions, implementation of incentive policies to facilitate industry-university corporation, and strengthening of career guidance services in colleges and universities as lifelong learning institutions; 3) changes in school management and governance structure: flexible school management to properly respond to the diversity of education & training demands, introduction of new governance system that has more autonomy and accountability, and constant restructuring of higher education institutions; 4) strengthening of universities' role as a main actor for regional innovation: provision of education & training opportunities for enhancing individual's employment rate and supply of manpower for industry through regional partnership; 5) internationalization of higher education: internationalization of curriculum by college type, establishment of international network among higher education institutions, operation of joint venture with foreign universities, and improvement of institutional infrastructure for utilizing foreign brains; 6) introduction of quality evaluation and management system: development of various evaluation models by higher education institution type, development of more scientific evaluation methods, operation of evaluation system through international network, and opening of evaluation results to the public; 7) strengthening of administrative and financial support: development of incentive measures for inducing diversification and specialization of higher education institutions and programs, increases in financial aids to adults learner and enterprises, securing of more budget, and development of new institution for mutual recognition of credits, degrees and qualifications of various kinds of higher education institutions.

4. Research and Projects Based on the Innovation of Human Resources Policies

Chang-kyun Chae · Nam-chul Lee · Chun-soo Park · Sung Lee · Kyou-hee Hwang
· Seung-bo Kim

This study summarizes the processes and systems employed to pursue national policies for human resources development as well as the content and accomplishments of the major policies. In addition to this, an inquiry into the directions to head for in the pursuit of human resources policies was made.

The study presents three major directions for human resources policies. First, human resources policies should be considered as the key factor of economic and social policies. To attain this, the current system needs to be reorganized with accordance to it. Second, human resources policies should focus on higher education and adults' lifelong learning. Lastly, it is necessary to fundamentally solve the problem of social bipolarization, by addressing the bipolarization of educational and human resources development.

Chapter 4 examines the future directions of human resources policies on a long-term basis. More specifically, it broadly examines the upcoming future industries and career world, seeking to develop adequate educational means to meet their needs.

Chapters 5 to 9 present the basic research accomplishments related to the examination, analysis, and assessment of the national human resources development project, which may be referred to as the core axis in the reorganization of the system in pursuit of human resources policies as mentioned in Chapter 3. Whereas Chapters 5 and 6 attempt to portray the general framework used for evaluating the policies and projects of national human resources development through the analysis of domestic and foreign example cases, Chapters 7, 8, and 9 examine ways to connect individual assessment techniques that are widely used to the evaluation of national human resources development efforts.

Chapter 5 attempts to present the directions required to improve the assessment methods for the HRD field. It reviews the investment analysis in the past and further analyzes the cases of the United State's PART and the U.K.'s Value for Money programs, with the purpose of benchmarking them for improving assessment methods.

Chapter 6 attempts to find some implications for developing evaluation system for national HRD projects from the past and present developmental process and evaluation system of national R&D projects.

Chapter 7 examines whether to apply the ROI techniques which were primarily used in the corporate HR field to the investigation, analysis, and evaluation of national human resources development projects.

Chapter 8 looks into the topic of whether the evaluation based on goal management system (a system in which the duties of individuals and unit organizations are divided in accordance with organizational goals, and whose

evaluation is made on the basis of goal achievement) can have some adoptable lessons for constructing national human resources development evaluation system.

The results of the analysis in Chapter 9 suggest that the AHP technique, one of the multi-based decision-making methods, has a high chance to bring a great deal of utility to the evaluation of the HRD projects. In assessing national projects for human resources development, it is essential that relative priority should be added to certain parts for alternatives for the following reasons. First, most of projects require both economic and non-economic evaluations from a range of perspectives. Second, the evaluation usually needs to handle both qualitative and quantitative data. Therefore, the AHP technique is currently considered one of the most systematic methods for appropriately evaluating national human resources development projects.

Chapters 10 and 11 analyze the major issues related to higher education in accordance with the discussion in Chapter 3 that human resources policy needs to focus on higher education.

Chapter 10 discusses the necessity to seek new performance indexes for higher education quality management and their alternatives. The core argument in this chapter is that introducing a vocational ability evaluation system is demanded so as to measure and assess the vocational ability levels of college students.

Chapter 11 addresses utilizing excellent international brainpower, in particular, through promoting the establishment of foreign R&D centers in Korea.

5. A Study on Improving Projection Methods of the Labor Market

Cheon-soo Park · Sang-don Lee · Me-rhan Kim

Proper projections for the future changes can help heighten the autonomy and effectiveness of choices and actions. The choice of future career paths and employment has been carried out based on the consideration of future shifts. To be able to perform specific jobs, one needs to take a series of steps such as completing the pertinent education courses, engaging in job training, and obtaining the relevant certificate of qualification. Moreover, the period in which one will engage in the selected job is generally rather lengthy. Therefore, future job choices should be carried out based on the occupational supply and demand projection system so that it will be possible to forecast future occupations. The selection of a career path that is not in keeping with labor market demand can lead to many economic hardships for the relevant individuals. In addition, such situations can also cause problems such as making it hard for enterprises to recruit the required manpower, and at the national level, creating unemployment.

Based on a prediction of future economic structure, an occupational supply and demand projection system includes various factors such as the change in occupational employment, expected wages, and required skill levels. Changes in occupational employment are mainly influenced by changes in final demand, the development of technical levels, changes in business practices, and the expansion of international transactions. With this in mind, the changes in production and consumption created by the growth or contraction of international transactions can be regarded as the factor which brings about some of the most rapid shifts, making it the most difficult to predict. The level of occupational wages based on the supply and demand for labor within the relevant occupation, and influenced by various factors, is a very important factor when considering the economic significance of a particular occupation. In terms of job selection, wages (income) should be taken to imply the wages that can be anticipated, given the possibility of securing employment within the relevant field, and the outlook for long-term employment, rather than the wage levels at a specific point in time. Changes in occupational skills are influenced by the development of technical levels and changes in business practices. The introduction of new technologies or equipment can change the methods used to perform the related job tasks and eventually bring about shifts in the skills required.

As an occupational supply and demand, projection system must take into consideration these complicated and diverse variables, various models have been developed based on the institutions and customs of the relevant labor market or the stages of economic development of the pertinent country.

Economically advanced countries such as the United States have developed occupational supply and demand projection models that have been based on their own characteristics, and have made continuous improvements to these models over

time. Various Korean institutes have developed projection models covering specific periods, and these have been used to compile occupational supply and demand projections. However, the majority of these projections have been focused on capacity-centered quantitative models. Moreover, as occupational classifications were restricted to the sub-major group level, many limitations have emerged with regards to the actual use of these models.

This study consists of a reanalysis of existing occupational supply and demand projection models in order to establish a new model that makes it possible to forecast the supply and demand for manpower at the occupational unit level, as well as of an analysis of the relevant results from a multilateral standpoint. In addition, this study is also geared towards helping teenagers, who form the manpower of the future, choose advantageous future career paths, and induce their smooth school to work transition. Moreover, this study may also serve as the foundation upon which presently employed or job-seeking individuals base their decision to change jobs, or the manner in which they seek employment. By heightening the job match between the job-seekers and various occupations and those engaged in the relevant field, this study will increase the manpower pool and its usage, and ultimately contribute to the achievement of economic growth and general job stability. Furthermore, this study is expected to be used in many occupational studies conducted by the Korea Research Institute for Vocational Education & Training (KRIVET) and to improve the effectiveness of these studies.

1. Model

As the tasks related to the management of employment and personnel within Korea's labor market have exhibited a strong tendency to be carried out based on rotations at the enterprise or individual department level, a proper occupational labor market has failed to take root. As a result, the ratio of job change within a particular industrial field has been higher than the ratio of job change within a particular occupation. This clearly proves the weakness of the current occupational labor market, and demonstrates the fact that the industry-specific characteristics of skills have dominated over the occupation-specific characteristics of skills in the labor market.

The need for specialization in conjunction with the performance of job tasks has gradually heightened as a result of the advent of the knowledge-based economy occasioned by the development of information & communication technology (ICT), and of the greater economic competition created by the invigoration of economic openness. This has resulted in efforts launched within the labor market to establish an occupational labor market system and to improve occupational specialization through such means as the introduction of job-based and annual salary systems, the establishment of an optimized job education system, as well as attempts to raise job awareness, expand job-related information, and provide the pertinent information through various sources and routes. In this regard, the importance of establishing occupational projection models and reliable projection results has increased exponentially.

The limited amount of information available has resulted in existing studies on the forecasting of the supply and demand for manpower being in many cases

frowned upon. This failure to produce the necessary information has been caused by a lack of statistical materials, as well as the inability to develop models appropriate for Korea. More to the point, as a proper occupational labor market has failed to develop, the reliability of occupational statistical materials has been very low; moreover, serious limitations have emerged with regards to the ability to collect such statistical materials. In addition, in terms of the projection models, as existing studies have used methods to forecast future trends that have been based on numerical values calculated in the past, these have failed to reflect the rapidly occurring shifts in various occupation-related aspects, such as the change in employment and job tasks. As a result, the occupational information produced based on these manpower projection studies has been limited to the sub-major group level, while failing to reflect the results of qualitative job shifts, such as changes in wages and demand for skills. To this end, existing occupational projection results yielded little more than information about the increase or decrease in the number of employed which have taken place over time.

This study, which should be regarded as a supplement for the numerical value-centered manpower projection models used in existing studies, expands the occupational projections to the occupational unit group level, and also incorporates the qualitative shifts in occupations in the projection model. For the manpower supply projections, existing study results, which have been widely accepted, were utilized. For the industrial production and employment coefficient projections, the lack of statistical materials and the mismatch in terms of occupational classification made it such that the researcher had little choice but to rely on existing data.

For the occupational classifications, the researcher made use of the Korea Employment Classification of Occupations (KECO). The current number of employees at the various occupational units level (367 occupations) was calculated by summarizing cumulated data from the Occupational Employment Statistics (OES) program and the Labor Demand Survey conducted by the Ministry of Labor. Based on this, the researcher was able to forecast the number of employees for the period of 2005-2015 using an exponential smoothing technique. An investigation of shifts in occupational skills, relative wages (income level), and international influences was also implemented in order to analyze the emergence of new types of specialists and skilled manpower. Given the fact that the demand for new occupational skills is expected to rise as a result of the development of ICT, and the high likelihood of the need for tasks which can mitigate the mismatch between occupational skills in terms of the provision of the education and training programs required to meet such demands will emerge, the importance of providing information about occupational skills cannot be overstated. There is no need to argue over the fact that wages are the key to all economic activities. Based on the consideration that in the long run it might be an important explanatory variable of individual occupations relating to the shifts in occupational prestige, the researcher also included the social influence factor.

A survey of specialists in 30 individual occupations was conducted in order to analyze the reliability of the suggested estimations. This step was designed to include the judgment of current specialists in order to overcome the fact that the rapid changes in occupational employment expected to emerge as a result of economic opening are hard to reflect when using past trends based on gradually changes.

This projection model compiled at the occupational unit level was focused on

integrating numerical estimations with qualitative forecasting in order to improve the uses of manpower projections. Nevertheless, rather than an independent and perfect model, the projection model suggested in this study can be characterized as one which complements existing numerical models by taking into consideration the limitations of statistical materials. The model developed for this study is designed to obtain highly reliable projection data at the occupational unit level, all of which can be estimated from existing statistics. There is a need to continuously study manpower projections and to, through the exploration of such models, develop appropriate projection models.

2. Results

The results of our analysis of projections for 2015 conducted in conjunction with a numerical model that utilized the Korean Employment Classification of Occupations (KECO) as the standard, revealed an overall trend towards an increase in employment at the sub-major group level. In this regard, employment in the legal, police, fire-fighting, and teaching professions exhibited the highest growth rate (85%), followed by the health and medical professions (60.7%), social welfare and religious professions (50.8%), and the security and custodial service professions (44.6%). Meanwhile, the occupations for which the number of employees is expected to greatly increase were identified as being those related to the management, accounting, and administrative associate professions (581,000 employees) as well as the security and custodial service professions (437,000 employees). Considering the ratio of each occupational group in terms of overall employment, our study found that while the marketing and sales professions currently account for the biggest ratio, 16%, and are predicted to continue to do so in 2015, employment in the agricultural, forestry, and fishery (∇ 27.9%), textile and clothing (∇ 22.9%), and environmental, printing, lumber, furniture, handicrafts, and primary production fields (∇ 3.3%) displayed a downward trend.

Analyzing the projected number of employees at the individual occupational unit level (367 occupations), the highest growth rate in terms of employment by 2015 was recorded by claim adjusters (184%); meanwhile, the biggest drop-off in terms of jobs was posted by manufacturing laborers (∇ 79%). Taking a look at the shift in the number of employees, retail salesperson (503,000 employees) was the occupation that was found to have the highest increase in employment, while crop farm laborers exhibited the biggest drop (∇ 678,000 people).

The total increase in employment of the 30 occupations predicted to exhibit the highest growth rate was set at 814,000 people, thus accounting for 27% of the overall increase (3,043,000 people) in employment. The average growth rate was rather high at 105%. Claim adjuster (184%), interpreter(133%), system software developer (132%), accountant (123%), recreation coordinator and sports instructor (120%) were occupations that were forecasted as high growth occupations.

It was estimated that the occupation group (30 occupations) which exhibited the greatest increase in employment would result in the creation of 3,334,000 new jobs. The average employment increase rate of these 30 occupations was estimated at 56%, which was 4 times higher than the overall increase rate. In this regard, retail salesperson (503,000 people), custodian (313,000 people), administrative clerk

(177,000 people), receptionist (155,000 people), and nurse (144,000 people) were all identified as high growth occupations.

The 30 occupations which showed the highest decrease in employment saw a drop in total jobs of 2,004,000, thus accounting for 93% of the overall decrease in employment. The average decrease rate of these 30 occupations was 34%. Crop farm laborer ($\nabla 54\%$), retail sales manager ($\nabla 32\%$), simple production laborer ($\nabla 48\%$), general administrative clerk ($\nabla 23\%$), and sawing machine operator ($\nabla 33\%$) were amongst the occupations which showed the most rapid decrease in employment.

In addition to the projection of employment scale, the researcher also estimated the qualitative outlook for skills, income, and international job prestige of individual occupations based on the results of the specialist survey. This step was based on the determination that information such as the social prestige of the relevant occupation was also necessary, and that factors such as wages and demand for skills were directly related to the long-term development of an occupation. While the quantitative projection results are presented in numerical form, it is difficult for the majority of information demanders who are not occupational specialists to understand the exact meaning of the given value. Furthermore, the biggest interest of information demanders concerning occupational outlooks revolves around the possibility for the development of individual occupations amidst present and future changes in the economic and social environment.

The researcher conducted a 5 point scale-survey of specialists concerning the degree of occupational skills which would be required for each of the 367 occupations (occupational unit level) 10 years down the road. In this regard, the average overall occupational score was calculated to be 3.53, indicating that more occupational skills will be required 10 years from now. Overseas sales and marketing, robot operator for automatic assembly line and industrial robot operator, consultation specialist, technological marketing, and computer security specialist were estimated to require a higher level of occupational skills in the future. Meanwhile, gas station attendant, vendor and traveling salesperson, cargo loader, transport related laborer and freight handler, and display clerk were estimated to require a lower degree of occupational skills in the future.

Analyzing the results of the 5 point-scale survey of income levels, i.e. occupational wages, our study found that the wage levels of computer security specialists, high-level executives of enterprises, aircraft mechanic, robot operator for automatic assembly line and industrial robot operator, computer system designer, and analyst are expected to show the most improvement 10 years from now. Conversely, the wage level of vendor and mobile salesperson, gas station attendant, cashier and ticket agent, traveling salesperson, and display clerk is anticipated to experience the greatest drop off in the future.

The results of the survey of occupational influence 10 years down the road found that the international and domestic influence of occupations such as computer security specialist, consultation specialist, overseas sales and marketing, cultural, art, design, broadcasting related managers, environment and public health inspector was expected to rise significantly. Conversely, the influence of occupations such as vendor and mobile salesperson, gas station attendant, traveling salesperson, masseuse, and lawyer will decrease in the future.

Using the quantitative and qualitative projection employment results secured at the occupational unit level above, the researcher then proceeded to select occupations

which have a bright future. Although various methods can be used to determine potential future occupations, these were selected in the current study based on the results of the quantitative projections of the scale of the increase in employment and in the rate of employment, and the results of the qualitative projections of wages, skills, and occupational prestige.

The 32 of the 367 original occupations, which include 4 occupational groups, selected as future potential occupations were: managerial positions (high level executives of enterprises, finance and insurance manager, information & communications technology manager, cultural, art, design, and broadcasting related manager), social welfare and religious related professionals (social welfare service, consultation specialist, social activist, child care instructor and child care worker), and information communications technology related professionals (computer engineering, communications engineering, computer system designing analyst, system software technician). In addition, the following professions were also selected as future potential occupations: financial assets manager, special school teacher, police officer, fire-fighter, conductor, composer, performer, singer, dancer, and choreographer, director, producer, and actor, technology marketing officer, security guard, building security manager, skin-care and body shape management, recreational coordinator and sports instructor, Japanese cuisine chef and cook.

As job education, selection of career paths, and job consultation can be likened to windows toward the future, these should be determined based on industrial and occupational projections. However, at this point in time education, career paths decisions, and job choices are being carried out amidst an uncertain future that is constantly in flux. In this regard, the actual importance of manpower projection studies and occupational projection studies at the occupational unit level has been underestimated. Therefore, there is a need to secure more investment from the public sector for this particular field.

6. National HRD Budget System

Kyeong-jong Kang · Sung-jun Baek · Jong-woo Kim

1. Research Summary

The purposes of this study were to investigate HRD-related government budgets, classify them based on their characteristics, analyze the expenditure structure, and develop a systematic budget management system as a new foundation of government HRD policy implementation. For these purposes, literature review, contents analysis, case study, focus group interview, expert panel, and seminar were conducted as research methods.

2. Concept and Significance of Human Resource Development Budget System

The concept of budget system encompasses the budget classification and the budget management. Budget classification is to categorize the budget into sub-segment according to certain standards, while budget management means planning, control, and coordination on the budget in order to achieve the policy goals of government projects in most effective and efficient ways.

In these context, this study put focus on the budget of human resource development projects of the government. This study intends to develop the human resource centered budget system which is a budget management system of classifying, planning, controlling, and coordinating the budget of human resource development projects, as a policy measure of comprehensive, systematic, and efficient management of human resource development projects.

Through this HRD budget system, the government can figure out the total amount of HRD budget and analyze the budget by purposes, target group, and the ministry.

3. Foreign Budget Systems

Review on the budget system reforms in major OECD countries including the United States of America and the United Kingdom suggests following implications: First, there is no OECD country whose budget system deals with HRD-related budget separately as a functional budget classification. In that sense it is very unique and meaningful for Korea to categorize HRD budget as a separate classification item and to analyze it. Second, HRD budget system needs to be designed so that it can be analyzed from many different perspectives. Third, it is necessary to set human resource development as a separate section in the mid-term finance planning, and to manage it on the basis of performance evaluation. Fourth, the budget classification system of human resource development projects should include all projects comprehensively, while its categories should be mutually exclusive and be flexible

enough to absorb new projects.

4. Current HRD Budget System under National Budget Structure

The state budget consists of the general account, the special accounts, and the fund. The total amount of HRD budget, estimated on the bases of the 2nd NHRD strategy plan, was 6.5 trillion won which was confirmed by the Ministry of Planning and Budget (MPB). Among this, the budget from the general account and the special account was 3.5 trillion won which accounts for almost the half of the overall HRD budget. Also, the public fund was 1.3 trillion won (19.8%), the local budget was 1.6 trillion won (24.7%), and the civil budget was 176 billion won (2.7%). The HRD budget controlled by MPB including the budget and the fund was 4.8 trillion won which took 72.6% of the overall NHRD budget. The overall NHRD budget also was allocated into ministries as follows: Ministry of Education and Human Resource Development (2,442 billion won), Ministry of Gender Equality and Family (1,876 billion won), Ministry of Labor (864 billion won), Ministry of Health and Welfare (574 billion won), and Ministry of Commerce, Industry and Energy (167 billion won). The portions of detailed parts such as central budget, fund, local expenditure, and public investment are different across ministries.

The HRD budget can be classified by project areas, target group, and policy area in the second NHRD strategy plan. This study provides the basic model of HRD budget classification with 4 categories such as development of HR, allocation & utilization of HR, HR policy infrastructure, and support to HR institution.

5. New HRD Budget System

The proposed NHRD budget classification system, which encompasses purposes, target groups, and project areas, contains 4 project areas, 16 policy categories and 35 detailed action plans. The budget of each project area was allocated as follows in order: human resources development (4,731 billion won, 62.2%), human resources allocation and utilization (1,735 billion won, 26.5%), infrastructure (653 billion won, 10.0%), and institution support (86 billion won, 1.3%).

The budget allocations in sub groups are as follows; In human resources development, the budget was allocated as follows in order: preschool education and nursery (53.5%), higher education-undergraduate (16.4%), elementary and secondary education (15.1%), and higher education-graduate (15.0%). In human resources allocation and utilization, the budget was allocated as follows in order: vocational training for employees and the unemployed (47.4%), supports for the disadvantaged (30.6%), supports for women, military and police man, public sector workers (15.3%), and lifelong education (6.7%).

The HRD budget structure was designed based on the current classification cases which government departments have followed for HRD projects. The HRD budget structure is consisted of 1) salary, 2) R&D, 3) facilities, 4) scholarship, 5) operation, and 6) training. The amount of HRD budget according to the budget structure in 2006 was as follows in order: facilities (1,996 billion won, 30.5%), scholarship (1,545 billion won, 23.6%), training expense (1,245 billion won, 19.0%), operational expense

(1,162 billion won, 17.8%), R&D expense (363 billion won, 5.5%), and salary (236 billion won, 3.6%). This shows that there are more emphases on the physical asset investment.

6. Policy Directions for the HRD Budget System

For establishing the HRD budget system, the followings need to be considered: 1) setting the mid-term and long-term goals and directions for the national HRD, 2) planning strategies for the national HRD, and 3) making annual plans based on mid-term and long-term goals and strategies. The budget for the NHRD should be acquired and allocated through the budget adjustment system among ministries rather than the department-based separate budget allocation system. Furthermore, the budget adjustment system should be connected to the mid-term budget plans which are based on the NHRD strategic plans. After setting up yearly action plans of NHRD strategy plan by ministries, the government should manage the HRD budget specifically according to sub categories of program-unit project-task. HRD budget classification scheme and budget structure mentioned above should be applied to this process of HRD budget management. New HRD budget system needs to be reviewed and managed by the National Committee on Human Resource which will be established in the near future.

In order to make the above-mentioned HRD budget system workable, it is prerequisite that related ministries reach agreement on the principles and standards for setting up and applying the system. In addition, it is required to increase the reciprocity of budget data among ministries and the efficiency of budget management by building database through codifying the national HRD projects according to the HRD budget classification and budget structure.

7. Military HRD and Industry-Military Cooperation

Sung Lee · Hyun-soo Kim · Jung-pyo Lee · Chang-ik Choi · Dong-chul Lee

This study identified ways of cooperation for education of soldiers, noncommissioned officers, and commissioned officers to help them well manage their duties in military and help them equip skills, knowledges, and attitude needed for their business lives. The ways of cooperation were identified based on the cooperation between industrial world and military side with supports by the government.

For this study, the researchers conducted literature review and benchmarked advanced cases of France and Germany to find out implications. This study also interviewed and surveyed business people in major companies of Korea to draw out opinions regarding to the possible cooperation ways, systems, educational programs, and other resources of business side.

Several military people were interviewed to identify the educational needs, education systems, and educational environment of military sides. The researchers held a forum of which participants were mainly people who were working for education in military to get opinions for the research results of this study.

Through the above methods, the researchers analyzed the problems of current education system of army and identified the possible cooperation ways of enterprises and military for education of military people in the aspects of software, hardware, and human-ware.

The roles and responsibilities of enterprises, army, and government were proposed. The enterprises should understand their cooperation for education of military people is not only for military but also for themselves because the trained people in military will eventually work for enterprises after they are discharged from military service.

The army should understand the cooperation with enterprises is not the terminal objectives but the opportunity to learn and benchmark the advanced educational systems, know-how, and expertise of enterprises. After several years of cooperation with enterprises, the army should establish training system for their people using advanced educational methods, systems, and expertises.

The specific proposed programs identified by this study included sharing e-learning program of enterprises, establishing cooperation council of educational experts, receiving support from enterprises to train educational experts in military and off-line education programs, commissioning education to enterprises, and providing long term internship in enterprises.

Following suggestions were also proposed:

1. Reorganization of HRD commission between enterprise and army
2. Conclusion of a basic agreement between enterprise and army
3. Introduction of learning holiday system

4. Introduction fo OJT programs in enterprises
5. Establishing competency development insurance system
6. Establishing learning account system for military people
7. Monetary supporting system for job career selection
8. Enactment of a law to encourage employment

The researchers hope that the results of this study can be used by the educational policy makers, experts, and professionals when they establish educational system and develop educational programs for army. If they use the result of this study they can help the military people equip competencies need for their successful careers. The researchers also hope that the soldier can recognize that the times of their compulsory military service is not the discontinuation of their development but the continuation of their development.

8. Developing a Program that Supporting Employment Connect the Discharged Soldiers and the Small and Medium-sized Enterprises

Dong-Yeol Park · Sun-Hee Hong · Hyung-Han Yoon · Jung-Pyo Lee ·
Myung-Gu Kang

According to the research, most of the men in Korea who fulfilled their military service do their best to get a job, but it's difficult for them to get a job in a private company. This is due to their lack of professionalism and competence that the companies require. For this reason, it's necessary that some program should be developed to connect those men with the small and medium-sized enterprises. In addition, this program should be developed to be able to analyze and diagnose whether the men meet the standards that the enterprises require. We have reviewed the literature, posed questions to the discharged soldiers, interviewed them within and outside of the country, and held several seminars.

Each chapter contains the following:

In Chapter 2, we surveyed the supporting policy and the program for the discharged soldiers at home and abroad. This survey contains the fact that France and Germany give our country an excellent supporting employment system. In addition, we investigated the present condition of the educational training system to improve the basic educational knowledge and the professional competence among the programs of supporting the discharged employment.

In Chapter 3, we studied the characteristics of the discharged soldiers and analyzed the needs for developing the programs and management related to the discharged employment.

In Chapter 4, we brought the directions and the main contents of the supporting discharged soldiers' employment programs to a conclusion. Moreover, we suggested that the programs to improve the vocational competence and professional ability should be operated efficiently.

The basic directions of the supporting programs for the discharged soldiers' employment is to support the soldiers to develop the power to compete at the labor market before they finish their service in the army. In order to find enterprises' vocational standards, we developed a program to find the vocational key competencies and job performance abilities of the discharged soldiers. We have also suggested five other programs to manage and support the discharged soldiers' employment.

9. Case Study on the Learning Infrastructure in Small and Medium Enterprises

Mee souk Kim · Young hun Oh · Sung Lee · Su won Kim

1. Background

In the changeable situations, it is the very important to increase the added value of the firm for it to survive on its own, with few opportunities to increase the employees' competency development. This article identified current conditions of human resources in SME, reviewed the manpower policy of SME in many countries, and has case study on learning infrastructure of seven small and medium enterprises. We represent the successful factors, problems, and barriers through best practice of learning infrastructure in SMEs. We recommended ways to establish the best learning infrastructure and provided consulting to benchmark other companies' strategies. As a result, it encouraged employee's learning in SMEs and provides demand-side environment to suitable learning and supporting system.

In this article, we dealt the policy of human resources development, government supporting system for vocational training of employees, current situation of training and learning infrastructure, and case study on best practices of learning infrastructure in SMEs.

2. Concept and Analysing Framework to Learning Infrastructure

The learning infrastructure in organization is composed of supporting action for the learning of members and mechanism. The effective learning conditions can be separated into three types, which are formal learning, active learning, and experiential learning. Two main factors, social-supporting and physical-supporting, are related to learning infrastructure. The social-supporting is categorized into vision, strategies, leadership, and organizational culture, involving intention of CEO, competency-based organizational value, mood, opinion of members and respect for value, communication system, professional of staff, participant, empowerment of members and etc. The physical supporting is categorized into organizational structure, information system, reward system, involving linkage with human resources management system, performance-based reward, investment of education and training, providing the training program, evaluation of learning results, regulation, common place to learn, learning manual and etc.

3. Case Study on the Learning Infrastructure in SMEs

There are 7 cases to analyse the learning infrastructure in SMEs. We have 3 questions to identify the best practices. First, it concerns learning actions, meaning

how to get and develop employees' ability. It needs the operating skills, social skills, and learning skills. Second, it concerns supporting the learning, meaning ways to support the learning in organization. Third, it concerns learning condition, which means organizational environment that encourage members' learning.

Through the 3 questions, CEOs of 7 companies replied with passion and interest in education for employees. They recognized that learning is companies' vision and strategy. Especially, they made regulation to form training, education and learning teams. CEOs were focused on growing the key competency, giving employees the motivation and autonomy, and investing in the employees' self-directed learning. Middle managers are very important in constructing the learning infrastructure and they must have leadership. The experienced worker and beginner have partnership with each other to increase their abilities. HRD staff provide education by job, age, position, task and etc. Finally, employees have to participate in their learning actively and autonomy.

4. Conclusion

There are many barriers in human resources development in small and medium enterprises. Particularly, they have limitations in financial aspects. We took recognition that the SME have bad work situation, worse employment conditions and economical estrangement, moreover, the rate of participation of HRD is lower than larger companies. We need to understand and try to solve the problem of HRD in SMEs.

10. A Study on the Introduction of Job-rotation

Weon-Ho Jeong · Ahn-Kook Kim

1. Overview

This study aims to explain the "Job-rotation" as one of vocational training systems that has spread in Europe since the nineties, and measures taken to introduce it in Korea. Job-rotation is the system in which unemployed workers work temporarily in the firm as substitutes for the training employees, while the actual employees get trained outside their firm. Through Job-rotation, employers can expect the improvement of productivity and upgrade in their skills, and unemployed workers can obtain better opportunities of employment as regular employees through job experiences.

From this we have understood the features of Job-rotation, and studied the cases of Denmark and Germany. Successively we examined the Korean institutions which relate to Job-rotation and employers' inclination to Job-rotation, and finally suggested some institutional changes.

2. Features of Job-rotation

As mentioned above, the principle of Job-rotation is the rotation of employees' training and unemployed workers' substitutional work. Because all three participants, employers, employees and unemployed workers, can benefit from Job-rotation, it can be characterized as a "win-win-win triangle".

There are several types of Job-rotation such as one-to-one substitution, multiple substitution, part-time substitution and group substitution and more. Therefore the process of a Job-rotation project is very complex, meaning it is very important that the process of a Job-rotation project should be well managed by the project-manager. Furthermore, institutions' financial support system should be well structured, and close networks between firms, Public Employment Services, training institutions, and other regional stake-holders should be effectively established.

3. European Cases

Job-rotation was originally designed in the end of the eighties in Denmark and has spread in Europe since the nineties. Among European countries Job-rotation was most activated in Denmark and next in Germany.

In Denmark, the labor market reform 1994 led a rapid activation of Job-rotation through the introduction of three leave systems: training leave, maternity leave and sabbatical leave. Thereafter in the middle of the nineties the number of participants in Job-rotation grew considerably, but since then it has reduced slightly, because

the number of the unemployed who could be substituted has significantly reduced. However, the leave system and the financial support system for Job-rotation were better established in Denmark than any other European countries.

In Germany Job-rotation had been introduced in 1996, but was not activated until substitutes workers' wage is supported to employers by the Federal Employment Agency since 2002. However, the number of participants in Job-rotation did not grow so much, because there wasn't enough training leave in Germany. In addition, The Employment Offices weren't supportive of Job-rotation, because of its ineffectiveness on reducing unemployment. However, the private project coordinators such as firms, training institutions, academic institutions were very active, leading to nation-wide association for Job-rotation (Bundesverband Job-rotation).

4. Korean institutions for Jobrotation

In Korea, many institutions concerned with Job-rotation as workers are paid when they leave for training, or pregnancy wage support to substituted workers for female workers under maternity leave that are financially supported by the Employment Insurance. But the institutions are not so much utilized, because the amount of the support is very small. The function of Public Employment Services that should manage Jobrotation projects is also very weak, because the number of personnel of PESs is not sufficient for the management.

On the other hand, according to an survey, employers are positive for the introduction of Jobrotation.

5. Policy suggestion

In order to activate Job-rotation in Korea first of all the right to training leave should be given to workers so as to have time to participate in vocational training.

Secondly, wage support to substituted workers should be given to substituted workers for training employees as well as for female workers under maternity leave. Furthermore, the amount of the support should be raised as well.

Thirdly, personnel of PESs should be supplemented in order to facilitate project management. Otherwise, PESs should consign project management to private coordinators and support them.

11. An Innovative System for HRD at Regional Level

Hye-won Ko · Sang-jun Lee · Sang-hoon Lim

The Korean government has continued to operate the 'Governance Plan' in order to regionalize and localize businesses with respect to HRD. This plan has been assessed of having a number of problems. This study analyzes recent 'Governance Plan of HRD' at regional level.

In this study, it is recommended that the following principles be established in the future;

1. Set up a Partnership and Governance System

Regional issues are overall and comprehensive, and furthermore complicatedly related to many ministries and stakeholder. Therefore, such a governance system is required to enforce the participation by, and cooperation among, people with varying forms and degrees of interest in the central governments, regional governments, and regional areas.

2. Organization and Operation for Employment and HRD Agencies

It is necessary to form one system for regional employment and HRD in order to generalize and coordinate varying divisional policies.

3. Evaluation-oriented Approach

Evaluations of regional governments may help prevent inefficiencies and reduce the costs for regional employment and HRD. Based on the evaluation results, the budget from the central government can be decided upon and efficiently operated.

4. User-driven Services

It is necessary for job centers to set up a more 'customized service,' with specific working manuals and programs to supply both services (ex: placement plans) and training programs.

12. A Vocational Training Demand Survey

Young-sun Ra · Hye-won Ko · Kyung-won Cho · In-joong Ju · Sang-don Lee ·
Chul-hee Kim · Jae-sik Jun · Sang-ho Kim · Eun-sang Cho

The Korean Ministry of Labour and the Korea Research Institute for Vocational Education & Training have been working together on this study of vocational training demand so as to satisfy the demands of business enterprises. The following issues have been examined in this study;

1. How many people do employers intend to employ who have completed training for the unemployed?
2. How many unemployed people want to undertake training for the unemployed?
3. How many people can be trained in training institutes?
4. What is each optimum level of training demand and supply across the six regional Labour Administration Offices?

Results of this study made into these issues are as follows:

1. We surveyed 7,196 business enterprises across the country to examine their demands for manpower and training. As a result, we found that 16.1% of total respondents suffered manpower shortages. Manpower shortages were particularly acute in service fields; personal services & other public repair services were the most in need of manpower, followed by business services and the transportation industry.
2. We surveyed 7,247 unemployed people who visited job centers, (operated by the Korean Ministry of Labour), about their job experiences, training experiences, and training demands. 44.3% of respondents said they planned to undertake training for the unemployed in the future. They expressed preferences for services training, with IT service training second, followed by office administration and machinery equipment training.
3. We surveyed the status of enrollees in training courses, including courses that have already been completed in 2005 and desirable courses that might be offered in 2007, from 2008 to 2010 at a total of 633 training institutes.

To summarize, the preferred training courses among the unemployed and among training institutes was roughly the same in most regions. Generally, training institutes have focused on inviting as many trainees as possible, and have been opening and developing training programs according to trainee preferences. However, these courses have not related closely enough with the demands of industry. As a result, the employment rates have been relatively low, despite the completion of training courses.

13. A Study on the Innovative Evaluation System for Vocational Training

Younghoon Oh · Meesouk Kim · Suwon Kim

1. Outline

This study aimed to analyze the practice and performance of vocational training evaluation system and maximize the outcome of vocational training project. For this, we first identified the present situation and problem of vocational training institutes and program evaluation, involving the related legislations, policy and system. Second, we reviewed the literature of evaluation theory and constructed meta-evaluation framework, which involved two survey tools for meta-evaluation, and collected evaluation specialists' opinions. We then analyzed the validity and suitability of the evaluation criteria used in the year 2005 vocational training evaluation through interpretation of raw evaluation scores of training providers.

The results show that the current vocational training evaluation system was committed to some training programs, responsible for the accountability of, and decision-making concerning vocational training. It means that vocational training evaluation assures the quality of vocational training institutes, enhances trainees' right to choice through provision of various information, strengthens the competitiveness of training providers, and helps to build a healthy training market, as well as performance-centered service system and policies.

2. Innovative Strategies for Training Evaluation

A. Innovation of evaluation framework and tools

First, evaluation teams should be formed with consideration to the attributes of training providers by location and type of training. Training providers should be grouped accordingly and the same evaluation team should be responsible for those in the same grouping. Also, evaluation manuals should be easy to understand, providing sufficient information regarding evaluation process and detailed explanation about completing evaluation items and the key issues, thereby ensuring the consistency and accuracy of evaluation.

Second, site evaluation should be confined to special cases and the major evaluation tool should involve face-to-face interview between evaluators and training providers.

Third, the screening and selecting of evaluation specialists should be executed in such a way to ensure that complaints about evaluators are minimized.

B. Reform the evaluation infrastructure

First, the leading evaluation institute needs to be coordinated in order to ensure consistency, increase the synergy effect between training providers, and improve the efficiency of physical and human resources.

Second, the main role of evaluation institute should focus on the evaluation of vocational training institutes and programs in the short run, and on overseeing the evaluation projects by the Ministry of Labor in the longer run.

C. Performance-based evaluation model and sharing the information

First, we need to construct an evaluation system based on performance. This will require the scoring portion of performance in evaluation items to be higher than before.

Second, we need to compose consulting team with evaluators, and monitor evaluation outcome for consultation.

Third, we need to analyse the performance by location and type of training.

Fourth, as the trainee's satisfaction is most important factor in assessing training quality, more weight should be given to user evaluation in the overall evaluation of training providers.

Fifth, the results of evaluation by the local offices of the Ministry of Labor should be used to help determine the evaluation grade but not the overall evaluation score.

Sixth, the annual evaluation cycle should be coordinated and different evaluation systems should be employed to account for the differences between training providers.

Seventh, a database system should be built based on evaluation outcomes so that evaluation outcomes are managed systematically, and are generated, analyzed and used effectively.

To sum up, it is important to design and follow an evaluation system that is reasonable and realistic.

14. The Relationship between the Index of Enterprise Human Resource Development and Enterprise Credit Level

Chang-yong Song · Sung Lee · Young-saeng Kim · An-kook Kim · Joo-wan Park
· Seung-lok Hwang · Jae-hyuk Lee

Securing the excellent human resources is an imperative task for enterprises in order to survive in the current environment which has become globalized rapidly and which has led an intense competition. Employing and educating human resources doesn't mean simply utilizing human resources, because it is closely connected with the business strategies securing high performance individuals and it gives the effects to the enterprise's competitive power. Major global enterprises are making a positive investment in educating and managing human resources for these reasons. But human resources-related activity of enterprises in Korea leaves much to be desired. When it comes to the present status of human resource development in Korea, the level of investment is very low. The investment ratio of education and training to the labor cost dropped from 2.09% in 1996 to 1.47% in 2003. That is, the concern in activity of human resources development has rather been decreasing. Speaking of small and medium sized enterprises, this phenomenon is even clearer. In case of small and medium sized enterprises having from 100 to less than 200 employees, Korea's investment ratio of education and training to the labor cost is only 0.6% in comparison with 15 EU nations which investment ratio is 2.5%.

With these backgrounds above, the purpose of this study was to show that enterprise's HR activity gives effects to its performance which can be represented by enterprise credit level. Therefore, the objective of this study were to diagnose the level of HR activity of enterprises, to analyze the correlation between HR activity and enterprise credit level, and to make a kind of mechanism to promote the HR activity of enterprises.

To measure the level of HR activity, the HR activity model was introduced, and analyzed through analysis of research material and statistical methodology. The first-year research material of Human Capital Enterprise Panel made by KRIVET(2005), Korea Research Institute for Vocational Education & Training, was used to investigate the enterprise's HR activity, and 2004 Credit Rating Score from KIS-Credit Scoring Model, made by Korea Investors Service Inc., was used to measure the enterprise credit level in this study.

To analyze the correlation between HR activity and enterprise credit level, items related with HR activity among the questionnaires of Human Capital Enterprise Panel were chosen, and then the analysis of research material and correlation analysis were conducted. Items in each area were combined and standardized into 100-point maximum score scale. After understanding which item has a significant correlation through correlation analysis between the enterprise credit level and score of each area, correlation coefficient considering the size of enterprise was calculated. And then significance test for variables was conducted in regression analysis to extract

items in each area which explain the enterprise credit level well. Decision analysis, decision tree Model for data-mining, was also conducted to find out the rule classifying the enterprise credit level by each area.

The results and suggestions of this study are as follows.

First, this study found out the correlation between enterprise's HR activity and its performance. Using the enterprise credit level score, it is possible to connect them. Second, this study showed that HRD area and HRM area had a different effect on the enterprise credit level. Especially almost all items in HRD area such as education and training and so on had a significant correlation with the enterprise credit level. This result can give a stimulus to investment in enterprise on HRD. Third, with consideration that the enterprise credit level can be one of the indicators of future value of enterprise and the solution leading investment of enterprise on HRD is the reflection of future value on the present value, it is critical to find a relationship between the HR activity and the enterprise credit level in policy making. Despite of several limits of this study, it is meaningful as a contemporary opinion to activate the discussion about these.

15. Performance Analysis on the National Authorization System of Private Qualifications

Hyun-Soo Kim · Jong-Sung Park · Sang-Ho Kim

1. Overview

This research was conducted to evaluate the performance of the National Authorization System of Private Qualifications (hereinafter referred to as "the Authorization System") and to suggest implemental remedies.

By reviewing the introduction purpose and management situation of the Authorization System the range and method of performance analysis were determined. Tool for performance analysis was devised through analysing preceding studies on policy evaluation and performance analysis with the aspect of input and output.

Questionnaire survey was adopted to gather data for performance analysis from 1,412 respondents who have an authorized private qualification, 78 assessment committee members for authorization and 123 personnel manager in firms. Utilization status of private qualifications and implemental remedies for the Authorization System were surveyed through in-depth interview with the administrators of private qualification (authorized 38, unauthorized 35).

2. Implementation Results of the Authorization System

A. Statistics of authorized private qualification

The number of application for authorization was 217 qualifications in the year of 2000, 117 in 2001, 110 in 2002, 113 in 2003, 74 in 2004 and 123 in 2005 including application for modification and renewal. 62 private qualifications are authorized and they are managed by 38 organizations as of September 2006.

B. Statistics of acquisition of authorized qualifications

1,088,685 persons took authorized private qualification as of the end of 2004. The most number of acquisition is ITQ with over 500,000 and qualifications in the field of information & telecommunication and language show more applicants and acquirers in general.

The economical status of qualification acquirers in that time their acquire qualification was student(44.2%) and worker(42.8%). Students applied to the qualification test more after authorized for the purpose of getting jobs.

A motives for acquisition of authorized private qualification was mostly for the future purpose(50.6%). It shows that the motive for acquisition of authorized private

qualification is to secure the uncertain future.

Although it shows similar distribution in both group of acquirers who attains certificates before and after the authorized, the later shows more response that they could get more favored in getting a job. According to this result we could infer that authorized private qualification is recognizing more positively for utilize to the applicants.

C. Indicators for performance evaluation

Indicators for performance evaluation was developed based on preceding studies but evaluation areas and items were set up with consideration of feasibility for data gathering. Indicators for performance evaluation consisted of input and output aspect largely (large area). Input stage consisted of 2 mid area, 7 small area and 17 detailed items and output stage consisted of 4 mid area, 6 small area and 18 detailed items.

Inputs were preparation of the authorization system, implementation and role performing of each interesting subjects which were required for implementing the authorization system. Outputs had economical and noneconomical effects, it was more relevant in comparison with input, supplying equitable opportunities to the interesting parties in the process of implementation of the authorization system, and the degree of satisfaction of beneficiaries.

4. Performance of the Authorization System

First, field relevancy, utilization, and public trust areas have some outcomes in terms of purpose attainment of the authorization system, although there are some problems.

Second, in the aspect of means of authorization system, the role and endeavor of assessment institution, private qualification administrator, and government were reviewed. Specialty and appointment of assessment committee members, number of assessment qualifications, assessment procedure, and assessment criteria were found to be relevant.

Otherwise, relevance of human resources and organization for management and management for certification, which were implemented by qualification managers, showed weak performance. Governmental ministries also had more problems in trying to promote utilization of private qualification, making a consensus in deciding related ministry and prohibited qualification titles, controlling quality through follow up management, and deciding relevancy of deliberation period and council members of Policy Deliberation Council on Vocational Education and Training.

Third, economic and noneconomic effects were reviewed by effectiveness indicator. Performance differed from items but there was very low performance in this area as a whole.

Fourth, in this efficacy indicator, the alternative system such as report system, license system, and registration system, didn't show anything that is better than existing authorization system.

Fifth, there was some performance in equity indicator, but also had a lot of

problems to be fixed.

Sixth, in this correspondency indicator, some degree of satisfaction were reviewed such as assessment institution, assessment procedure and criteria, certification (testing fee, testing contents, and testing methods), and private qualification administrator. Some items showed performances but in general the performance was low

As a whole, there was a significant performance in upbrining the operation capabilities of private qualification administrators whereas a low performance in social utilizing of the private qualifications.

5. Policy Suggestions

First, social utilization of private qualifications should be strengthened.

Second, to secure the competitiveness of private qualification it should develop the mechanism to meet the needs of industries.

Third, private qualification administrators should be properly represented and trusted by public.

Fourth, the authorization system should be reformed in terms of implementation.

Fifth, Data Base(DB) on private qualifications should be set up.

Sixth, restriction criteria for private qualification should be arranged.

Seventh, guidelines for new establishment and management should be presented.

Eighth, framework on qualification and its enforcement ordinance should be repaired.

Ninth, quality control system should be set up through regular analysis of performance.

16. A Plan for a New Qualifications System in the Knowledge and Information Era

Dong-Im Lee · Hyun-Soo Kim · Deag-Ki Kim · Jeong-Yoon Cho · Whan-Sik Kim

1. Study Background

The knowledge and information era does not involve only a progress in the informing data based on IT technologies but also refer to a new society with complex mega-trends including globalization, rapid technological changes and growth of the service industry. As technologies used at the industrial fields evolve drastically, it is difficult for qualifications to reflect on-site needs. Also with fast transformation of external circumstances which highlights the necessity of lifelong learning, learning should essentially be pursued on a constant basis and linkage between its result and qualifications. In an environment where labor movement is inevitable with the advent of the globalization trend, more weight is given to the functions of qualifications to facilitate labor movement. Against this background, this study focuses on the rising need of preparing strategies for a new qualifications system by re-identifying functions and roles of qualifications.

2. Results

A. Diagnosis of the Korean Qualifications System

As for the trend of qualifications application, the number of applicants has decreased. Recently, the number of applicants for technician qualification has particularly reduced, while the number of applicants for license qualification or high level professional qualifications has slightly increased.

One of the most serious problems of the current qualification system is its uselessness. In addition, the awareness toward qualifications is still at a low level and the qualifications are not utilized as standards for employment or promotion at corporations. Even when one obtains a qualification, the job area of the qualification, in many cases, does not coincide with the area that the worker practically engages in. Moreover, as the qualification items do not reflect on-site needs, they should be overhauled. In addition, as a result of an analysis on whether the test standards reflect on-site needs, it was found that there is a gap between the test contents of job duties and the skills required at the industrial fields. Meanwhile, it is worth a note that the method of granting qualifications in Korea is not proper to promote lifelong learning desired in the knowledge and information era.

Finally, the effects of qualifications on job transfer, job duties satisfaction level, employment and wage were examined. As a result, it was revealed that qualifications play a role of signaling employment and job transfer but does not affect the area concerning satisfaction on job duties, wage, and workers after employment.

B. Diagnosis of Changes in External Environment

Aging of population and change in people's tastes have brought about emergence in new industries such as silver industry, environment industry and sports industry. Qualification items in these areas, however, are not diversified yet. In addition, proportions of the primary and secondary industries are falling with the growth of service industry, while that of the tertiary industry is rising. Also, the manufacturing industry is increasingly linked to the service industry with the development of information and telecommunications technologies. Therefore, National Skills Qualifications taking its root at the traditional manufacturing industry cannot guarantee on-site utility any more and thus, measures to address this problem should be prepared.

Meanwhile, job duties have changed drastically and the job structure has simplified centering around unskilled manual work, service related work, research and analysis work and culture and art work. This signifies that with decreasing demands for workers with middle level skills, the demand for relevant qualification items will decline as opposed to rising demand for high level skills.

C. Analysis of Recent Changes in Qualification Systems of Other Nations

Nations around the world have recently witnessed a variety of changes to their qualification systems. The changes and their implications can be analyzed and summarized as follows.

First, efforts are being made to strengthen on-site utility of qualification. With the global trend of rapid technological changes, there are rising needs toward changes in qualification items and contents and methods of qualification assessments. In Germany, experts at various research organizations have made concerted efforts to launch "the early recognition system (so-called the early warning system)" in order to survey qualifications requirements responding to emergence of new jobs in the wake of technological changes. It is a kind of system to deliver qualifications requirements.

Second, countries around the world are paying a keen attention to preparing for the lifelong learning society. For example, in Australia, recognition of prior learning is advanced at the national level and flexible linkage between study and work is promoted in a similar way as the Germany Dual System for reducing unemployment rate of adolescents. Moreover, the school-based apprenticeship, a mix of vocational education and training and general education, is spreaded in the country.

Third, with the frequently growing movement of labor among countries, nations around the globe are preparing for mutual certification of qualifications. For example, Germany has come up with a system for mutual certification of qualifications among EU member countries. In a similar drive, Japan has improved its professional engineer system as part of the efforts to prepare introduction of a system for mutual certification with other nations.

Fourth, qualification systems are becoming more flexible. In Germany, the module type qualifications has been introduced and in Japan increasingly diverse entities have become in charge of management and operation of qualifications.

D. Establishment of Concept, Functions and Roles of Qualifications in the Knowledge and Information Era

In Korea, a qualification is being defined, under the Basic Qualification Act, as "the level of acquisition of knowledge and skills that are evaluated and recognized according to certain standards and process and the competency required for job duties performance". Based on this definition, qualifications are confined to vocational ones and granted through one-time testing service. However, changes in the concept of qualification is required in the knowledge and information era because lifelong learning has become more important and labor movement is increasing. Qualifications so far have been based on workers but in the future individual learners including workers should be the focus of qualifications. Also, a qualification system should emphasize recognition of individual competency rather than the labor market. The learning (education and training) here should have various forms and methods. In addition, granting of qualifications should be done in a more diverse way. As for functions of qualifications, while signaling, guiding and screening functions have been stressed in the past, other functions should be added including promotion of labor movement, enhancement of lifelong learning and integrating and linking of various competency evaluation mechanisms.

E. Vision and Strategy of New Qualification System

The strategy for the new qualification system desired in the knowledge and information era is to secure flexibility, integration and standardization of qualifications. Sub and detail plans of the strategy are as follows.

1) Increased Flexibility of Qualifications

Sub Plans	Detail Plans
Strengthen lifelong career development	<ul style="list-style-type: none"> -Establish role model of qualifications -Enhance participation by employed workers on qualification acquisition -A qualification system responding to changes in the population structure
Increase on-site utility of qualifications	<ul style="list-style-type: none"> -Link with Corporate HRD -Continued development of professionalism by qualification acquirers -Support acquisition of qualifications -Facilitate in-house qualification systems
Establish a qualification requirements delivery system	<ul style="list-style-type: none"> -Strengthen the function of SHRDC identifying qualification requirements -Introduction of the qualification early warning system -Improve competency of organizations operating the qualification system

2) Integration of Qualifications

Sub Plans	Detail Plans
Develop module type qualifications	<ul style="list-style-type: none"> -Develop module type qualifications -Develop module type evaluation methods -Improve the process and methods of obtaining qualifications -Develop and apply module type qualifications on a pilot basis
Link academic background, career and qualifications	<ul style="list-style-type: none"> -Prepare a NQF -Improve the qualification grade and standard of application eligibility -Prepare measures to recognize prior learning
Link with education and training	<ul style="list-style-type: none"> -Prepare the manual and process for development of national skills standards -Establish a system to certify national skills standards -Utilize the national skills standards

3) Standardization of Qualifications

Sub Plans	Detail Plans
Mutual certification of qualifications among countries	<ul style="list-style-type: none"> -Improve the professional engineer qualification system -Improve the professional service qualification system -Secure transparency of qualifications
Establish a RQF	<ul style="list-style-type: none"> -Establish a NQF -Establish a RQF -Carry out diverse researches on foreign qualification systems
Quality management of test organizations	<ul style="list-style-type: none"> -Manage organizations -Manage and operate the test system

3. Conclusion

What is especially emphasized under the new paradigm is the integration of qualifications. Breaking away from the traditional testing service that had been offered only once, a system for evaluation and recognition of various types of learning, should be established and the relevant qualifications should be granted for the learning. In order to realize this new qualifications method, the following should be pursued in the future.

First, roles of the government and the private sector should be established. The

current method initiated by the government should be avoided but qualifications that are recklessly issued by private organizations should not be recognized, either. While respecting independence of the private sector, private qualifications that are introduced to the social system should be controlled in an appropriate way. As the authority of establishing new qualifications is monopolized by the Administration (strictly speaking, individual ministries), participation of relevant professionals and private organizations should be guaranteed, thus decentralizing the authority.

At the same time, there should be more clarified standards and process for establishing new qualifications and the clear division of roles among ministries at the government should be made.

Second, establishment of skill standards and a National Qualification Framework should be carefully examined.

Third, various types of qualifications should be recognized. Besides the existing national qualifications, national technical qualifications, private qualifications and officially recognized private qualifications, and new types of qualifications should be also recognized.

Fourth, the relationship between educational qualifications and vocational qualifications should be clarified. The 1:1 linkage between vocational qualifications (currently national technical qualifications) and educational qualifications was favorably addressed in recent discussions on the KQF. However, this deserves a more careful review because there exists a big gap between the time spent for acquisition of vocational qualifications and degrees and the contents of learning.

Fifth, the evaluation and recognition methods for diverse competencies should be recognized, which is deeply related with systemizing evaluation and recognition of prior learning (experience) and establishing a recognition system for various types of education that are provided through different methods and in different times and places.

Sixth, if qualifications can be viewed as closely related with evaluation and recognition of competency, it would be also important to establish a system to manage accumulated scores.

17. Occupational Research on Health and Medical Industry

Sang-Geun Han · Chun-Soo Park · Dong-Im Lee · Yun-Kyoung Jeong ·
Dong-Son Choi · Hyang-Jin Jung · Joo-Ho Lee

1. Purpose and Method of Research

This research work intends to track the change of occupations in the health and medicine industry, through close networking within the field of health and medicine, and identify the knowledge, skills, and attitude required for the major occupations in the health and medicine industry, in order to devise a strategic alternative in human resources development which will include the consideration of the demand and supply of the workforce, educational training and certification. More detailed purposes of this research are as follows.

The first purpose is to find out the structure of occupations in the field of health and medicine through an analysis of categorization by industry and by occupation. The second purpose is to identify the characteristics of each occupation such as knowledge/skill, attitude, salary and working conditions, career path, job expertise level, and job satisfaction, through a study on occupations by industry targeting the health and medicine industry. The third purpose is to analyze the systems of human resources development, including qualification/certification and educational training in the field of health and medicine. The fourth purpose is to carry out an occupational analysis on one single type of occupation (musical therapist) in the field of health and medicine, and to analyze the gap between the educational curriculum and the "real world" of the occupation itself. The fifth purpose is to compile the analyzed results based on the occupational research method into a report, to be titled "Occupational World in the Health and Medicine Industry" for the purpose of supporting students and job hunters in selecting their career. The sixth purpose is to suggest an alternative policy on human resources development - demand and supply of workforce, qualification, and educational training - based on the results of the occupational research on the health and medicine industry.

This study is significant in that it is occupational research conducted in a way that is oriented toward the actual field. In terms of methodology, this research mainly utilizes in-depth interviews targeting workers in the industrial field, and the establishment of a co-operational network between industrial concerns and relevant institutions.

2. Categorization by Industry and by Occupation in the Health and Medicine Industry

The health and medicine industry mostly falls under the Health and Welfare (P) category of the first-level categorization of the Korea Standard Industry Code (KSIC). The health and medicine industry is composed of hospitals and clinics, other relevant medical organizations, and institutions offering medical related services, which

provide health service in order to prevent and cure a variety of diseases for the purpose of maintaining people's health.

This study selected 20 occupations from a number of occupations in the health and medicine industry to carry out occupational research. In selecting the target occupations, the research team reviewed candidate occupations based on the various industry categorization regimes including the Korea Employment Classification of Occupations (KECO). In the end, a total of 20 occupations were finally chosen based on interviews with relevant field workers, review of documents and meetings among the researchers. The occupations selected were: doctor, doctor of Oriental medicine, dentist, veterinarian, clinical nutritionist, clinical pathologist, dental hygienist, emergency medical technicians, nursing assistant, dental technician, pharmacist, nurse, optician (optometrist), occupational therapist, radiological technologist, medical records and health information technician, physical therapist, musical therapist, clinical psychologist, and biomedical engineer.

3. Characteristics of Occupations in the Health and Medicine Industry

With regards to the 20 occupations that were the main target of this research, what was first considered for each occupation was the outline of the occupation, the work conducted, the chance for promotion, track record of transfers and occupational change. Next, job performance capabilities for occupations in the health and medicine industry were evaluated. In this research, job performance capabilities are considered to be composed of knowledge, skill and attitude.

The results of this research's in-depth interviews and surveys indicated that the job performance capabilities required in the major occupations in the health and medicine industry showed marked differences by occupation, especially for components under the skill category, that is, in the areas of instrumental or organizational capabilities.

As for expert knowledge, a considerably high level of theoretical and practical knowledge in one's major was required in most of the occupations. The average level was a bit lower for nursing assistants, dental hygienists and opticians (optometrists) when compared to other occupations, but the average required level of expert knowledge for all occupations were over 4.0. Moreover, incumbents working in the field recognized that an equally high level of both theoretical and practical expert knowledge is required.

In terms of instrumental capability, there were discrepancies between the occupations. The ability to produce a document is highly required for occupations like clinical nutritionists, musical therapists, medical records and health information technicians, biomedical engineers, nurses, clinical psychologists, and emergency medical technicians, whose occupations involve a considerable amount of work creating and managing documents. As for fluency in foreign languages, biomedical engineers, clinical nutritionists, radiological technologists, pharmacists and occupational therapists are required to have a high level.

In contrast to instrumental capability, most occupations in the health and medicine industry were found to require a relatively high level of organizational capability. A high level of ability for creative thinking is required among occupational therapists,

clinical nutritionists, musical therapists, biomedical engineers, veterinarians, physical therapists and clinical psychologists. When it comes to problem-solving, clinical nutritionists, musical therapists, dental technicians, doctors, biomedical engineers and veterinarians must be equipped with a high level of capability. In terms of communication ability, a high level is required for clinical nutritionists, musical therapists, nurses, occupational therapists, and medical records and health information technicians.

In almost all the occupations, a meaningful gap of occupational performance capabilities was identified between the level required in the actual fields and the contribution made by universities and educational training institutions. In other words, the research results show that the current training to nurture human resources for the health and medicine industry is not sufficient enough to develop occupational performance capabilities required in the clinical fields. One thing of note is that the gap between this educational training and the occupational world is especially prominent in the clinical field-oriented elements.

4. Certificate System in the Health and Medicine Industry

Korea's certificate system in the health and medicine industry grants a variety of certificates; the main ones being national certification, national technical certification, officially recognized certification, unofficial certification, etc. However, the majority of them certificates issued are for national certification. Some examples of certification that are not national are: clinical psychologist, biomedical engineer (national technical certification), hospital administrator (officially recognized certification) and musical therapist (unofficial certification).

This research made a suggestion as to what kind of new certifications in detailed areas (medicine, pharmaceuticals, nursing, veterinary, medical support, and others) are required in response to changes in the external environment and the problems of the certification system in the health and medicine industry based on interviews and surveys from the perspective of respondents.

Doctors singled out the problem as the lack of an effective refresher education system, while dentists pinpointed several problems in the system of the dental specialist system itself and argued for establishment of a dental assistant system. Doctors practicing Oriental medicine responded that the problems are the lack of a system to validate oriental doctors' capabilities, and lack of a procedural process to become a full-fledged professional oriental doctor (internship and residency).

5. Educational Training in the Field of Health and Medicine

One of the characteristics the occupations in the field of health and medicine carry is that there is a high level of relevancy between a specialty area and the actual work, as people engaged in the field are required to receive a national (private) certificate. A closer look at the consistency between the specialty area and the actual work reveals that for all of the 19 occupations (with the exception of nursing assistants), the training in the specialty area and the actual work were a perfect match.

Educational training methods after starting work were also analyzed. Generally, for all of the 20 occupations including doctors, the most efficient educational training method was identified as guidance from seniors or superiors (4.21) followed by on-the-job training (OJT) (3.99), seminars and forums on the specialty areas (3.93), experiences during internship (3.81), study groups (3.67), participation in projects (3.39), study in overseas countries (3.27), commissioned educational study conducted in Korea (3.26), work rotation (3.22), and refresher education such as associations (3.12).

Educational training method for occupations in the field of health and medicine showed partial differences in the level of the contribution of educational training depending on the type of hospitals (large-, medium-, or small-sized) and the job areas (medicine, pharmaceutical, nursing, veterinary, medical support and others) worked in. Depending on the type of hospital, there was a significant difference in the effectiveness of "guidance from seniors or superiors" and "seminars and forums on the specialty areas." "Guidance from seniors or superiors" and "seminars and forums on the specialty areas" were more effective for medium-sized hospitals than others (small-, large-sized, other hospitals) in improving knowledge and techniques required to perform their duties.

6. Job Forecast in the Health and Medicine Industry

By utilizing the method and numbers that were used to calculate the job forecast based on KECO, the job forecast by occupation in the field of health and medicine was reviewed. Among 19 occupations related to the health and medicine industry, the number of nurses (including maternity nurses) is expected to grow by 144,000 (116.3%), showing the biggest growth in employment, followed by an increase of 36,000 (72.2%) for doctors. By contrast, workers in two other occupations, - medical records and health information technicians - will decrease compared to the current 2004 level.

Next, in order to complement the limitations of the qualitative job forecast, the perceptions among incumbents working in the field on the future job forecast were researched and analyzed through a questionnaire and in-depth interviews. First of all, the volume of employment, financial income, and social influence after five years expected by the incumbents were analyzed complementarily, and the level of skill required after five years, as perceived by incumbents, was also analyzed as well.

18. Koreans' Occupational Consciousness and Work Ethics

Hong-Geun Chang · Sang-Geun Han · Ji-Yeon Lee · Yoon-Gyeong Jung ·
Doo-Seung Hong · U-Seok Seo · Gi-Hong Yi

The most comprehensive and large-scale study on occupational perceptions and views among Korean people was carried out by the Korea Research Institute for Vocational Education and Training (KRIVET) for the first time in 1998 right after the financial crisis when job instability and unemployment crisis became a major social concern. Then the study of 1998 was replicated and expanded in 2002 when post-crisis memories still remained clear socially, economically, and culturally.

Based on the overall framework of previous two accomplishments, this research focuses on the following two issues. One is on occupation-related social status as an object in the sense that occupation is objectified as one's work is ultimately evaluated by others. Occupational prestige score, as presented in this and many other previous studies, is a measurement to understand an important aspect of occupation. The other is occupation as a subject meaning how one regards his/her own work and occupation in general. Organizational and occupation commitments are instrumental filters through which job as a subject can be eventually related to the issue of work ethics.

For empirical investigation, data were collected in the period of March and April of 2006 by face-to-face interviews and questionnaire surveys with three different groups: 4,500 adults aged 18 through 64; 1,500 college students; and 2,700 high school students.

Chapter 1 is a brief introduction of basic issues of this research, and Chapter 2 presents a summary of previous research, its implications and the methods used for data collection and analysis. Chapters 3 through 7 deal with the following topics respectively: the structure and change in occupational consciousness; job-related satisfaction and social capital; general differences in occupational consciousness; work ethics; and job counseling for youth. Chapter 8 summarizes the entire project report.

The major findings presented in Chapter 3 highlight that the values and meaning of occupation have changed along with changes in the structure of occupations. Compared with the results of the previous studies, instrumental aspects of occupation such as income and stability turn out less important than self-actualization and a sense of accomplishment. Also people tend to place more emphasis on leisure than before, especially among the highly educated.

Chapter 4 discusses the influence of social capital on work attitudes. Life satisfaction differs by demographic, socioeconomic, and job-related background variables. By gender, women show a higher degree of work satisfaction. Married people and professionals tend to own more social capital at the individual level, seemingly due to marriage experience and tacit knowledge sharing respectively. Experience of college education, during which one is exposed to various relationship-managing situations, contributes to more effective accumulation of group-level social capital.

Chapter 5 analyzes differences in attitudes toward work and occupation by age group. Relative to leisure, work appears less important to the younger who tend to conform to work-related norms less strongly than their older counterparts do. Education also explains inter-generational differences in a significant way. The better educated take work more seriously and show higher expectation toward work. Neo-liberalist and post-materialist views also strengthen serious attitudes toward work.

For work ethics, Chapter 6 indicates that Korean people tend to take responsibility, sincerity, honesty and trust into account seriously while less do so on job commitment, spontaneity and organizational commitment. Many respondents reported job-related unethical misconducts in their workplace, but such non-ethical behaviors were more frequently found among employees of small and medium-sized firms.

Based on the findings from the surveys with students, Chapter 7 suggests considerations on counseling for youth. For both high school and college students, males tend to show more conservative attitudes than females with regard to lifetime employment, because males are more likely to be certain that they have to support their family and work for a stable life in the future. Many of the NEETs (Not in Education, Employment or Training) report that they are more or less comfortable with their having to depend on their parents at least for the time being. As expected, college students are more likely to go under the pressure of getting a job after graduation than high school students.

19. Development of Employment Service Excellence Standards

Eon Lim · Ji-yeon Lee · Dong-son Choi

1. Introduction

Due to the increasing flexibility in labor market, changes in the employment practice, and the arrival of aging society, it is necessary for individuals to develop their career throughout their life. It is increasingly emphasized that government is responsible to support career development of all in order to improve nation's competitiveness as well as the well-being of individuals.

In these context, in 2005, ministry of Labor presented a plan to innovate the employment services. One of the core tasks of the innovation plan was to activate and to certify private employment services to ensure the quality of employment services provided by private agencies. It is prerequisite to establish a quality standards to accredit employment service agencies, which can contribute to consistent and coherent services among various agencies.

The purpose of this study was to find essential elements of employment services, and specific criteria for each elements, and to develop a quality standards of employment services. For this purpose, we examined the current situation of employment services in Korea, examples of quality standards in the foreign countries, and the assessment criterion for the public employment services in Korea. In the process of developing the quality standards of employment services, delphi survey was conducted three times with professionals of employment services.

2. Employment Service in Korea

Public employment services are provided by about 450 centers managed by various ministries of government. Among these centers, the most representative agencies are "Employment Support Centers (ESC)" managed by the Ministry of Labour. The main roles of ESC are employment assistance, employment insurance, and vocational training. Activities for employment assistance are job counselling, psychological tests, job-search services, employment promotion for the elderly, and programs for career development, etc. By expanding the budget and improving competencies of staffs, ESCs are trying to improve their services geared towards the needs of various groups and regions.

In Korea, there are approximately 6,536 private employment service agencies. The weakness of private employment service agencies is its small scale and lack of competencies of staffs. In order for private employment agencies to take a substantial role for providing employment services with quality to various groups, the Ministry of Labor made a plan to support private employment service agencies and to intervene to assure the quality of services.

3. Examples of Standards for Excellent Management

To find implication for developing standards of employment services, examples of developing and applying excellence standards in management were reviewed. ISO(International Organization for Standardization), European Quality Award, and Malcolm Baldrige National Quality Award were reviewed in terms of the elements of excellent management, and the benefits of applying standards. ISO can help work process more concise, clear and intensively connected to each other, and increase effectiveness of tasks. Based on the criterion included in European Quality Award, a career guidance excellence model was developed in Sweden, and a self evaluation tool for career education was developed in Denmark. The criterion of Malcolm Baldrige national Quality Award was utilized in developing Performance Excellence standards of WDPN(Work Development Professionals Network) in U.S.A..

4. Examples of Standards in Employment Services in Foreign Countries

In the United Kingdom, employment services are provided not only by public agencies but also by private agencies supported by government. In order to assure the quality of employment services, 'Jobcentre Plus Quality Framework' is used as the standards for self-evaluation. In addition, 'Matrix Standard' is an important standards for employment service agencies to participate projects funded by government.

Performance Excellence standards in the US that is used for accreditation system was managed by WDPN, a network of employment services professionals, gives good examples of specific activities of employment services. In Australia, employment services are provided by private agencies funded by the government. The quality of service is assured by clear criterion of service outcome, that is the employment rates weighted according to the relative weakness of job seekers. 'The quality framework of career education' in Australia gives implication in developing standards in this study. Its elements are ① leadership and innovation, ② strategy and planning process, ③ data information analysis, ④ people, ⑤ customer and market focus, ⑥ process, products, and focus, ⑦ results.

After examining the examples of standards of management and employment services in other countries, the structure of the KESES (KRIVET Excellence standards for Employment Services) was constructed. The validity of the structure was examined by professionals of employment services. The tentative standards constructed by researchers of this study was reviewed and revised three times through delphi survey with 39 employment service professionals.

The key feature of the KESES are as follows. First, the KESES is a guideline for improving the quality of employment services. Secondly, the KESES is a primarily for self-evaluation rather than for assessment by others. In the process of autonomous innovation, the KESES can gives directions and guidelines.

Thirdly, the KESES can be applied for various institutions. It can be applied for public employment service agencies as well as private employment agencies. It shows criteria that can be applied consistently regardless of various clients and

agencies. Fourth, the KESES consists of 12 key elements, and these elements can be categorized as two groups: process and management. Because elements of service management have a lot of commonality with management principles of other institutes, the idiosyncrasy of the KESES can be found in key elements of service process.

Fifthly, the KESES includes ethical standards. In general, ethical standards is expected to be made spontaneously by professionals concerned. Ethical standards in the KESES can be used as a criterion until the professionals make the ethical guidelines by themselves.

5. Suggestions for Utilization of the KESES

Developing national standards for employment services is useful in ensuring the minimum quality of services provided by various agencies, and reducing the variances and to increase consistency among agencies. In order for these expected effects to be actualized, the following conditions are to be met.

First, KESES should be disseminated to professionals of public and private employment service agencies. Leaflets are made and will be distributed to employment service agencies. In addition, KESES is presented on the web(<http://careernet.re.kr/keses>) to share with many professionals.

Secondly, training programs for KESES need to be prepared to influence on actual practice.

Thirdly, continuous and periodical revisions of KESES are required to meet these changes in labor market and needs of clients.

Fourth, a system of consultation need to be established to provide with proper help when employment service agencies, using KESES, try to improve their service quality in self-directed way .

Fifth, KESES can be utilized as a reference when the accreditation process will actually operate to certify private employment services by the Ministry of Labor.

20. Careers of Korean Ph.Ds with Degrees of Foreign Countries and the HRD Policy of the Highly Skilled in Korea

Mi-Sug Jin · Su-Young Lee · Hyung-Han Yoon · Na-Ra Kim · Ho-Young Oh

1. Overview

Due to the development of information and communication technology, the advancement of science and technology, and the rapid globalization, the investment in R&D and the development and utilization of highly skilled and talented human resources in science and technology areas have become critical. In general, people who have been educated and who have earned a doctorate degree in a good educational environment of advanced countries are considered to be highly talented human resources with global competitiveness. Therefore, the utilization of those doctoral recipients has great implications on the advancement of national R&D of Korea. Nevertheless, there are few surveys and research in status and current conditions of doctoral recipients in science, technology and engineering areas who earned their degree abroad.

This research aims to investigate career development activities, career histories and trajectories, and current status of doctoral recipients who earned their degree abroad, in particular in the areas of science, technology and engineering (or STE foreign doctoral holders). The results of this research are expected to provide policy implications on how to utilize highly skilled and talented human resources with global competitiveness. The research focuses on two important aspects of STE foreign doctoral holders' career development. First, the research examined the STE foreign doctoral holders' transition patterns to the labor market after graduation; in other words, school-to-work transition processes. Second, the research looked at international mobility of higher skilled human resources as a result of STE foreign doctoral holders' decision to come back to Korea or stay in a foreign country after graduation.

In order to investigate current career status of the STE foreign doctoral holders, we analyzed data from two main data sources; Korea Research Foundation's Database for Report of Doctoral Degree Earned in a Foreign Country, and the Survey of Earned Doctorates(SED) of the U.S. National Science Foundation. Also, we conducted two rounds of our own survey of STE foreign doctoral holders(n=454) who earned a doctorate degree in the United States, and interviewed ten STE doctoral holders who earned their degree in the U.S. In addition, we carried out case studies, interviews with experts, and an expert seminar in order to draw policy implications.

2. Main Results of the Research

A. The overall number of foreign doctoral holders and the status of doctoral recipients who earned their degree in the U.S.

First, for the past 15 years, the number of foreign doctoral holders has been dramatically increased. On average, each year 1,100 foreign doctoral holders are produced in all academic fields. Among those, 700 doctoral holders are in the STE fields. In 1980s, the percentage of foreign doctoral holders reached the highest record of 30%. Since then, the percentage of foreign doctoral holders compared to the total doctoral holders who earned a doctorate degree either in Korea or foreign countries has been gradually decreased. This decline of the percentage of foreign doctoral holders in the STE fields has been more noticeable than other fields. This is partly due to the dramatic increase of doctoral recipients who earned their degree in Korea. This overall increase of the number of doctoral holders means more intense competition for the limited positions and jobs in the labor market between foreign and domestic doctoral holders.

Second, in the STE fields, 85% of foreign doctoral holders earned their degree in one of two countries; 60% from the United States and 25% from Japan. Thus, it is important to target future research's focus on doctoral recipients who earned their degree from either the U.S or Japan. The future research questions may include investigating their decision to return back to Korea or not after graduation, their career development trajectories, and conducting a cross-national comparison study between doctoral holders from the U.S and Japan.

Third, the number of doctoral holders shows a gradual increase since 2000 after a slight decline around the time of the IMF foreign currency exchange crisis in 1997-1998. Overall, the number of doctoral recipients who earned their degree in the U.S has been stayed at the stable range of 1,300~1,500 for the past 20 years. Among those, 93% are non-U.S citizens who went to the U.S for advanced study after graduating from a college or university in Korea. The number of STE doctoral holders who earned their degree in the U.S. is approximately 700~900 (per year), and it comprises 60% of the total doctoral recipients from the U.S. in all fields.

B. Background characteristics, motivation for studying abroad, and satisfaction with curriculum and educational environments of doctoral recipients who earned their degree in the U.S.

First, about 20% of all STE doctoral holders in Korea earned their degree in the U.S. They tended to go to one of the best undergraduate colleges or universities in Korea with a good family background (e.g., the educational level of their parents is higher than that of the overall population) and a high undergraduate GPA. This indicates that they are high quality human resources and the target subjects of high quality human resources policies.

Second, our own survey shows that they chose to pursue their graduate study in the U.S. because of high quality educational environments and conditions in the U.S. Also they showed a high level of satisfaction with curriculum and educational

environments of their graduate study program. This illustrates strong competitiveness of curriculum and educational environments of the U.S. graduate study program. Moreover, this implies that one of possible incentives to attract higher quality human resources into Korea is to establish high quality doctoral study programs in Korea which meet a global standard. Those programs should provide high quality educational environments that include high quality faculty members, research facilities, and curriculum. In addition, doctoral recipients who earned their degree in the U.S. chose to study abroad because of diverse financial support opportunities including high availabilities of RA or TA positions. They also showed a high satisfaction level with the financial support they got while they were studying in the U.S. This implies that the level of financial supports and opportunities for getting a RA or TA position for doctoral students in Korea should be getting increased than the current level.

Third, approximately 20% of doctoral recipients who earned their degree in the U.S. had already planned to stay in the U.S. when they began their study in the U.S. Those who had already planned to stay in the U.S. from the beginning of their study tend to stay in the U.S. after obtaining their degree or going back to the U.S. even after temporarily coming back to Korea after graduation. Thus, it is important to investigate career paths of those doctoral holders who had planned to permanently stay in the U.S. and reasons behind their decision. It seems to be difficult to lure those doctoral holders who had planned to stay in the U.S. from the beginning into Korea after graduation. Therefore, instead of such a policy that tries to draw them into Korea, we need to seek alternative policies that make them contribute to their knowledge and expertise to Korea while they are staying abroad.

Fourth, about 80% of doctoral recipients who earned their degree in the U.S. said the main reason why they decided to pursue their doctorate degree was to become a professor. On the other hand, 63% said they chose to pursue their degree to become a researcher. Therefore, although doctoral holders' preference to professor positions are still high, their career path to researcher positions seems to become getting popular. From the point of the utilization of high quality human resources, we need to take our attention to career path and career development of tenure track "researchers."

C. Career activities after obtaining a doctorate degree

At the time of receiving a doctorate degree, higher percentage of Korean doctoral recipients who earned their degree in the U.S. compared to the total doctoral recipients in the U.S. chose a post-doctoral research position as their immediate career path. Our own survey also confirmed that in science, technology and engineering fields, more than 75% of doctoral holders completed a post-doctoral course. Thus, a post-doctoral study course became a common practice after getting a doctorate degree in the STE fields. Moreover, more than 90% of doctoral recipients who earned their degree in the U.S. planned to go through a post-doctoral course in the U.S. This may cause a temporary delay in their return to Korea. Completion of a post-doctoral study is often a necessary requirement for professor positions. Thus, those who are on a post-doctoral study program are considered to be candidates for professors. This implies that more Koreans than the whole doctoral recipients

in the U.S. pursue professor positions.

As of 2004, i.e., two years after obtaining a doctorate degree, 6.3% of doctoral recipients who earned their degree in the U.S. were still seeking a job or unemployed. This unemployment or underemployment rate was lower than that of doctoral recipients who earned their degree in Korea. Of the total full-time employed (excluding post-doctoral researchers), 40% of doctoral recipients who earned their degree in the U.S. work at higher education institutes. About 65% of doctoral recipients engage in research and development(R&D) work. A slightly higher percentage of doctoral recipients who returned back to Korea after obtaining their degree in the U.S. engage in education and teaching job than those who stayed in the U.S. Moreover, the part-time or post-doctoral employment rate of doctoral recipients who came back to Korea is lower than that of doctoral recipients who stayed in the U.S. This implies that employment status of the doctoral holders who returned back to Korea after obtaining their degree in the U.S. is more secure and stable. This is partly because people tend to return to Korea only after they secure stable employment.

Two third of the full-time employed doctoral recipients evaluated that their job was relevant to what they studied. However, one third of the doctoral recipients who worked in Korea judged that their job did not require the level of doctoral study.

In general, the level of satisfaction with their current job was high. The satisfaction level of doctoral recipients who stayed in the U.S. was slightly higher than that of doctoral recipients who returned to Korea. Doctoral recipients who worked at a higher education institute showed a higher satisfaction level with their job than those who worked at industrial or private sectors. In particular, the doctoral recipients who returned to Korea and worked at a company showed the lowest level of satisfaction with their job.

Since we surveyed new doctoral recipients who earned their degree during last five years, only 23% of the respondents indicated job change experiences. While the doctoral recipients who returned to Korea showed a very clear converging job-change pattern to professor positions, the doctoral recipients who stayed in the U.S. do not show a common pattern.

The doctoral recipients who returned to Korea and are working at a private company show low satisfaction with their job and their job requires lower level of skills and knowledge than what they studied; This implies a severe problem in utilizing high quality human resources. In other word, this raises policy questions of not only how to attract more doctoral recipients who earned their degree abroad but also how to utilize those human resources to maximize their capacity and talent. If doctoral recipients returned back to Korea after obtaining their degree abroad but their advanced knowledge and skills are being under-utilized, this would cause dissatisfaction to individuals and inefficiency and waste to the nation as a whole. In order to promote efficient utilization of doctoral recipient resources in private sectors we need to conduct in-depth investigation of doctoral recipients' employment conditions and status in private sectors. At the same time, we need to analyze the quality that private sectors demand from those who earned a doctorate degree abroad. Based on those analysis, we need to develop strategies to attract and utilize highly skilled and talented human resources.

D. International mobility of doctoral recipients after obtaining their degree in the U.S.

The Survey of Earned Doctorate by the National Science Foundation of the U.S. surveys all of the doctoral recipients at the time of their graduation from any of doctoral degree granting colleges or universities in the U.S. One of the most important findings from the SED data is a gradual decline of Korean citizens who plan to return back to Korea right after obtaining a degree in the U.S. Two third of Korean doctoral recipients who earned a degree in the U.S. have a plan to stay in the U.S. after graduation. During the past 20 years, the percentage of Korean STE doctoral recipients who earned a degree in the U.S. and planned to stay in the U.S. has increased by 25% so that three fourth of Korean STE doctoral holders stayed in the U.S. right after graduation. However, this stay in the U.S. after graduation does not necessarily mean a permanent stay. Rather, it is often a temporary stay while they are taking a post-doctoral study course or temporary employment in the U.S. When we cross checked data from both SED and Korea Research Foundation's Database, it was estimated that about 50% of STE doctoral holders stayed in the U.S. for a long term. The returning rate of Korean doctoral recipients who earned a degree in the U.S. after graduation has been declined since 1994. Since 2000, however, the returning rate remains at a constant level. Therefore, this shows a different pattern with the increasing percentage of the returning plan reported right after graduation.

Our own survey shows that one third of the doctoral recipients who earned a degree in the U.S. permanently settled down in the U.S. Main reasons of such permanent (or at least a long term) stay in the U.S. include higher quality research and work environments, and better conditions to raise and educate their children in the U.S. than Korea. On the other hand, main reasons of returning to Korea after obtaining a doctorate degree include the unquestionable fact that Korea is their home country and job discrimination is rare in Korea. For people who had planned to stay in the U.S. from the beginning of their study in the U.S., the rate of a permanent stay in the U.S. increases as they show a lower motivation to be a professor, took more time to complete their degree, have a full-time permanent job, have higher satisfaction with their current job, have a less bright outlook for Korean job market, and a brighter outlook for international job market.

Few percentage of the doctoral recipients who earned a degree in the U.S. and returned back to Korea have a concrete plan to go abroad for a job in the near future. Nevertheless, 40% of them responded that they could go abroad whenever a right opportunity comes along. The main reason why they consider to go abroad for a job is because of better educational environments and opportunities for their children. The planning rate to go abroad for a job increases when they had planned to stay in the U.S. at the beginning of their doctoral study, are in science, technology, engineering fields, took shorter time to complete their degree, and less satisfied with their current job. This result implies that providing high quality working environment and a better support system for their children's education are critical factors to attract more doctoral recipients who are staying in the U.S. after graduation and to prevent those high quality human resources who were educated in the U.S. from going abroad again for a job.

3. Policy Implications for Utilizing High Quality Human Resources Who Earned a Doctorate Degree Abroad

A. Basic directions

The policies should be made with a basic understanding that those high quality human resources who earned a doctorate degree abroad are attracted to a job that offers a better research and work environment rather than a physical location of a job. Indeed, they are globally competitive human resources. It is inappropriate to force them to return back to Korea because Korea is their home country by taking a nationalism or close minded perspective. Therefore, from effective and efficient utilization perspectives, the policies should support them to maximize their potential capacity no matter where they live..

B. Policy recommendations for the utilization of high quality human resources

- 1) Strategies to attract more doctoral recipients who earned a degree abroad into Korea after graduation include better and improved social and financial reward systems, increased opportunities for them to take a high quality post-doctoral study program in Korea, an expansion of tenure-track, R&D faculty positions, support system for their children's education, and permission to a dual citizenship.
- 2) Strategies to construct environments that support effective utilization of high quality human resources include fostering support systems to promote partnership and collaboration between industry, universities, and research institutes, utilizing more doctoral recipients in government-funded research institutes, and developing a new career development model for tenure-track "researchers" and support system for researcher career path.
- 3) Strategies to utilize high quality human resources who earned a doctorate degree abroad and stay abroad after graduation include increased opportunities for international collaboration between researchers in Korea and abroad, building a network of Korean science, technology and engineering expertises abroad, and the expansion of projects that promote short and long term visits to Korea of high talented Korean researchers who stay abroad.
- 4) Strategies to collect and manage HRD data on Korean high quality human resources abroad include constructing a database system to collect and manage such data, introducing a local official position that collects high quality HRD data in each country, initiating international collaborative research that studies issues of education and utilization of global talents, a panel study that follows current undergraduate students through their graduate study and/or employment, and constructing and facilitating a website that supports high quality Korean human resources who stay abroad.

C. Recommendations for utilizing high quality human resources who earned a degree abroad in private sectors

A few large corporations are equipped with a sophisticated human resources management system from recruitment to retirement in order to effectively utilize the high quality human resources who earned a degree abroad. Nevertheless, many doctoral holders tend to leave a corporation for universities or research institutes whenever an opportunity comes along. This is partly because corporations' culture usually values an immediate outcome and achievement and their organizational culture is often bureaucratic and rigid. Thus, in order to effectively utilize the high quality core talents in private sectors, they need to improve their R&D culture to allow practicing research that maximizes their capacity with a long term vision. Additional support systems should be developed for small and medium enterprises which do not have their own system and capacity to attract and utilize the high quality doctoral holders. Such a support system include strategies to utilize high quality human resources who earned doctorate degree abroad as short term consultants or technical coaches.

Research Material 2007-29

2006 KRIVET Research Abstracts

Published : December 2008
Published by : Korea Research Institute for Vocational
Education and Training (KRIVET)
Address : 15-1, Chungdam 2-Dong, Kangnam-Gu, Seoul
135-949 Republic of Korea
Tel. : 82-2-3485-5000, 5100
Fax. : 82-2-3485-5048
E-mail : pionny@krivet.re.kr
Homepage : <http://www.krivet.re.kr>
Registration No. : 16-1681(11 June 1998)
ISBN. : 978-89-8436-878-4 93300

All rights reserved.

Copyright © Korea Research Institute for Vocational Education and Training (KRIVET)