

A Case Study of SW Expert Training Platform Based on International Cooperation: HRD Center in Cambodia

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Abstract

In recent years, international cooperation has become important not only at the humanitarian level but also at the socio-economic level. As a result, major foreign countries are increasing capital-intensive international cooperation. In this environment, Korea needs to look for differentiated international cooperation plans centered on sustainable talent cultivation and move away from capital-based international cooperation. In this study, we analyzed the case of HRD (Human Resource Development) center in Cambodia as an international cooperation model between industry-academia-college for training software (SW) workforce. The HRD Center in Cambodia is an educational institution that fosters SW talent and can be viewed as an international cooperation model that can influence the ICT industry in Cambodia as an educational platform. In fact, 190 people who have been hired so far have entered various fields. 97% of graduates have been satisfied with HRD center and 90% of them are willing to recommend the center. In particular, as highlighted in the case study, the HRD Center has had a positive effect on not only cultivating self-initiated learning-based SW talent, but also formulating positive image of Korea and Korean companies thereby facilitating entry into the global market. The HRD Center in Cambodia has developed a virtuous cycle of fostering human resources, providing education, advancing industry and building a cooperative network. Korea has transformed into a platform for international cooperation and human resource development and education by providing active support and aid. This case study will be utilized as a new model of international cooperation with SW expert training platform for Korea.

Keywords : SW Expert Training Platform, Cambodia International Cooperation, SW Workforce, ODA (official development assistance), HRD Center

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1. Introduction

1.1 Research Background

The GDP (Gross Domestic Product) per capita of Korea is expected to exceed 30,000 USD in 2018 from 27,214 USD in 2017.¹⁾ Considering that the GDP per capita was less than 800 USD after the end of the Korean War in 1951, Korea achieved remarkable growth in a matter of decades. The role of international cooperation supported by a multitude of foreign countries cannot be underestimated in Korea's development.²⁾

International cooperation can ease the disparity between the rich and the poor in the international community, provide a foundation for long-term economic development in developing countries, and contribute to international expansion and export. In addition, international cooperation also plays an important role in addressing global issues beyond the capability of an individual country, such as environmental conservation, resource depletion, overpopulation, and terrorism in developing countries. For this reason, the importance of international cooperation is constantly increasing and is therefore important for Korea to be providing international cooperation that matches its current international status [Hwang, 2010]. Capital based cooperation is the most fundamental form of international cooperation. However, there is a clear limit to pursuing international cooperation strategy similar

to that of US and China that involves investing enormous amounts of capital. Therefore, a differentiated international cooperation strategy must be developed that suits Korea.

1.2 Research Purpose

Conventional approach that Korea has chosen for international cooperation has several issues. First, international cooperation focuses on material-based cooperation, such as road construction, transportation infrastructure construction, and factory construction. Such cooperation is applicable to a limited number of countries and, even from the recipient country's point of view, it fails to help develop labor force expertise. Second, short-term event-based international cooperation in the form of forums or MOUs make up the majority of international cooperation. Short-term international cooperation is known to have little impact on the mid- and long-term development of developing countries. Finally, most cooperation efforts are government oriented and cooperation that encompasses college and industry participation has been overlooked [Moon and Lee, 2013].

In this study, the case of the HRD center in Cambodia, which is widely regarded as a successful SW expert training model for expanding the scope of international cooperation, will be analyzed. Herein, the case of HRD center will be evaluated in the perspective of human resource development (HRD) platform for SW expert training and the possibility of expansion to other fields.

The study is structured as follows. In Chapter 2, the concept of SW expert training platform and

1) Chosun Ilbo, "Korea's GDP per capita is 29th place in the world at \$20,733...", August 2017.

2) Chosun Ilbo, "[New 70 Years of Korea (1945~2015)]" "USA poured \$ 3.1 billion more in aid to Korea than the Africa continent", May 2015.

〈Table 1〉 Platform Definitions

Research	Definition
Kwon and Kim [2013]	<ul style="list-style-type: none"> • Each participant can freely move and stay according to each's needs and thus the platform can be regarded as an ecosystem
Jang and Gong [2012]	<ul style="list-style-type: none"> • Create value by forming mutually beneficial participants • Network effects created and increased as the interactions becomes easier
Hong et al. [2014]	<ul style="list-style-type: none"> • Finding common structures and create an open infrastructure to address common needs in various applications and centralize and connect multiple groups
Hong et al. [2012]	<ul style="list-style-type: none"> • Infrastructure or a means to standardize the process to improve accessibility and efficiency of a process

international cooperation will be introduced. The status of international cooperation and HRD center in Cambodia will be examined in Chapter 3. In Chapter 4, the success factors for the HRD center will be evaluated and finally in Chapter 5, the study will conclude along with some suggestions for future study.

2. Theoretical Background

2.1 SW Expert Training Platform

The word 'platform' originates from the train station platform that connects trains to a multitude of travelers. As the origin suggests, platform links people to people or people to companies [Lee, 2016]. However, specifically, the meaning of the platform can be defined as a system that can provide new values and benefits to all individuals and companies that participate by providing a free environment for participation [Yoon, 2011].

Especially, the focus on physical infrastructure has shifted to developing an extended network connecting technologies, services, and real (social) relationships in combination with the Internet.³⁾ In addition, the development of information communication technology has made plat-

form development easier to build and utilize, and if properly constructed, it would not take much manpower and cost to operate. This allows all participants to build and operate the platform. In general, the concepts defined in platform-related research are as follows.

Hardware platform is used as a 'physical structure' in real life, such as a platform for vehicle production or a train platform. In other words, platforms are not only a link between people and people, but also a means to create a variety of products through a standardized process and serves as a tool [Lee, 2006]. Software platform refers to the OS (operating system) on which the application operates. Recently, the operating environment of the closed platform concept gradually shifted to an open internet environment and the platform became defined as the collection of application programs that can provide and develop solutions or contents [Hwang, 2008]. In general, the definition of the platform varies slightly depending on the type and purpose of research but still uses the same common structure.

3) Broadcasting Communication Committee, "Strategy of social networking based on social platforms", 2011.

In this study, platforms, in an engineering perspective of hardware and software platforms, are applied to international cooperation and is reinterpreted as a SW expert training platform in human resource development that plays a role in connecting participants and production.

2.2 International Cooperation

International cooperation refers to the support and cooperation to develop countries with low economic and social development, i.e. developing countries [Lee, 2013]. In particular, international cooperation refers to the promotion of human resource development and education to induce economic development in developing countries, healthcare for human rights, transparent and efficient administration, and agriculture, forestry, and fishing for sustainable food production. In addition, it includes support for the development of science and technology, environment, and human rights [Jang and Jeung, 2008]. In short, international cooperation is being carried out in various ways, including government led ODA (official development assistance) and funds in form of both public and private [Lee et al., 2013].

Investigations of the international cooperation strategies adopted by major countries provide some learning. The US in particular pursued active international cooperation with neighboring countries during the Cold War but has since decreased its efforts significantly after the collapse of the Soviet Union. However, in the wake of '9.11 Terror' in 2001, the importance of democracy and national defense emerged as key na-

tional security strategies. Especially, the importance of aid for developing countries was highlighted as a counter terrorism strategy. In addition, cooperation for human rights has become essential in the scope of international crime, drugs, international peace, security, health, education, and protection of those in need. Furthermore, cooperation for justice, democratic governance, economic growth, trade, finance and construction is necessary. It is also necessary to address humanitarian issues such as disasters, refugees, and immigration issues [Yoo, 2014]. In order to promote action, economic cooperation encompassing economic growth, agriculture, trade, health, democracy, tension relief, humanitarian efforts, and global development have been conducted with the USAID (United States Agency for International Development) at its core.

For Japan, international cooperation has focused on harmony between environment and development, international peace and security, support for democratic market economy, and human rights. To this end, the JICA (Japanese International Cooperation Agency) was established in 2003 as an economic and social cooperation organization for developing countries and is responsible for government oriented technical cooperation, human resource development, and funding for developing companies [Shin et al., 2013]. In particular, IT related cooperation projects and development surveys have been conducted via the ODA with 23 countries. The efficiency of education, health, and medical care in particular were highlighted in addition to other fields that can be closely linked to industrial and trade policies [Cha, 2011].

〈Table 2〉 International Cooperation by Country

Country	Characteristic
Korea	<ul style="list-style-type: none"> • Ministry of Foreign Affairs and KOICA centered ODA with OECD DAC Member • Promote mutual exchange and animosity through economic and social development in developing countries • Conduct various projects such as development consulting, invitation and training trainees, and volunteer dispatch • 16th out of 29 OECD countries (1.96 billion USD in 2017) • Amount aid to income was relatively small at 0.14% (2017)
US	<ul style="list-style-type: none"> • USAID centered ODA with OECD DAC Member Country • Cooperation for peace and security in the international community, guarantee basic human rights, democracy and governance, economic growth, and humanitarian efforts • US ODA is centered on economic development support and welfare improvement in developing countries • Amount aid to income at 0.18%
Japan	<ul style="list-style-type: none"> • JICA centered ODA with OECD DAC Member Country • Suggest policies for compatibility between environment and development, peace and stability in international society, economic support for democratic market, and guarantee of human rights. • Invite trainees, dispatch experts, and provide funding especially ODA in IT fields • Link development cooperation with domestic industrial and trade policies. • Amount aid to income at 0.20%
China	<ul style="list-style-type: none"> • Not a OECD Member Country but carried out ODA • International cooperation for political and diplomatic purposes with primarily socialist countries before reform • After reform, focus on international cooperation for economic benefit primarily in Asia and Africa • Cooperation for commercial purposes rather than humanitarian • Cooperation based on large capital

China, on the other hand, pursued international cooperation for political and diplomatic ends with focus around socialist countries prior to reformation and opening up. Since then, China's primary focus has been on economic interests and has centered around quid pro quo economic cooperation in Asia and Africa. The scale of aid has been similar to that of the US between 2000 and 2015 with Chinese aid mounting to 354.4 billion USD and US amounting to 396.4 billion USD. However, government oriented development funds accounted for 93% for the US while it accounted for just 23% for China.⁴⁾ As such, China tends to focus more on commercial purposes than on international

development and, with its powerful economic power, China is contributing significantly to the economic growth of developing countries.⁵⁾

Korea had been a recipient of international cooperation and in 1991 founded KOICA (Korea International Cooperation Agency) and, by extension, established the foundation to provide aid to developing countries. In 2010, Korea joined the OECD DAC (Development Assistance Committee) to facilitate KOICA. This also facilitated the Ministry of Foreign Affairs in carrying out ODA and promoting friendly, cooperative relations and mutual exchange through economic and social development support for developing countries [Lim, 2014].

4) The Bank of Korea, International Economy Review, "China's Foreign Trade and Foreign Assistance", June 2015.

5) Hankyoreh Newspaper, "China, the first aid country beyond the United States", October 2017.

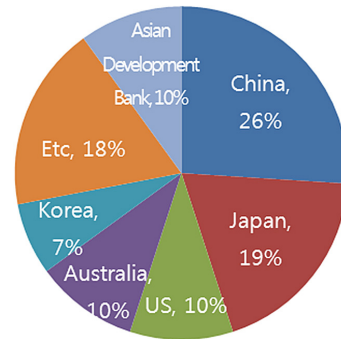
KOICA focuses on researching sustainable international cooperation, developing talent in developing countries, improving self-sufficiency, and expanding partners for development cooperation. Specifically, KOICA carries out various projects such as development consulting, education, volunteer dispatch, public-private cooperation. It also provides small-scale grant aid, cooperates with international organizations, and promotes development awareness.

3. Overview of Cambodia HRD Center

3.1 Current Statuses of Cambodia International Cooperation

Cambodia received 1.4 billion USD in aid, representing 7.9% of GDP in 2015 and 34% of the government budget. The CDRB/CDC (Council for the Development of Cambodia) is responsible for managing the assistance. Every two years, dialogues and policy reviews between governments, private sectors, and donor countries occur to facilitate development cooperation and is monitored through the Cambodia Development Forum [Kim and Jung, 2017]. Cooperation is mainly with China, Japan, US, Australia, and Korea and the support accumulated since 2010 is shown in <Figure 1>.

Korea contributes 7% of the total Cambodian aid, which is a relatively small amount. Specifically, mid- and long-term goals (2016~2020) are driven by KOICA: development of human resources through the improvement and systematization of education while strengthening support for technical manpower and nurturing ad-



(Source: National Cooperation Strategy of Cambodia, 2016).

<Figure 1> Cambodian aid by Country Over the Same Time Frame

vanced manpower.⁶⁾ In addition, KOICA and Cambodia's NiDA (National Information Communications Technology Development Authority)⁷⁾ are in the process of establishing a master plan for science and technology in the field of ICT, where HRD center is an integral part of the project.

3.2 Management of HRD Center

The HRD center was established on April 26, 2013 in the University of Phnom Penh as part of the ICT Master Plan as requested by the Cambodian Government. This was to support the training of skilled personnel and transfer Korean experience and skills.

The short-term goal of the HRD center is to provide educational opportunities through the improvement of education infrastructure (HW, SW) and to identify the educational demand for Cambodia. The final goal is to strengthen the national competitiveness and cultivate cultural

6) Related ministries, "Cambodia's National Cooperation Strategy", 2016, pp. 9-11.

7) National IT Industry Promotion Agency, "Development Cooperation in ICT Sector (Focused on Cambodia Case", 2016.

exchanges while understanding/building relationships.⁸⁾

Typical activities include identifying potential college graduates in IT related majors every February. The SW specialist course is a nine month course with five months of basic foundation education and four months of deep-dive classes. In the basic course, students study JAVA, database, and web programming for eight hours a day. Ten specifically developed textbooks, fifteen lectures, and 600 online lectures are at students' disposal. In the deep-dive course, HRD center, Webcash Institute, and KOSIGN (Korea International Sign & Design Show) are involved to train tailored SW experts. In particular, the HRD center has a curriculum for professors. Throughout the course, seven or more candidates are selected each year and trained through hands-on programs with teaching materials and practical training for professorship. Six in 2013 and eight in 2014 were put through the curriculum and currently work as local instructors.

In addition, Cambodia's first e-learning platform was launched in April 2015. It was originally developed as part of the project for the students, but the government and local universities showed interest in using the platform and expanded access to various contents. Currently, the Ministry of Education and some universities are actively using the platform.

The HRD center also develops infrastructure and cultural contents to promote cultural exchanges between the two countries. It also operates the Korea Culture Promotion Hall and hosts various events such as Taekwondo and other

opportunities for experiencing Korean culture. In addition, Korean language lectures are regularly held to contribute to cultural exchange and dissemination.

Through this process, the HRD center graduates are moved on to IT master's degree program in developed countries or receive training in Korean IT companies prior to working in local IT companies. The graduates become the core of Cambodia's HR professionals. Also, the computers from HRD center are donated to neighboring high schools for ICT education and the HRD center students volunteer on the weekend to educate Cambodian students.

These activities will ultimately help HRD centers to use Korean SWs in Cambodia, which can also affect the SW exports in Korea. This will have a positive effect on entry into the South-east Asian market as well as entry into the Cambodian IT market.

4. Success Factors in Cambodia HRD Center

4.1 Curriculum: Supporting Application Focused Self-Directed Learning

In Cambodia, although there are graduates from 32 ICT related institutions for higher education each year, there is a shortage of high quality human resources in terms of competence and skill level. In consideration of this, the HRD center employs a practical curriculum. Specifically, the SW foundation course focuses on seminars and discussions while the advanced course, which is closely related to the job process, is a tailored program developed by the local Khmer Academy,

8) KOICA, "Preliminary feasibility study report on the construction of HRD center in Cambodia", pp. 9-10.

Plug-in Memo, ATM-server program, and Android/iPhone App development. The practical training has contributed to the success of the HRD center by continuously attracting outstanding students, which helped them enter graduate schools and become a key player in local businesses.

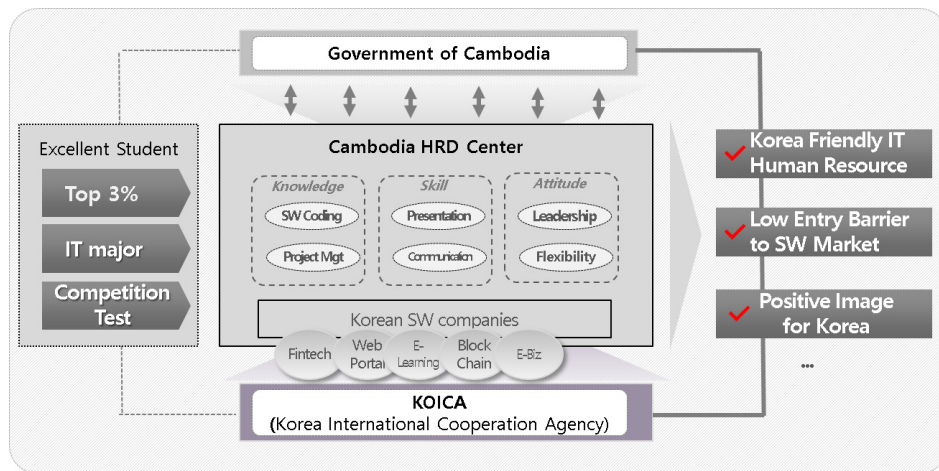
In particular, the HRD center is preparing to become financially independent by launching paid programs, renting facilities (including the library) and making custom applications. Paid education programs include general Korean language courses, IT education courses, local language courses for KOICA volunteers, and Taekwondo courses. The partner organizations mainly support the budget for the program and the center provides physical and human resources such as facilities and equipment.

4.2 Function: SW Expert Training Platform

The HRD center in Cambodia is not only a short-term event based international cooperation but also a sustainable platform to develop a talented labor force. It is also a flexible, open,

and interactive platform.

First, the curriculum, operational experience, and know-how of running the HRD center can be applied to other countries. Currently, the HRD center is located in the middle of Southeast Asia and the curriculum can be continuously developed by reflecting each country's cultural characteristics. Second, it is an open learning space accessible to anyone with passion and willingness to learn. Therefore, it facilitates the participation of the government, industry, and colleges, thereby minimizing mismatches that may occur between the industry and the graduates as the industry itself participates in the curriculum design. Finally, it is a systematic interactive platform that is based on a database. In the HRD center, the whole process from curriculum planning to the current state of employment is continuously managed and the needs of the industry are constantly reflected in the curriculum. Therefore, the HRD center aims at providing the best educational contents that reflects rational decision making between the students and the industry.



<Figure 2> SW Expert Training Platform

4.3 Management: Cooperation with Cambodian Government and Student Satisfaction

The HRD center provides students with the opportunity to concentrate on education by providing a differential allowance according to their academic achievement. The students are within top 3% of local students. The center also provides external consultation for start-up items/projects and gives them full support including payment for the IT project and operating funds. As a result, these students have become a key player in Cambodia and the voluntary development of HRD centers has become an important factor for success. In fact, as of May 2018, a survey of 190 graduates of the program revealed that 97% of the graduates were satisfied with the HRD center education and 90% of the students were willing to recommend the HRD center education to others.

In addition, the HRD center maintains a close working relationship with the Cambodian government. It is a project that is in line with the government policy and operates in cooperation with teaching related educational programs in terms of budgeting, operation and planning. In particular, a joint committee has been formed to approve the annual operation plans, regulations, and amendments with the president of University of Phnom Penh who serves as the committee chair. This enables the HRD center to play a long-term role in supporting sustainable education and improving quality.

5. Conclusion

5.1 Summary and Implication

Major countries around the globe are pursuing

international cooperation to expand infrastructure in developing countries. The study of the HRD center in Cambodia demonstrates a way to maintain a mid- and long-term cooperation between the donor countries and recipient countries. Although Korea is responsible for a small amount of aid compared to other developed countries, the HRD center embodies an international cooperation model based on aid tailored to the needs of the recipient country.

In particular, the HRD center in Cambodia can be understood as a collaborative project focusing on a physical space. However, it can also be understood as a cooperative project focused on establishing a flexible and interactive model for international cooperation by developing a practical curriculum, achieving financial independence, imparting a strong learning motivation, cultivating talented labor force necessary for the industry, and maintaining close cooperation with the government.

This is not a short-term, sporadic effort but a sustainable and self-motivating project that fosters talent. It can be considered as SW Expert Training platform that can help the growth of the country and improve cooperation between the two countries. In order for such platform to become settled in the future, it is necessary to review the characteristics of the country and the educational sector to pursue a differentiated model.

5.2 Future Study

In the future, it is necessary to examine how international cooperation can be applied to new fields and in new countries based on the success of the HRD center in Cambodia. Specifically, one

example is the emergence of safety issues that may arise in the development and growth process. The SW Expert Training platform could help nurture advanced, professional manpower that will help improve safety. Since the end of the Korean War, Korea has experienced rapid industrialization as well as industrial disasters. In this process, the workers' sacrifices were largely overlooked under the objective of economic growth. The lessons on safety and professional education of Korea could be beneficial to countries such as Cambodia and Bangladesh, which are considering industrial development. In fact, the collapse of a garment production factory in 2013 injured 2,400 workers and caused more than 1,000 casualties. A month after the accident, a ceiling collapsed at a shoe factory in Kampongpu in southern Cambodia, killing six people and injuring 11 others. Therefore, is it necessary to develop and study safety as a new application field for the platform model, which will be a vital part of international cooperation.

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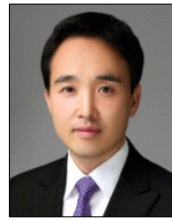
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