Higher Education Promotion for Knowledge-Based Economy: A Comparative Study of Brain Korea 21 and Thailand’s National Research Universities

แนวทางการพัฒนาการวิจัยในระดับอุดมศึกษาเพื่สร้างเศรษฐกิจองค์ความรู้: กรณีศึกษาโครงการ Brain Korea 21 และโครงการมหาวิทยาลัยวิจัยแห่งชาติ

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Abstract

The purpose of this research was to study South Korea’s agenda for human resource development through nurturing higher education and compare the Brain Korea 21 Project, one of the major higher education development strategies to lead Korea towards a knowledge-based economy, with Thailand’s National Research Universities Project to improve the policies for the development of Thailand’s higher education institutions. The research employed documentary research and interviewed the informants of education in Sought Korea and Thailand. The results showed that Brain Korea 21 Project is an example of the South Korea’s Government strategy to nurture research universities to meet the demand of high quality human resources. It also greatly improved development of excellence human resources, and in turn enhanced the capacities of the universities while Thailand’s National Research Universities Project represents an effort to promote university research and strengthen the research capacity of university academics and staff to enhance country’s competitiveness.

KEYWORDS: Higher education, Knowledge-based economy, Brain Korea 21. Thailand’s National Research Universities Project

บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษาทิศทางการพัฒนาทรัพยากรมนุษย์โดยการส่งเสริมการศึกษาในระดับอุดมศึกษาของประเทศเกาหลีใต้และเปรียบเทียบโครงการ Brain Korea 21 ซึ่งเป็นกลยุทธ์สำคัญในการพัฒนาการศึกษาช่วงอุดมศึกษาสู่เศรษฐกิจองค์ความรู้ กับโครงการมหาวิทยาลัยวิจัยแห่งชาติของประเทศไทย เพื่อแนวทฤษฎีนโยบายในการพัฒนาสถาบันอุดมศึกษาของไทยต่อไป งานวิจัยนี้ได้ใช้วิธีการวิจัยเอกสารและการสัมภาษณ์ผู้ให้ข้อมูลทั้งจากประเทศเกาหลีใต้และประเทศไทย นอกจากนี้ทางวิจัยพบว่า โครงการ Brain Korea 21 เป็นตัวอย่างของการมุ่งมั่นในการส่งเสริมวิทยาศาสตร์และวิจัยเพื่อตรงกับความต้องการด้านทรัพยากรมนุษย์ระดับสูงและกระตุ้นให้เกิดการพัฒนาศักยภาพของมหาวิทยาลัยและพัฒนาความเป็นเลิศของทรัพยากรมนุษย์

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Introduction

At the beginning of 21st century, the term “globalization” is widely used in various sectors, including politics, economics, cultures, and education. It refers to “the development of increasingly integrated systems and relation beyond the nations”. Globalization is described as a complex process of creating a worldwide network of capital technology and information made possible through enhanced competition, stronger interconnection and greater independence. Two of the main bases of globalization are information and innovation, and they, in turn, are highly knowledge intensive.

Higher education prepares a quality workforce by offering instructional programs, matching instruction to the needs of business and industry and helping individual learns throughout their life. It can help employees to be proficient in language, mathematics, and science. Employees who received higher education can read and understand blueprints and operational manual for complex and expensive machines and instruments. Higher education also increases worker’s literacy and numeracy skill in order to master the complex and sophisticated skill of modern trade and technical occupations.

South Korea (Korea hereafter) has achieved one of the fastest rates of economic development of any country in the world. Between 1966 and 1996, its per capita income grew by an average of 6.8% by annum. However, Korea experienced its worst economic crisis in 1997. Nonetheless, Korea made a remarkable recovery from the crisis at 10.7% in 1999. After the crisis, Korea was expected to face a much more difficult and competitive global environment from its rising wage and increasing competition from lower wage countries in East

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Asia. Increasing scientific understanding and vary rapid advances in information and communication technologies (ICTs) were making knowledge and information become one of the most important factors for competitiveness. In consequence of these developments and global knowledge revolution, Korea was facing the new challenge of transforming itself into a knowledge-based economy.

The Korea Government realized the crucial value of creativity, which would lead to the foundation of innovation and would be necessary for global competition. As a result, major policies to support the development of basic science and human resources were formulated and implemented. Higher education plays an important role in creating and maintaining highly skilled labour forces. Thus, Korea has been trying to build a world-class higher education.

The Brain Korea 21 (BK 21) Project initiated between 1999-2005 was one of a major higher education reform projects that aimed at cultivating creative and high quality human resources necessary for the 21st century. For this project, the Government invested 200 billion won per year (1.34 trillion won in total). The Natural and Applied Science and Technology and Humanities and Social Science were two subject areas supported by the project. The Natural and Applied Science and Technology included the fields of Information Technology, Physics, Chemistry, Mechanics and Materials, Biotechnology, Material Engineering, and others. The Humanities and Social Science area included History, Language, Philosophy, Education, Law, Administration, Politics, Economic, Psychology and others. For the former area, the annual financial support for each team project ranged from 800,000 dollars to 6 million dollars and from 150,000 to 750,000 dollars for the latter area.

Globalization influenced higher education in Thailand as well. The production of high skilled labour was very needed for international competitiveness. However, Thailand had a low proportion of scientists and engineers per capita and national innovation capacity still lagged behind its East Asian counterparts.

In 2005, Thailand allocated only 0.7% of GDP to higher education which was far below the investments made in Korea as indicated in Table 1.

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Table 1: Public Expenditure on Higher Education

<table>
<thead>
<tr>
<th>Countries</th>
<th>% of GDP</th>
</tr>
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<tbody>
<tr>
<td>China</td>
<td>0.8</td>
</tr>
<tr>
<td>Denmark</td>
<td>2.7</td>
</tr>
<tr>
<td>Germany</td>
<td>1.2</td>
</tr>
<tr>
<td>India</td>
<td>0.7</td>
</tr>
<tr>
<td>Ireland</td>
<td>1.2</td>
</tr>
<tr>
<td>Malaysia</td>
<td>2.7</td>
</tr>
<tr>
<td>OECD Average</td>
<td>1.3</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>South Korea</strong></td>
<td><strong>2.4</strong></td>
</tr>
<tr>
<td>Sweden</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Thailand</strong></td>
<td><strong>0.7</strong></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1.1</td>
</tr>
<tr>
<td>USA</td>
<td>1.4</td>
</tr>
<tr>
<td>Finland</td>
<td>1.7</td>
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</tbody>
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Based upon this analysis, the Thai Government foresaw the importance of improving higher education quality and, proposed a National Research Universities (NRUs) Project which runs from 2010 to 2012, and invested 12,012 million baht for this project. The project aimed to develop world class universities with the idea of becoming an education hub within the ASEAN region. Thus, studying Korea’s strong human resource development and R&D nurtured by higher education institutions was deemed useful for Thailand.

Materials and Methods

This study employed descriptive research by using documentary and interviews. Documentary research was based on documents from related government agencies in both Korea and Thailand, and particular the Ministry of Education, BK21-NURI Committee, National Research Universities, which was collected by internet and secondary data collected from books, academic journals, articles in magazines and related research. For interviews, I
interviewed informants who expert in the field of education of Korea. Subsequently, interviews were conducted with Thai’s informants and the results were analyzed to find appropriated policies for Thailand’s higher education institutions development.

Results

Education has been an important factor in Korea’s rapid economic success. The government-led economic development plans have been directly reflected in education policy and planning. The government has been successful in expanding the education system based on economic requirements. Thus, the education development system aligned itself with economic development. The focus of the government’s educational planning respectively moved from primary and secondary to higher education. Particularly, globalization increased the demands of high skilled graduates and workforces to cope with a knowledge-based economy.

Even though universities constituted a large pool of high quality human resources in Korea, most of R&D was funded by government institutions and private companies. However, the universities played the crucial roles in supporting basic research and training potential researchers. Furthermore, increasing demands of knowledge-based economy in Korea raised the need for a national system as well. The cooperation between government research institutes, universities and private sectors became more important and the link between universities and industry are expected to get stronger.

The Brain Korea 21 Project is an example of the Korea’s Government to nurture research universities to meet the demand of high quality human resources. The seven-year project, which started in 1999, greatly enhanced the research capacity of universities and developing excellence human resources. Universities participating in BK21 have reformed their administrative systems and improved student selection methods to become research-oriented institutions. For example, they enhanced research capacity by introducing pay-on-performance based on professors’ research achievements. This helped to create a research environment. The second phase of BK21, which began in 2006 through 2012, continues to create high quality R&D human resources. It will focus on the science and technology sector that will have more direct impact on nation’s economic development. Excellent researchers, particularly, students with Master and Doctoral Degrees, have received grants for development. Therefore, Korea higher education relates to quality, differentiation and endeavor to enhance human resource capacity to respond more creatively the challenges of globalization and a knowledge-based economy.
Brain Korea 21 succeeded to enhance the research capacities of participating graduate students by increasing the number of papers listed on SCI in Science and Technology area and papers published in national journals in Humanities and Social Science area as can be seen from figures 1 and 2.

Figure 1: Number of Papers Listed on SCI

![Chart](image1.png)

Source: BK 21 and NURI Committee (http://bnc.krf.or.kr/home/eng/index.jsp)

Figure 2: Number of Papers Published in Nationwide Journals

![Chart](image2.png)

In Thailand, the 8th National Social and Economic Development Plan (1997-2001) was a major turning point in national development planning by placing emphasis on people-centered development. However, Thailand encountered with severe economic crisis in 1997 and needed to rehabilitate the economy to be more stable and reduce the impact which caused unemployment and poverty. People-centered development policy was contained in the 9th National Social and Economic Development Plan (2002-2006) aligned with sufficiency
economy policy. The outcomes of 9th plan were satisfying and Thailand’s economy constantly expanded at an average of 5.7 per year. The policy continues to be implemented in 10th National Social and Economic Development Plan (2007-2012). During this recent planning period, Thailand still confronts a number of challenges as follows. Thailand needs to respond to the changing global environment in different aspects. Globalization leads to economic integration. Therefore, an aggressive trade policy is needed to enable domestic producers to compete in a knowledge-based economy. Moreover, rapid changing in information technology affects the economy and society; consequently education development is very important. The average year of schooling in Thailand constantly increased to 8.5 per year and the workforces which completed higher than primary school increased to 39.8 percent in 2005. However, the efficiency of the Thai labor force is still below average compared with neighboring country such as Malaysia, South Korea, Singapore, Taiwan, and Japan. Moreover, mid-level and high skilled workers are still insufficient in numbers and lack quality. The R&D investment is only 0.26 of the GDP which is seven times under average and application of knowledge in business is still low as well. Therefore, they become weak to create knowledge, innovation and R&D for national development and block competitive capacity in international level.

Universities play more important roles in producing graduates to serve the manpower needs of the nation. Further, research and postgraduate universities play important roles in developing Thai higher education’s academic excellence by generating new body of knowledge and technologies appropriate to Thailand’s needs. A strong university system is a stepping stone to the third necessary ingredient for a successful innovation system, namely R&D. This includes R&D conducted by leading universities, research institutes and corporate labs. Yet a focus on R&D is not feasible without a high level of technical skills, which is why raising the quality of at least a network of core universities is intrinsic to efforts to build an innovation system. Therefore, National Research Universities Project supports a knowledge-growth strategy by encompassing two principal components, namely: development of National Research Universities and promotion of university research.

1. Development of National Research Universities. The concept of NRUs is an agent to solve the country’s social and economic problems. Therefore, selected NRUs are the instrument to solve social and economic problems. This project also represents an effort to promote university research by taking advantage of open competition research grants to allow equal access to research funding for researchers from different fields and establishing innovations in operating management for monitoring and assessing the effectiveness of research grants and their output which stimulate qualified research production.
2. Promotion of University Research. This project represents an effort to promote university research with specific emphasis on specialized universities and undergraduate universities. Guiding concepts and strategies to implement the funding mechanism for university research and integrated research funding system that matches various age groups in the university will be created to strengthen the research capacity of university academics and staff with multidimensional objectives and enhance country’s competitiveness.

The Brain Korea 21 Project and Thailand’s National Research Universities Project can both be regarded as the Korean and Thai Government’s respective efforts to upgrade existing universities with research potential to become World-Class universities. However, the NRUs initiative still lacks behind the BK 21 for the following reasons;

1. The Brain Korea 21 is a long-term project (12 years) while Thailand’s National Research Universities is short-term project (3 years). The long time period for implementing the BK21 facilitates an understanding of the process and the problems of the project. The continuity of the project also helps to enhance incentives to conduct research among students and researchers in universities. The short-time period of NRUs might decrease the incentives of recipients because most research projects require long time and effort to do so, researchers might lack of confidence that they will receive further financial support or funding until their research projects end or not.

2. The budget to support the NRUs Project is quite small. For example, BK21 Phase I (1999-2005) account for one percent of R&D expenditures in Korea while Thailand spending 0.2 percent of GDP on R&D in 2010 which means the budget for the NRUs Project is very small compared with BK21.

3. The BK21 Project budget is stable while the NRUs Project is instable. The NRUs respondents indicated that the budget were reduced over time. Some universities had to use their own budget prior to receiving fund from the project which created burdens on the universities, while researchers also lost confidence in the projects.

4. The BK21 enhances competitiveness while the NRUs Project enhances research collaboration. Competition for funding stimulates participants to strive for excellence while uncompetitive funding diminishes these incentives. Even though research collaboration in the NRUs support overall research progress, the incentives in conducting research are lower than those involving competition in the BK21 project.
Conclusions
In the era of globalization, South Korea and Thailand’s key strategy to develop qualified human resources is to develop world class research oriented universities in specific fields by;

1. Improving the research capabilities of faculty and graduate students.
2. Enhancing the quality of research.
3. Upgrading research potential of universities in general and promoting universities with research capabilities to become national research universities which can compete with World-Class University.
4. Producing human resources in various fields to respond to demand of community, industry, and innovation system which lead to enhance competitive capability.

The Brain Korea 21 and Thailand’s National Research Universities Project helped to increase the size of the pool of trained research workers by increasing the production and retention of such workers. The two projects also sought to increase the size and the quality of the domestic pool of knowledge workers. Furthermore, they stimulated high quality globally competitive research. The universities participating in the program will compete with each other to become winners of the program to attract high qualified student and to gain an advantage in applying to other education-related projects in the future. In turn, those universities will recruit high quality professors and researchers to increase capability of the university both domestically and internationally. However, some universities in NRUs Project were unable to conveniently disburse budgets due to differences in administration procedures. Thus the nine national research universities should have more autonomy to allocate budgets by themselves. Moreover, the Thai Government should support NRUs Project both in terms of budget and continuity. The project should receive larger budgets and should be developed into larger-term initiative to encourage, monitor and evaluate the project subsequently so that Thai universities can nurture high quality graduate students and researchers to build world-class research universities in the future and produce human resources for a knowledge-based economy in the 21st Century.

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