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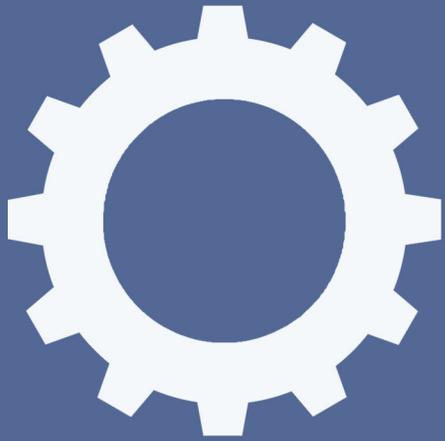
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Government-led Vocational Training System and its Lessons: In case of South Korea before the IMF Economic Crisis

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1. Introduction
2. Theoretical Considerations
3. Developmental Changes
 - 3.1. Prior to Vocational Training System (the early 1960s)
 - 3.2. Settlement of Vocational Training System (the 1960s-1970s)
 - 3.3. Reform of Vocational Training System (the 1980s)
 - 3.4. Transition of Vocational Training System (the 1990s)
 - 3.5. Implementation
4. Lessons
5. Conclusion

Abstract

Vocational training system for skilled workforce has been highlighted as one of the key driving forces of South Korea's economic development. South Korea is well known for adopting a government-led vocational training strategy to make sure the supply of a skilled workforce according to the 1st-7th five-year economic development plans. This paper examines the main features and developmental changes of this strategy from the 1960s to the 1990s and suggests a set of important lessons for the design and implementation of vocational training policies. Vocational training policy also was led by the government and complemented by private sector. By providing training program through the establishment of public training institutes, the government managed the supply of skills. While the government has consistently expanded and controlled the vocational training system for meeting the needs of industry, the principle system was the compulsory in-plant training system, in which it was obligatory for large companies to provide training program for their workforce or alternatively contribute the training promotion fund. The initial stages of this system in the 1970s were considered as successful in terms of raising numbers of trainees within industry. However the numbers later fell dramatically in the 1980s after the government reformed its policy. Many employers resisted against the burden of training obligation and levy. Although there were still unsolved limitations of the government-led vocational training system, South Korean vocational training system before the 1997 IMF economic crisis has contributed systematically to the transformation of industry and to economic development.

Keywords: South Korea; economic development; government-led strategy; skilled workforce; compulsory in-plant training; public vocational training; training levy; employment insurance

1. Introduction

After the Korean War, South Korea remained a typical underdeveloped agricultural country until the early 1960s and was one of the world's poorest countries, with a per capita income of less than \$100 in the early 1960s. At that time, the Korean economy was almost fully dependent on US aid as a typical agricultural country. Meanwhile, the rapid population growth and mass migration from rural to urban areas in the early years of industrialization led to over-supply of unskilled people to non-farm sectors in cities, resulting in very high unemployment rates. The demand for industrial workforce was not high in South Korea until the early 1960s because during that period it remained an agricultural country where more than 60% of workers were engaged in the agricultural production. At that time, there was a lot of potential workforce as a result of the rural-to-urban migration and therefore was a little awareness about the importance of vocational training for skilled workforce.

In this social and economic context Korea launched its 1st five-year economic development plan in 1962. In this plan, the government adopted an export-oriented strategy for realizing national economic growth by processing raw materials imported from overseas markets and then re-exporting the goods, given Korea's weak domestic demand and lack of natural resources. This strategy has been considered an excellent choice that enabled the Korean economy to achieve rapid growth after the Korean War (Kil-Sang Yoo, 2009). The government started considering the introduction of a vocational training system from the time when it was working on the 1st economic development plan in 1961. At that time, there was a perception that there was urgent need for vocational training system to match its economic development plan, as soon as possible, as every country pursuing economic development after the Second World War. This perception played a critical role in introducing a vocational training system in South Korea. Similar views were often expressed by foreign advisors. Advisors to the UN Commission for the Unification and Rehabilitation of Korea (UNCURK), who were stationed in Korea after the end of the Korean War in 1953, noted the importance of HRD projects in relation to Korea's industrialization policy (Sang-Sun Suh, 2002).

The social and economic background of applying vocational training system is summed up as follows. Firstly, there were many unskilled workers for whom vocational training could be provided. Due to young people's preference for academic schools, there was a strong tendency to avoid vocational schooling with the ratio of

academic to vocational school graduates reaching 70 to 30. In the initial stage of industrialization the vocational education failed to produce skilled workers required by industry because of its poor contents, lack of equipment and facilities, and incompetent teachers. In addition, there were many unskilled unemployed youths who did not go into higher education. Young people who did not enroll in a middle school, high school and college accounted for more than 20%, 30% and 80% of total elementary, middle and high school graduates, respectively.¹ Secondly the demand for skilled workers was growing rapidly. According to a survey of skilled workers employed in the secondary and tertiary industries, the number of craftsman was estimated to increase by 205,623 from 279,670 in 1961 to 485,293 in 1966. An average of 40,000 new craftsmen was needed each year to meet the increasing demand. Thirdly, South Korea's employers were reluctant to provide training programs for future skilled workers. Before the introduction of the vocational training system, employers could voluntarily train the workforce necessary through apprenticeship program at work sites according to the Craftsman Training Ordinance under the Labor Standards Act. However, the apprenticeship system did not work effectively because of employers' lack of awareness and failure to meet the required conditions. Formal vocational training system started to work with the enactment of Vocational Training Act in 1967 after a long period of consultation and counseling among relevant government agencies

This paper consists of four parts. Firstly, some theoretical issues on government intervention are discussed. Secondly, I review the developmental changes of the vocational training system including South Korea's economic and labor market situation and main vocational training policies. There is brief explanation about policy implementation in terms of legislation, funding and training providers. Thirdly, I suggest informative lessons from South Korea vocational training system: close connection between vocational training system and economic development plan, supply of skilled workforce to meet industrial demand, parallel development of vocational training and national technical qualification system, complementarities between vocational education and vocational training, limitations of government-led

¹ In Korea, unlike other developing countries, the enrollment rate for compulsory education rose to as high as 96% in the early 1960s, and thus most young people had no problem in reading and writing. Such a high literacy level was a factor that made it possible for Korea to implement its vocational training policy successfully. Thanks to the five-year literacy project conducted since 1954 after the end of the Korean war, the illiteracy rate among Koreans, which reached 14.0% in 1954, largely declined to 4.1% in 1958 (Bok-Nam Yoon, 1990).

vocational training system. In conclusion brief implications are suggested for other developing countries which are trying to implement vocational training policies.

2. Theoretical considerations

During its industrialization era, South Korea had a successful skill formation system, one that was able to coordinate demand for and supply of skills quite well. During that era, the government played a decisive role, by providing a skill base through intervention in education and training. This System can be fairly characterized as a 'government-led' vocational training system (Jin-Ho Yoon and Byung-Hee Lee, 2010). It needs to be explained what the rationale of government-led strategy is.

Some theoretical issues around government intervention could be briefly discussed. Controversy over these issues has been mainly discussed under two theories: the human capital theory and the public goods theory. The human capital theory focuses on the responsibility of both the individual worker and the enterprise. The public goods theory focuses on the nature of training as a public good and therefore on the failure of the vocational training market.

Human capital theory was the dominant to skills formation. This theory assumes that market failure does not occur in the competitive market and considers that all training can be classified into general training or specialized training, in which both the individual worker and the enterprise have training investment incentives. It also argues that direct training provision by the government is not desirable and as a result, optimal efficiency of vocational training can be achieved under the principles of a free, competitive market. Furthermore, the human capital theory maintains that government intervention in vocational training is unnecessary and may be harmful, assuming that the free, competitive market can bring about sufficient investment in vocational training. Therefore, the only action a government needs to take is to refrain from intervention and to make sure that a free, competitive market is well functioning. After all, if the strength of the freely competitive market provides appropriate incentives for skills formation, the government needs only be concerned with maintaining a well-functioning market, using various practices such as abolishing price controls, promoting the circulation of market information, and fostering competition (Becker, 1964).

However, market failures like poaching of workers and other externalities occur inevitably in the real labor market. Firms are likely to under-provide general training because they worry about turnover of trained workers (poaching). The public good theory can be applied here. Public goods theory has used the concept of a public good to outline a role of government production in the economy. A good is defined as public if it has one or both of characteristics of joint-ness in consumption and non-excludability. This theory was tried to show why the public goods cannot be produced efficiently by the private sector of the economy, creating a market failure (Holcombe, 2000). In South Korea vocational training is considered as a public good. It is likely to be under-provided if training provision leave entirely to the private sector. The benefit of training does not accrue exclusively to the workers who participate in training courses and can be shared by other people in society like a public good; and employers are reluctant to provide training to their workers or assume the total cost of training. Therefore, the government should intervene in vocational training to produce an optimal level of skills either by providing subsidies or incentives to enterprises and workers or directly providing training to workers.

South Korea offers a good example of government-led policy in vocational training to assure the supply of a skilled workforce and often shows an example of 'government failure' before the integration into the Employment Insurance. The government intervention as a strategy intended to resolve market failure does have some rationality. It contributed to meet increasing skills demands at the initial stage of economic development. It also transformed mass unskilled youth leaving rural areas to a skilled workforce through vocational education and training (Jae-Yong Shim, 1997). On the other hand, it is also understood that government action in the name of public interest could commit a fault for bureaucratic reasons although government intervention aims to correct market failures. Governmental officials and agents have the capacity to act in ways to maximize their individual interests (e.g., bureaucratic freedom; agency problems, maximize their own achievements, promotion, wages, etc.) as economic subjects. The time-borne question of government efficiency then arises. At this point 'government failure' also occurs when the government is not able to respond the changes of various skills demands (Shackleton, 1995). In South Korea many employers began to resist strongly against government-driven policy focusing on public training provision (called as 'training levy) from the beginning of the 1980s. The public

training could not satisfy the demand of high skilled workforce timely. Some evidence on government failure in South Korea will be discussed in 'the lessons' on this paper.

It needs to be pointed out that the development of the vocational training system in South Korea can be divided into two periods with the introduction of the employment insurance (EI) in the mid 1990s. At the end of 1997 the IMF economic crisis was significant turning point: the pre-EI period (before the IMF crisis) and the post-EI period (after the IMF crisis). In other countries, vocational training systems developed from apprenticeship systems in response to market needs. In South Korea, the vocational training system was institutionalized as a means of carrying out economic development goals. Before the introduction of the employment insurance system, vocational training system was designed and implemented to supply a skilled workforce for the industrialization. As the technical qualifications system, in addition to the vocational training system, was implemented to encourage participation in vocational training, it became possible to be easily hired in technical and skilled jobs after completion of training courses. Following the crisis in 1997, two years later the introduction of the employment insurance system in 1995, the focus of vocational training was placed on the unemployed. Vocational training measures assumed greater significance as an active labor market policy rather than for supplying a skilled workforce.

3. Developmental Changes

3.1 Prior to Vocational Training System (the early 1960s)

As shown in Table 1, the demand for skilled workforce was not high in Korea until the early 1960s because during that period it remained an agricultural country. Confronting with the economic and political upheaval and the decreasing of US aid after 1960, Korea government has begun to have interest with the economic development strategy. It set up the Economic Planning Board in 1961, and announced the 1st five-year economic development plan in 1962 to lay the foundation for economic independence. The goals of the 1st economic development plan can be summarized as follows: to push ahead with government-led industrialization, to create demand for industrial outputs by increasing exports, and to attract foreign capital to supplement the shortage of investments at home country.

Table 1: Employment Population by Industry (1953-1963)

(1,000 persons, %)

Year	All industries	Agriculture, forestry & fisheries (Primary)	Mining & manufacturing (Secondary)	SOC & other services (Tertiary)	Annual increase rate			
					All industries	Primary	Secondary	Tertiary
1953	6,536	4,928(75.4)	321(4.91)	1,287(19.7)	-	-	-	-
1954	6,550	4,865(74.3)	353(5.39)	1,322(20.3)	+0.2	-1.3	+10.0	+3.5
1955	6,578	4,811(73.1)	386(5.9)	1,381(21.0)	+0.4	-1.1	+9.3	+3.7
1956	6,628	4,767(71.9)	424(6.4)	1,437(21.7)	+0.8	-1.0	+9.8	+4.1
1957	6,700	4,736(70.7)	466(7.0)	1,498(22.4)	+1.1	-0.7	+9.9	+4.2
1958	6,798	4,716(69.3)	515(7.6)	1,567(23.1)	+1.5	-0.5	+10.5	+4.6
1959	6,923	4,710(68.3)	569(8.2)	1,644(23.8)	+1.8	-0.2	+10.5	+4.9
1960	7,082	4,720(66.7)	629(8.9)	1,733(24.5)	+2.3	+0.2	+10.5	+5.4
1961	7,269	4,744(65.3)	695(9.6)	1,830(25.2)	+2.6	+0.5	+10.5	+5.6
1961	7,500	4,789(63.9)	771(10.3)	1,940(25.8)	+3.2	+0.9	+10.7	+6.0
1963	7,779	4,856(62.4)	855(11.0)	2,068(26.6)	+3.7	+1.4	+10.9	+6.6

Note: () is component ratio

Sources: Shin-Wong Kim and Kwang-Jo Seo (1987). *The Creation of the Historical Base of Modern Korean Economy, A History of Modern Korean Economy*, Academy of Korean Studies

Although the vocational education and apprenticeship systems were already put in place to provide skilled workforce required executing the 1st economic development plan, their function of supplying skilled workers was very poor. Existing technical high schools did not provide enough graduates to meet the industrial demand. Moreover, the government did not design any separate policy measure to secure enough craftsmen, insisting that there were many already available workers (Sung-Joong Kim, 2005). Meanwhile, as employers took a passive attitude towards skilled workforce, a vocational training system that could bridge the gap in the apprenticeship system was urgent. As early as 1961, the government began to consider introducing a vocational training system to support its economic development plan. It recognized that economic development would bring a more industrialized society, which in turn would increase demand for skilled workforce. It is recognized that human resource development strategy, which tends to require a long period, should be designed in parallel with industrial development.

It took almost five years for the Vocational Training Act to be established in 1967. This was caused by the delay in decision-making by the government agency mainly in charge of coming up with the training system, objections to the introduction of the system raised by the Ministry of Commerce and Industry and the Ministry of Education, and the long period of consultation between employers' organizations. In the early stage of industrialization in South Korea vocational training had to be designed in a way that did not overlap with existing school education. There was a clear distinction between vocational education and vocational training. Vocational education at school was defined as education that helps school-age students to form good character and develop professional. On the other hand, vocational training was aimed at helping currently employed workers and job seekers to acquire skills immediately applicable in industry. Because of its emphasis on rapid applicability, vocational training was provided with a focus on practical education. For example, three-year machine operator course run by a technical high school, only 34% was allocated to practice whereas the proportion of practice reached 80% in the case of an one-year course provided under the vocational training system (Related subjects and liberal arts made up 14% and 6%, respectively). Finally the government's supervisory role in producing a skilled workforce was divided between different government agencies according to skill level. While the Ministry of Education was responsible for three-year technical education, the Office of Labor (now the Ministry) was responsible for short-term vocational training aimed at skilled workforce.

The Vocational Training Act was enacted in 1967 when the 1st five-year economic development plan period (1962-1967) was drawing to an end. The purpose of the Act was to "to improve workers' status and contribute to the development of the national economy by providing vocational training opportunity and skills tests for workers, and thus supplying the skilled workforce for the manufacturing and other industries." (Article 1 (Purpose) of the Vocational Training Act) Legislation provides the framework for policy implementation. The Office of Labor (former of the Ministry of Labor) started to implement vocational training project according to this Act.

3.2 Settlement of Vocational Training System (the mid 1960s-1970s)

Economic and Labor Market Situation

As the goals of the 1st five-year economic development plan (1962-1966), launched in 1962, were accomplished successfully, the employment structure began to change. Supplying skilled workforce required in the manufacturing sector emerged as an urgent social and economic issue to effectively carry out the 2nd five-year economic development plan (1967-1971). With the implementation of the 2nd five-year economic development plan, South Korea's export-oriented economic development strategy began to take off, relying mainly on light industries. South Korea also continued economic growth driven by the heavy and chemical industries during the 3rd (1972-1976) and 4th (1977-1981) five-year economic development plan periods. The government began to build large scale industrial parks or coastal industrial complexes such the mechanical industrial complexes in Chang-won city and the steel industrial complexes in Po- hang, Gwang-yang city. It was based on the rationale that the heavy and chemical industries have strong mutual dependence and technological correlations among raw materials, intermediate goods and final products, so an industrial complex should be constructed in order to put them together in one place. After that the demand for skilled workers grew sharply and steadily over those 15 years.

As the continuing economic boom and the growth of the heavy and chemical industries pushed up the demand for skilled workforce in the 1970s (Table 2), South Korea's employment structure fundamentally began to changed. While the employment population of the primary industry was sharply decreasing, that of the secondary sector was increasing more than before. In the meantime this period was considered a turning point in South Korea's labor market as the unlimited supply of labor from rural to urban areas ended in 1975(Moo-Gi Bae,1982).

Table 2: Employment Population by Industry (1972-1979)

(1,000 persons, %)

Year	All industries	Agriculture, forestry & fisheries (Primary)	Mining & manufacturing (Secondary)	SOC & other services (Tertiary)	Annual increase rate			
					All industries	Primary	Secondary	Tertiary
1972	10,382	5,238(50.5)	1,468(14.1)	3,674(35.4)	4.4	9.2	3.9	1.7
1973	10,942	5,445(49.8)	1,779(16.2)	3,719(34.0)	5.4	4.0	21.2	1.2
1974	11,421	5,481(48.0)	2,027(17.7)	3,914(34.3)	4.4	0.7	13.9	5.2
1975	11,692	5,339(45.7)	2,235(19.1)	4,118(35.2)	2.4	-2.6	10.3	5.2
1976	12,412	5,514(44.4)	2,708(21.8)	4,191(33.8)	6.2	3.3	21.2	1.8
1977	12,812	5,342(41.7)	2,866(22.4)	4,604(35.9)	3.2	-3.1	5.8	9.9
1978	13,412	5,154(38.4)	3,092(23.1)	5,167(38.5)	4.7	-3.5	7.9	12.2
1979	13,602	4,866(35.8)	3,209(23.6)	5,527(40.6)	1.4	-5.6	3.8	7.0

Note : () is component ratio.

Source: National Statistical Office of Korea, *Annual Report of Economically Active Population*, Yearly

Subsidy on In-plant Training

As the Vocational Training Act was enacted and went into effect in January 1967, the government's subsidy on part or all of expense of in-plant training worked as a motivation for providing in-plant training. The number of enterprises providing in-plant vocational training and the number of trainees rose thanks to government subsidies. The number of enterprises providing in-plant training grew from 16 in 1967, 43 in 1968, 56 in 1969, 70 in 1970 and 81 in 1971. The number of training recipients jumped from 3,890 in 1967 to 14,303 in 1971 (Table 3).

On the other hand, public vocational training also contributed an almost equal proportion of skilled workers to meet the demand in this period. Public vocational training relied on the increased government budget for its expansion whereas in-plant vocational training depended heavily on the training subsidies provided by the government for that purpose (Kye-woo Lee, 2005). Finally the number of trainees rose threefold from 10,738 to 30,588 in 1970 after the Vocational Training Act. However, the budget for such subsidies reached its limit by the end of the 2nd five-year plan period.

As subsidy payments, financed from the general account, were suspended, the number of both training facilities and trainees decreased significantly.

Table 3: Numbers of Trainees during 2nd Five-Year Economic Plans (1967-1971)

(Unit: persons)

Year	2 nd Five-Year Economic Development Plan					
	total	1967	1968	1969	1970	1971
Total	98,863	5,392	15,115	18,405	26,965	32,986
○ Public training	36,317	1,502	6,309	8,419	8,819	11,268
1) Public training institutes	1,091	1,502	1,363	167	319	605
2) Correction facilities by Ministry of Justice (including KNOP)	16,794 (4,077)			3,291	4,760 (1,642)	5,878 (2,435)
3) Institutes by local governments	18,432		4,946	4,961	3,740	4,735
○ In-plant training	48,225	3,890	8,022	8,527	13,483	14,303
○ Authorized training by government	14,321		784	1,459	4,663	7,415

Note: Korean National Outplacement Program (KNOP) means training programs for Korean retirees from US military service.

Source: Ministry of Labor of Korea. *Annual Report on Vocational Training in Korea*.

Compulsory In-plant Training

With the 3rd five-year economic development plan (1972-1976), the government established a new workforce development plan and switched to a government-led, regulation-driven vocational training policy, based on the assumption that the shortage of skilled workers due to the growth of heavy and chemical industries could not be met by enterprises' voluntary training provision alone. While the government invested intensively in technical high schools in 1973, it obligated private enterprises to provide training program for supplying skilled workforce from 1974 (Ju-Ho Lee, 1992; Sung-Jun Park, 1992). In 1974, the government finally confirmed its decision to make in-plant vocational training mandatory, and enacted the Vocational Training Special Measures Act. It decided to apply this Act only to enterprises employing 500 workers or more in six industries - mining, manufacturing, electricity, gas & water supply, construction, transportation, storage & communications, and services - on a pilot basis until the end of December 1976. With the establishment of the Vocational Training Special Measures

Act in 1974, every large company was mandatorily required to provide pre-employment training during the 3rd five-year economic development plan period. This compulsory in-plant training system was timely suitable for realizing the government's commitment to achieve export-led growth by fostering the heavy and chemical industries.² (Table3).

Two years later, in 1976, the Basic Vocational Training Act was established, combining both the Vocational Training Act and the Vocational Training Special Measures Act. This new Act greatly strengthened the compulsory in-plant training system. The scope of enterprises obligated to provide in-plant training was extended to those with 300 workers or more, and the number of workers who would be provided with in-plant training was determined and announced by the government annually for each industry, after considering demand for skilled workers, but not exceeding 10% of total workers in the enterprise concerned. The aim of the Basic Vocational Training Act was to strengthen employers' role in training provision. In 1976, 1979, more than 90,000 skilled workforces were supplied through in-plant vocational training (Table 4, Table 5).

² However, the implementation of the compulsory in-plant training system revealed some problems. It turned out to cause too much burden to enterprises as the number of mandatory training recipients was determined in a one-size-fits-all manner regardless of industry and enterprise size. The system also disregarded the possibility of enterprises difficult to provide training due to their unique circumstances despite the mandatory legal provision. Private enterprises strongly resisted against the system, which they thought was too inflexible, uniform and unrealistic.

Table 4: Numbers of Trainees during 3rd Five-Year Economic Plans (1972-1976)

(Unit: persons)

Year	3rd Five-Year Economic Development Plan					
	total	1972	1973	1974	1975	1976
Total	309,593	27,525	39,851	41,310	75,254	125,653
○ Public training	78,151	9,918	16,234	16,356	17,480	18,164
1) Public institutes	11,200	678	1,174	2,106	2,999	4,243
2) Correction facilities by Ministry of Justice (including KNOP)	39,499 (3,267)	3,893	5,164 (1,515)	8,757 (833)	10,240 (355)	11,445 (564)
3) Institutes by local governments	27,452	5,347	9,896	5,492	4,241	2,476
○ In-plant training	177,350	10,799	14,124	12,940	42,667	96,820
○ Authorized training by government	54,092	6,808	9,493	12,015	15,107	10,669

Note: Korean National Outplacement Program (KNOP) means training programs for Korean retirees from US military service.

Source: Ministry of Labor of Korea. *Annual Report on Vocational Training in Korea*.

Table 5: Numbers of Trainees during 4th Five-Year Economic Plans (1977-1981)

(Unit: persons)

Year	4th Five-Year Economic Development Plan					
	total	1977	1978	1979	1980	1981
Total	495,616	83,027	100,425	129,297	104,502	78,365
○ Public training	119,994	14,878	19,201	28,488	31,153	26,274
1) Public institutes	56,294	5,539	10,041	12,672	15,029	13,013
2) Correction facilities by Ministry of Justice (including KNOP)	37,064 (2,815)	7,468 (543)	4,769 (802)	8,594 (518)	8,933 (603)	7,290 (349)
3) Institutes by local governments	26,646	1,871	4,391	7,222	7,191	5,971
○ In-plant training	337,388	58,739	73,038	90,992	66,213	48,406
○ Authorized training by government	38,234	9,410	8,186	9,817	7,136	3,685

Note: Korean National Outplacement Program (KNOP) means training programs for Korean retirees from US military service.

Source: Ministry of Labor of Korea. *Annual Report on Vocational Training in Korea*.

Table 4 and Table 5 shows that in-plant vocational training played a more dominant role in supplying skilled workforce than public training during the 3rd and 4th

five-year economic development plan periods. Under this Act, enterprises could pay training levies instead of complying with the obligation to provide in-plant vocational training. In other words, employers were allowed to make a choice between providing in-plant training and paying vocational training levies.

Central Vocational Training Institute for Training Instructor

It was important that there was securing enough vocational training instructors when designing the vocational training system. The training courses run by enterprises were mostly on-the-job rather than off-the-job ones. The qualification requirements for training instructors were: Familiarity with, and experience in, practical job at workplace in the enterprise. Thus field supervisors, such as foremen and senior foremen could be used as training instructors for such training.

It was determined that public training facilities providing off-the-job training courses should keep competent training instructors who were equipped with professional abilities, including theoretical knowledge and practical skills. The Office of Labor therefore decided to train such instructors through specialized long-term courses. As a result, the Central Vocational Training Institute was set up using international aid funds. The Institute had produced 180 training instructors each year in six trades, including casting and wooden pattern, since 1972. It selected potential instructors from high school graduates, and provided them with theoretical and practical skills training in their major disciplines for two years. Each course generally consisted of 50-60% practice, 25%-35% theory, and 5%-15% teaching profession subjects. Compared with college and university education courses at that time, which were skewed towards theory, the courses offered by the Central Vocational Training Institute were focused on practice. Vocational training instructors trained through the Central Vocational Training Institute were employed to many newly established vocational training institutes in the mid and late 1970s, thereby contributing to a smooth supply of training instructors (Young-Hoon Oh and et al, 2008).

Public Training Facilities by Foreign Capital (Aid, Loan)

In the 1960s, government strived to secure enough public training facilities. However, it faced limitations in implementing the vocational training project because it

lacked the financial resources and technical expertise needed to set up training facilities. As a result, the government made efforts to attract financial assistance from the advanced countries and international organization. The government set up the Central Vocational Training Institute by the aid of UNDP, ILO, and the Korea-Germany-Busan Vocational Training Institute by the support of Germany, the Daejeon Vocational Training Institute by the support of Japan, and the Korea-Belgium Changwon Vocational Training Institute by the support of Belgium. It also set up the Jungsu Vocational Training Center whose establishment was initiated by a major US figure visiting to Korea (Sang-Sun Suh, 2002).

Meanwhile, rural vocational training institutes were set up in cities and provinces with assistance from international organizations. Their aim was to train the rural skilled workers required in the process of developing rural areas under the 2nd economic development plan in the late 1960s. Local governments bore the costs of constructing such centers while UNICEF provided equipment and technical support, the UNDP paid training expenses and ILO paid for expert dispatch. Training courses was opened in such trades as agricultural machine repair.

As it became increasingly difficult to set up training institutes with grant-type foreign aid, the government began to rely on loans from the ADB and IBRD to establish training institutes. At that time, the Korean government put every resource into economic development projects; financially it had no spare capacity to establish dozens of training facilities within a short period of time. To address this problem, projects using foreign loans were discussed. The first such loan was obtained from the ADB, and used to set up five training institutes in Chuncheon, Incheon, Daegu, Gwangju and Seongnam. The loan amounted to \$3.7 million in total, and should be repaid at an annual interest rate of 5% over 15 years from 1977 to 1992 after a 5-year grace period. The ADB loan project gave the government a foothold to bring public training into full swing. As the ADB loan project proceeded as planned, the government picked the IBRD, which offered better loan terms, as the next target from which it would finance its objectives. Two IBRD loan projects began in 1975 and 1977, and were completion in 1980 and 1984, respectively. Through these two loan projects, a total of 15 training facilities were established in Cheongju, Jeonju, Jinju, Sucheon, Gumi, Pohang, Ulsan, Wonju, Busan, Hongseong, Gimcheon, Iri, Mokpo, Yeongju and Chungju. The IBRD loans amounted to \$37.80 million in total.

3.3 Reform of Vocational Training System (1980s)

Economic and Labor Market Situation

South Korean economy suffered from triple difficulties in the early 1980s: a slowdown in growth due to sluggish exports, a deteriorating balance of payments caused by growing oil imports, and serious inflation; growth rates were negative and the unemployment rate reached 5.2%. These difficult conditions, such as the continuing global economic recession was due to 2nd oil shock and spreading trade protectionism, coupled with domestic political and social conflicts. With economy being gradually recovered from the mid 1980s, overall economic growth remained high with average growth rate of 7% in the 1980s. The shift in the industrial structure from labor-intensive industries towards capital-intensive ones influenced directly the employment structure. Over the decade from 1976 to 1986, the number of people employed in the primary industry fell into 88.1%, while that for the secondary and tertiary industries rose by 48% and 86.8%, respectively.

The 5th five-year economic development plan launched in 1982 was renamed 'the five-year social and economic development plan,' reflecting the government's intention to put emphasis on social as well as economic development and to switch from its quantity-oriented development strategy to a quality-oriented growth one. As the economic and industrial structures changed after 1980, new needs for vocational training emerged, and rising income levels led to shrinkage of the target group for training, i.e. youths excluded the higher education. In other words, as the industrial structure changed from labor-intensive industries to technology-intensive industries, and from mass production to diversified small-quantity production, high-level multi-skilled workers were needed, and in addition to pre-employment vocational training improving the quality and skill levels of incumbent workers became necessary. With sharply rising incomes, the importance of higher educational attainment resulted in mass college enrollment and a rapid decline in vocational training applicants, and this, in turn, reduced the target population that could be nurtured into skilled workers through training.

Establishment of Public Agency and Training Institutes for the Disadvantaged

Despite difficult social and economic circumstances during that period, the government encouraged vocation training by establishing new vocational training management organization (public agency), controlling public vocational training facilities nation-wide and building training infrastructure such as R&D, training materials dissemination. It also brought relatively disadvantaged people into the fold by providing training opportunities to women and the disabled.

Firstly, responding to the decline in in-plant training caused by economic slump in the private sector, the government strengthened the public vocational training system by setting up the Korea Vocational Training Management Agency. This Agency established in 1982 was created by combining together the 24 public training institutes and vocational training research center under the Ministry of Labor, the Changwon Polytechnic College under the Ministry of Science and Technology, and the Korea Technology Qualification Agency responsible for technical qualification testing. Consequently, the functions of public training provision and certification, which had been scattered across many government agencies and organizations, were unified, and could be managed more efficiently.

Secondly, with the aim of improving job skills of young women and providing training opportunities for potential female workforce, the government undertook the project of setting up a vocational training institute for women only in 1986. Until then, most training courses had been provided for men, and only a few female training courses run by public institutions and social organizations, such as YMCA available to women (Sung-Su Cho, and et al, 1989).

Thirdly, the Ilsan Vocational Training Institute for the Disabled, the first training institute for the disabled only in Korea, was set up in December 1987 with a view to giving physically disabled people opportunities to develop their potential skills, and turning them into skilled workforce through vocational training and therefore improving their quality of life

Reform of Compulsory In-plant Training

In the early 1980s, the number of enterprises providing in-plant training, which played a leading role in producing skilled workforce and the number of in-plant

training recipients began to dwindle while income growth led to serious labor shortages in the so-called 3D industries (Table 6). The government revised the Basic Vocational Training Act in 1987 to change the standard for imposing the training obligation on employers. The imposing standard was changed from 'the number of employed workers in the previous year' to 'total payroll in the previous year'. In addition, the scope of activities on which enterprises could spend their mandatory training budgets was extended from providing training program only to establishing and installing training facilities, equipment and related infrastructure. According to the revised Act, each eligible enterprise was mandatorily required to spend for vocational training purposes the amount calculated by multiplying the total annual wages by the training rate. This imposing rate was annually determined and announced by the Minister of Labor by industry and enterprise size within the limits of 20/1000 of the total payroll. The ways of fulfilling the training obligation included: providing pre-employment training; supporting other training providers designated by the Minister of Labor; providing training for their incumbent worker, establishment of training facilities and purchasing training equipment. Enterprises were required to spend their mandatory vocational training budgets for the purposes mentioned above, and if they failed to comply, they had to pay training levies.

Table 6: Numbers of Trainees during 5th Five-Year Economic Plans (1982-1986)

(Unit: persons)

Year	5th Five-Year Economic Development Plan					
	total	1982	1983	1984	1985	1986
Total	273,151	62,920	52,141	51,846	55,385	50,858
○ Public training	121,044	28,085	27,711	22,803	22,583	22,862
1) Public institutes	66,474	15,663	12,377	12,079	12,957	13,398
2) Correction facilities by Ministry of Justice (including KNOP)	36,204 (1,257)	6,602 (180)	8,115 (305)	8,024 (218)	7,105 (318)	7,078 (236)
3) Institutes by local governments	18,366	5,820	4,219	3,420	2,521	2,386
○ In-plant training	114,773	30,131	20,960	20,764	23,876	19,042
○ Authorized training by government	37,334	4,704	6,471	8,279	8,926	8,954

Note: Korean National Outplacement Program (KNOP) means training programs for Korean retirees from US military service.

Source: Ministry of Labor of Korea. *Annual Report on Vocational Training in Korea*.

As explained above, the in-plant vocational training system was reformed in response to changing economic and social circumstances. In-plant vocational training had some advantages, such as allowing enterprises to train their necessary workers on their own, who can easily adapt to the workplace, as well as using existing production facilities and equipment for training. However, the volume of in-plant training recipients did not be increased to the level before reform (Table 7).

Table 7: Numbers of Trainees during 6th Five-Year Economic Plans (1987-1991)

(Unit: persons)

Type of Institution	Year	6th Five-Year Economic Development Plan					
		total	1987	1988	1989	1990	1991
Total		313,275	46,059	42,948	56,763	67,702	95,503
○ Public training		113,802	22,593	20,745	20,073	24,441	25,950
1) Public institutes		78,648	14,580	14,025	14,235	17,343	18,465
2) Correction facilities by Ministry of Justice (including KNOP)		25,496 (14)	6,781 (14)	5,648	4,380	4,254	4,433
3) Institutes by local governments		9,658	1,232	1,072	1,458	2,844	3,052
○ In-plant training		116,389	14,208	18,168	15,019	25,690	43,304
○ Authorized training by government		83,034	9,258	10,335	21,671	17,571	24,249

Note: Korean National Outplacement Program (KNOP) means training programs for Korean retirees from US military service.

Source: Ministry of Labor of Korea. *Annual Report on Vocational Training in Korea*.

Many issues were still pointed out by critics. One of the problems was that the compulsory in-plant training system or the training levy system ironically discouraged enterprises' investment in training due to its excessive regulation. The government had set standards for all matters concerning vocational training (training curriculum, period, facilities and equipment, instructors and materials), and if an enterprise failed to meet any of these standards, the training program could not be approved. Many enterprises therefore avoided in-plant vocational training, and chose to pay training levies instead. By 1986, two-thirds of enterprises obligated to provide in-plant training chose to pay training levies instead of providing in-plant vocational training (Kye-Woo Lee, 2005). It was also pointed out that vocational training levies became the main source of funding for public vocational training programs operated by government agencies (Jae-Yong Shim, 1997).'

However, some expert argued that this was a measure that had to be taken by the government to supply the skilled workers needed to achieve economic development (from an interviews with Kye-Woo Lee, an expert. 2011). South Korea's compulsory in-plant vocational training system had unique characteristics compared with those in other developing countries. Many developing countries, including Brazil and Colombia, implemented an obligatory vocational training levy system and allowed enterprises to deduct their training costs from training levies if they carried out in-plant vocational training. In South Korea, enterprises were required to comply with the obligation to provide in-plant training, and allowed to pay training levies if they failed to do so. Many developing countries, especially, those in Latin America, which implemented a training levy system, in principle, set up independent public vocational training agencies (e.g. SENAI and SENAC in Brazil and SENA in Colombia) using collected training levies, and established and operated many training institutes under those agencies. As a consequence, public training formed the majority of training programs, and in-plant vocational training was not popular in these countries. Moreover, although public vocational training institutes were entrusted by enterprises to provide training in these countries, their financial independence prevented them from responding flexibly to enterprises' demands to provide training courses, instructors, location and equipment, thereby exposing their weaknesses, such as low training practicality and efficiency. However, South Korea's compulsory in-plant training system, in principle, imposed the in-plant training obligation, and allowed payment of training levies. It removed the weaknesses of a training levy system in Latin America countries' cases.

3.4 Transition of Vocational Training System (1990s)

Economic and Labor Market Situation

Between 1987 and 1997, the labor market achieved almost full employment with the unemployment rate averaging 2.4% annually. Labor supply during that period was characterized by the highly-educated youth and increasing female participation in economic activities. Thanks to these characteristics, the labor force participation rate, which started to grow slowly in the mid 1980s, rose to 60% in 1990 and then to 62.5% in 1997 just before the IMF economic crisis. This period can be summed up as one of moderate growth and low unemployment. Korea recorded double-digit economic

growth thanks to the boom with three lows - low exchange rate, low oil prices and low interest rate.

South Korea's government-led planned economy ended with the 6th five-year economic and social development plan (1987-1991). In response to new social economic demand, the government established the 7th five-year plan for the new economy (1992-1996). The new demands arose from the transformation of the Korean labor market. Labor shortages were beginning to get worse as workers sought higher wages, and progress was being made towards a service economy thanks to increase in female labor force participation. However, democratization movements triggered a massive eruption of labor movements, and the expectation for higher income resulting from economic growth fueled the citizen's desire for democracy (Kil-Sang Yoo, 2009). There were strong aspirations for political democracy at home country, and with the spread of globalization, free-market economy principles were gaining momentum. Given this environment, the government established a large framework for guaranteeing private enterprises' freedom in their activities, and accepted the assertion that government intervention in the market should be kept at the minimum level necessary for ensuring consumer safety and active corporate competition.

Focusing on Incumbent Worker's Training

The 7th five-year plan for the new economy was a comprehensive reform plan which was based on the philosophy that a country's international competitiveness is eventually determined by the comparative advantage of its human resources. The government gave concrete shape to this philosophy establishing the Industrial Manpower Supply and Vocational Training Development Restructuring Plan in 1994. The main feature of reforms to the vocational training development system was to divide roles between government (public sector) and private sector. The role of private enterprises was to provide training program voluntarily, while the government was to encourage and induce enterprise to do so, minimizing related regulations

There was also a change in training needs in the workplaces. As more and more graduates poured out of colleges, employers did not need to develop their own initial training programs. As the rate of unionization increased rapidly and collective bargaining took root in large companies, internal labor markets began to be established even for blue collar jobs. As a result, the emphasis of training shifted from the pre-

employment training to the retraining of incumbent workers (Jin-Ho Yoon and Byung-Hee, Lee, 2010). Table 8 showed that the number of trainee by in-plant training was sharply increasing due to inclusion of incumbent worker's training participants. The number of enterprises providing training program and the number of trainee who have completed in-plant training have increased rapidly since the early 1990s. This reflects the trend of enterprises to expand short-term training courses for their employees. With the changing nature of the labor market and the introduction of microelectronics into the production process in the late 1980, the demand for in-plant training has increased, whereas the demand for training pre-employed trainee has been decreasing (Young-Hyun Lee, 1995).

Table 8: Numbers of Trainees through the 1990s (1992-1997)

(Unit: persons)

		1992	1993	1994	1995	1996	1997
Total		180,018	188,408	217,337	223,894	221,817	253,558
Craftsmen	Total	178,864	184,034	213,095	217,738	214,259	245,044
	Sub-total	26,131	26,206	31,761	30,586	36,644	49,257
	Public institute	18,116	18,407	22,704	21,220	25,615	36,970
	Institutes by KCCI	-	-	1,869	2,069	3,253	5,450
	Institute for the Disabled	-	193	241	224	198	195
	Correction facilities by Ministry of Justice	5,082	4,991	4,815	4,825	4,570	4,355
	Institutes by local governments	2,933	2,615	2,104	2,248	3,008	2,287
	In-plant training	122,457	122,151	152,030	160,413	151,303	173,686
	Authorized training institutes	30,276	35,677	29,304	26,739	26,312	22,101
	Multi-skilled engineers	-	-	961	3,004	4,733	5,843
Master craftsmen	594	352	286	417	480	579	
Training instructors	560	4,022	2,992	2,735	2,345	2,092	

Note: KCCI means Korea Chamber of Commerce and Industry.

Source: Ministry of Labor of Korea. *Annual Report on Vocational Training in Korea*.

Combination of Employment Insurance and In-Plant Training System

Then a critical event occurred, which it enabled the vocational training system to meet changing social needs. That event was the introduction of the employment insurance system.³ In 1995, the vocational training project was reorganized to become part of the employment insurance system, and the compulsory in-plant training system was abolished. From this time the term of 'vocational training' was officially renamed as 'vocational skills development.' In addition, the focus of vocational training shifted from initial training program for a new worker to upgrade training program for incumbent workers. The compulsory in-plant training system that had applied only to a few industries, including manufacturing and businesses of a certain size or larger was abolished after the 1999, and the applied scope of vocational training programs was extended to all businesses and workers.

The kinds of vocational training activities changed as well. In the past, enterprises were uniformly obligated to provide in-plant training, and selectively required to pay training levies. After the integration into employment insurance all enterprises have been obligated to pay training levies as part of employment insurance premiums, and when an enterprise provides training, its training costs were reimbursed. In other words, the government provides an incentive for voluntary providing training program by reimbursing training costs.

This incentive has certainly been of great help in promoting enterprises' voluntary participation in the vocational skills development program. A comparison between the percentages of enterprises training their workers in 1994 before the introduction of employment insurance and in 2002 reveals that only 22.5% of enterprises obligated to provide vocational training (enterprises employing 150 workers or more) actually trained their workers in 1994, whereas the percentage of enterprises providing training increased to 63% in 2002(including incumbent training) . In terms of the absolute number of workers receiving training from their firms, the new system under the Employment Insurance Act has had a more positive effect on worker training than the previous training levy system. However, from the viewpoint of enterprises, integrating the vocational skills development project into the employment insurance

³ In South Korea Employment Insurance System consists of three parts: unemployment benefit, employment stabilizing project (mainly wage- subsidy support), vocation skills development project (vocational training support).

system did not solve the problems inherent in the compulsory in-plant training system. The basic purpose of the vocational skills development project under the Employment Insurance Act was to promote private sector-led vocational training by allowing private enterprises to provide training program voluntarily according to their needs, and the government was to provide support in response to their demands. Nevertheless, it has been argued that new system like previous compulsory in-plant training system entails many regulations when it is implemented, and is therefore hard to promote private-led voluntary training provision.⁴

3.5 Implementation

Legislation

South Korea's vocational training policy has evolved and developed along with its relevant legislation. The Vocational Training Act was enacted in 1967, in which it provided subsidies to encourage employers to voluntarily provide training program for their workers. In the 1970s, the Vocational training Special Measure Act and Basic Vocational training Act was enacted, which introduced the compulsory in-plant training system (training levy system). In the early 1980s, training demand was sharply decreased due to the shrinking economic growth caused by the oil shock and enterprise complained against burden of training levy. It led to the 4th amendment of Basic Vocational Training Act. In the 1990s, the compulsory in-plant training system was abolished and unified as one part of the employment insurance system (by Employment Insurance Act), making it possible to provide a stable source of funding for the training of incumbent workers.

In the initial stage, the legislation provided the foundation for implementing vocational training policies aimed at skilled workforce mainly for the manufacturing industry. Since the introduction of the Employment Insurance Act, it has been leading the development of the vocational training system as an active labor market policy.

⁴ Moreover, voluntary training provided by enterprises does not need to go through the approval or notification procedures under the employment insurance system, and such procedures could be regarded as costs by enterprises, and thus is highly likely to be a social loss. Basically, the vocational skills development project is not aimed at providing insurance against possible risks. So the argument has emerged that there is no reason to collect training levies from individual enterprises and operate the project with them (Chul-in Lee, 1998).

Funding

The funding strategy for vocational training has changed to match each stage of economic growth. In the early stage of vocational training policy development, the government provided enterprises with subsidies that they could start in-plant training. Since the collection of training levies by the compulsory in-plant training system began, funding has come from two separated sources: the general account and the fund (called as 'training promotion fund') created through training levies. The funds from the general account are spent generally on the public training provision and management, training program for instructors and for the unemployed. The fund through training levies was supposed to supply skilled workforce for the employers who could not provide in-plant training program inevitably.

Also the government actively attracted and used loans from advanced countries and international organizations as part of its strategy for financing vocational training. As Korea's economic development plan was focused on industrialization driven by the heavy and chemical industries, supply of skilled workforce was needed for the growth of those sectors. At that time, the Korean government actively used foreign loans to set up public vocational training facilities.

Training Providers

In South Korea vocational training programs was delivered by both public and private providers. There were several types of public vocational training institutions such as 1-2 year polytechnic colleges under KOMA (former Korea Manpower Agency, now HRD Korea) and KCCI (Korea Chamber of Commerce and Industry). Public training facilities were divided into vocational institutes running one-year craftsman training courses and polytechnic colleges providing two-year training for multi-skilled engineers.

The most representative private providers were the in-plant training institutions. At the first time the 3-6 month training courses were provided through in-plant training. Main training fields were as follows: machinery, casting, electrical work, welding, forging, machine operation, carpentry, metal press, internal combustion engine assembly, plumbing, machine assembly, design, automobile maintenance, sheet metal,

engineering drawing, painting, electronic equipment repair, organic synthesis and synthetic resin, radio and TV, electronic equipment assembly, telecommunications equipment assembly, etc. As of 1987, in-plant training courses were being provided in a total of 405 occupational areas for periods ranging from 3 months to 36 months. However, six-month or shorter-term training occupied 61% of the total, suggesting that most in-plant vocational training was short-term courses for semi-skilled workers (Young-Sun Ra, 1987). Nevertheless, in-plant training institutions made the largest quantitative contribution to the provision of craftsmen needed industrialization.

4. Lessons

Connection between Vocational Training System and Economic development Plan

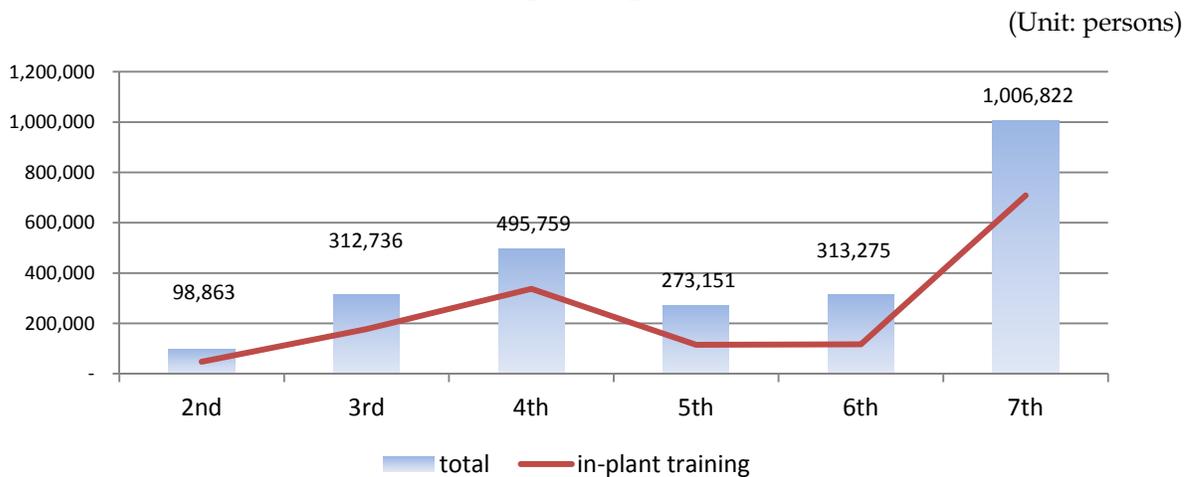
Many scholars have agreed that human capital was the key driver behind economic growth in South Korea's industrialization. Underdeveloped countries were able to produce simple industrial goods efficiently by eradicating illiteracy and providing standardized education and training. In these countries, sustainable growth was possible through their governments' low-wage policy and strong leadership, as in the case in Korea (Chul-In Lee, 1998). These countries could create a virtuous circle in which government-led education and training helped to accumulate human capital, which in turn drove economic growth, and thus had a positive impact in addressing poverty. The International Labor Conference Report of 2008 mentioned Korea, along with Hong Kong, Ireland and Singapore, as a successful catching-up country, and cited its government-led education and vocational training policy as one of the reasons. The report also noted that as part of its five-year economic development projects, Korea had flexibly adjusted its HRD policy to respond to skills shortages in an industrialized society.

In the early years of industrialization when South Korea was at the growth stage, government-led vocational training policy drove economic growth. Efforts were made to train and supply necessary workers in a timely manner in response to industrial changes which moved from light industries to heavy and chemical industries and then to service and high-tech industries. As figure 1 show, about 2.5 million skilled workforces were supplied over the 30-year industrialization period according to the 2nd-

7th five-year economic plans. Due to strong emphasis on vocational training policy, the abundant and qualified workforce provided the basis for South Korea's rapid growth and catch-up development, often called a man-made miracle. In addition it is worthy to note that skills development was led by government and complemented by the private sector (in-plant training) in South Korea. Figure 1 shows that trainees by in-plant training have the important part among total trainees in each economic stage (occupying 37%-70% of total trainees).

Vocational Training was expanded within a framework of government policy where the industrial infrastructure and skills were developed together. For example, Korean labor productivity in the mid of 1970s the Korean manufacturing sector accounted for less than 40% of Japanese labor productivity and less than 20% of the USA one. Starting from the mid 1980's productivity began to grow rapidly it reached 70% of the Japanese and more than 50% of USA productivity (Guarini and et al. 2006).

Figure 1: Number of trainees during the 2nd- 7th five-year economic development plan



Source: Ministry of Labor of Korea. *Annual Report on Vocational Training in Korea*.

Supply of Skilled Workforce to Meet Industrial Demand

The purpose of vocational training is to train workers in practical workplace-focused skills within a short period of time. As such it is very important to select appropriate training fields at each stage of industrial development.

In the early stage of industrialization in South Korea, occupational areas in demand across all industries were selected as training fields, and in the case of occupational areas requiring costly or specific training facilities, enterprises were encouraged to provide in-plant training, thereby maximizing training effects. Training fields were also adjusted flexibly according to changes in industrial demand. This is shown by changes in the number of trainees in each training field from 1967-68 when the vocational training system was introduced to the early 1990s. Figure 2 shows trends in the annual number of trainees in the five training fields with the largest number of trainees among 13 training fields, such as metal processing, transport equipment and construction installation, textiles, construction and wood processing, and electronics.

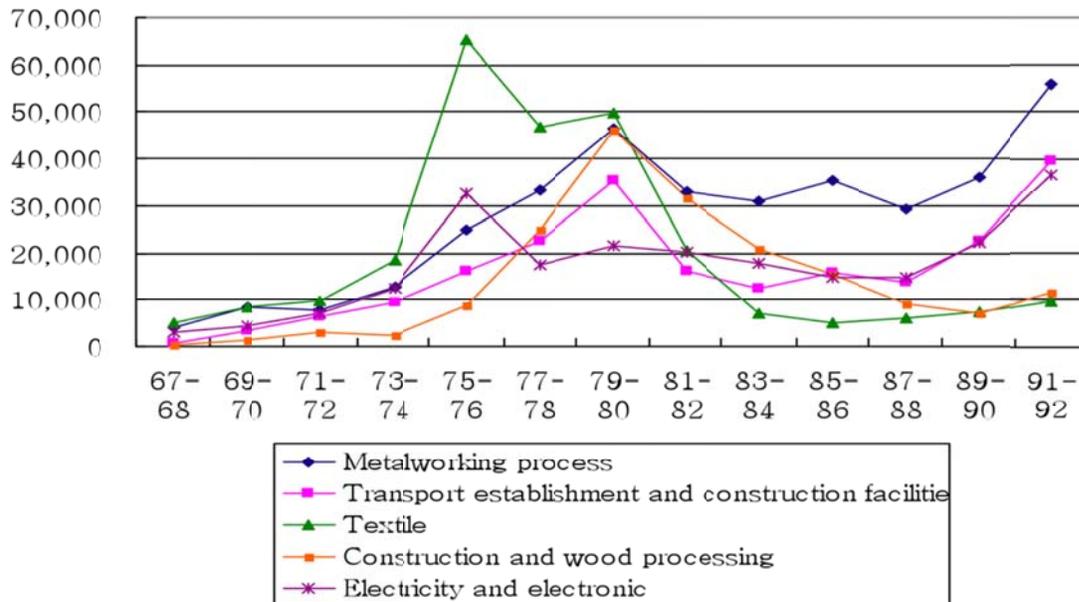
As indicated by the boom in the textile industry at the early stage of industrialization in South Korea, the number of trainees in this field sharply increased until the mid 1970s, then declined gradually, representing the smallest portion by the 1980s. The figure for construction and wood working reached its peak in the late 1970s, but dropped sharply thereafter. The number of trainees in the fields of metal processing and transport equipment and construction installation, which were small at the initial stage of industrialization, steadily increased by the end of the 1970s to support the heavy and chemical industry initiatives, but thereafter fell, though not as significantly. The electrical contracting and electronics field also saw a steady increase in the number of trainees as industrial sophistication pushed up the demand. In particular, in the early 1990s, the number of trainees sharply rose in the fields of metal processing, transport equipment and construction installation with electric contracting and electronics, reflecting the increased demand for skilled workers in those sectors.

The number of occupational areas where training was provided increased from 396 (13 sectors) in 1982 to 456 in 1991, suggesting that training fields were subdivided or increased in number in response to changes in industrial demand.⁵ This sequential approach contributed to a planned approach which prevented skill shortages or over supply.

⁵ Meanwhile, as many skilled construction workers went to the Middle East during the construction boom beginning in the mid 1970s, the domestic labor market suffered from a lack of technical and skilled rapid rise in the wages of skilled workers in South Korea. This is considered a main supply failure which arose as a result of the government failing to predict skilled workers' move to the overseas labor market when projecting the size of skilled workforce that would be supplied through vocational training (Sang-Sun Suh, 2002).

Figure 2: Numbers of Trainees in 5 Major Training Fields by Year

(Unit: person)



Source: Ministry of Labor of Korea. *Annual Report on Vocational Training in Korea*.

Parallel Development of Vocational Training and Technical Qualifications

A technical qualifications system is essentially needed for the efficient management of trained workers. The quality of training varies widely among training institutions, and to address this problem, a qualification system, the credibility of which is established at the national level is necessary. Also the national technical qualifications are signals in the labor market, reflecting the skills and capabilities required by industry.

With the Vocational Training Act of 1967, the government introduced a qualifications system along with the vocational training system during industrialization. At that time the qualifications system was intended to increase the credibility of certificates awarded to those who completed training courses. This intention was to certify and recognize officially the job skills by the examination. After that, Korea's national technical qualifications system has developed alongside the evolution of its industrial structure and vocational training system. The system has generally evaluated workers' job skills and training outcomes fairly according to specific criteria. In addition,

the system has performed the function of feedback as to whether qualifications helped to provide training program that meet industrial demands, and thus contributed to establishing the framework for workforce training that can effectively secure the quality of training. Moreover, it has played a role in rationalizing corporate wage systems by enabling enterprises to move away from traditional pay schemes based on only seniority or educational degree and by suggesting alternative standard of compensation according to skill level through the official recognition of qualifications (from an interview with Kye-woo Lee, an expert).

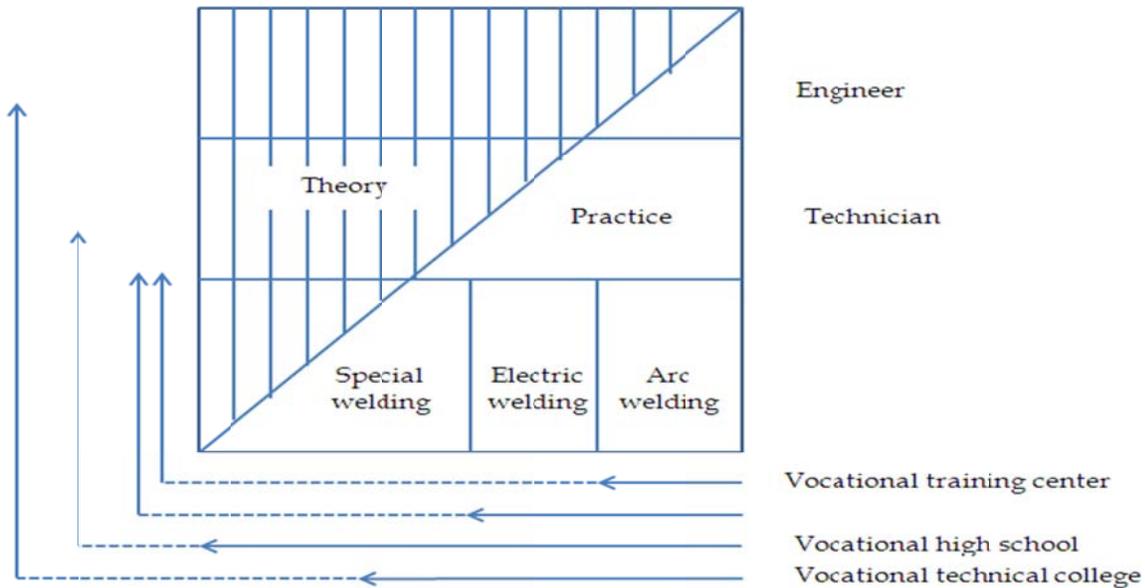
Complementarities between Vocational Education and Vocational Training

Skilled workers required for industry are generally trained in one of two ways: firstly, formal vocational education at school, and secondly, vocational training at public & private training institutes. Formal vocational education produces skilled workers by providing basic skills education in 3 years courses, and vocational training produces skilled workforce by providing specific skills training in short-term course. Many countries in the world introduced a vocational training system despite the fact that they already had a vocational education system. They recognized that formal education alone was not enough to satisfy the various workforce demands of a modern industrialized society (Sang-Sun Suh, 2002). In the case of South Korea, skilled workers have been supplied through both formal school education, such as vocational high schools and vocational training institutes. In short the formal school education system and vocational training system have been implemented and developed concurrently, thereby minimizing skill mismatch.

Take as an example the 2nd five-year science and technology promotion plan established in 1966. Based on estimated supply and demand for scientists, engineers, technicians, and skilled workforce, the plan noted that it would be necessary to provide vocational training because technicians and skilled workforce would be in serious shortage. To make sure the smooth supply of skilled workforce, the curricular of vocational high schools were reorganized and the Central Vocational Training Institute was set up under the Office of Labor to supply training instructors, to produce training. In 1977, the Ministry of and Education and the Office of Labor worked together on a plan to supply skilled workforce for industry. In the plan, the coverage of skilled workforce was clarified by schooling stage and skill level. As shown in Figure 3,

education goals (levels) and theory-to-practice ratios were set differently by 3 kinds of educational establishment (2-years vocational technical college, 3-years vocational high school, and 6-month or 1-year vocational training institutes)

Figure 3: Education Goals and Contents of Vocational High School, Vocational Technical College and Vocational Training Center



Source: Kye-Woo Lee (1983). *Human Resources Planning in the Republic of Korea - Improving Technical Education and Vocational Training*. World Bank Staff Working Paper no. 554.

Limitations of Government-led Vocational Training System

Korea's vocational training system is viewed as an overall success, but some problems are nonetheless apparent. They were mainly concerned with the vocational training levy system that imposed a financial burden on enterprises (compulsory in-plant training system). There was also skill mismatch, in which skilled workforce were in over-supply at particular areas, in shortage in newly emerging industries. They are examined in more details below.

Firstly, the vocational training levy system, essentially regulation imposed on enterprises, brought several unexpected effects (called as government failure). The

government's leading and active role had positive aspects, such as greatly contributing to the development of the vocational training system and timely supply of skilled workforce. However, several issues due to excessive regulation and enforcement of vocational training offered by private enterprises and the direct provision of public vocational training by the government need to be re-considered. Although the government timely responded to increasing demand for skilled workers at the initial stage of industrialization, it was difficult to create the market for private vocational training. Also the vocational training levy system failed to sufficiently boost voluntary training investment among enterprises. The compulsory in-plant training system was effective in securing sources of funding for vocational training at the national level, but did not attain the goal of promoting voluntary training by enterprises, which resulted in enterprises relying too much on the public training. In short, imposing a financial burden on enterprises by obligating them to provide training without considering their conditions led to inevitable resistance among enterprises.⁶ Finally the government introduced a new training system based on the Employment Insurance System.

Secondly, although from a macro point of view, vocational training is considered to have successfully reflected skills demands of industry, it is seen as not having responded well enough to the changes of the industrial structure. In its early days, the vocational training system failed to meet the demand for new skilled workforce in advance, putting a strain on the national economy. There were also case where over competition for securing skilled workforce resulted in higher wages. For example, when the footwear industry grew substantially in the 1970s, a shortage of skilled workers led to an increase in the wages for shoe factory workers. And when the construction of new towns demanded a lot of skilled workers in the 1990s, it caused the competition to secure workers among building companies (Sang-Sun Suh, 2002). It is also pointed out that industries grow at different paces and have different characteristics. As a result, the

⁶ In the case of South Korea, the compulsory vocational training system, though its timing and method was right, caused government failure because it was maintained longer than necessary. According to a recent study by Kyung-Joon Yoo and et al (2009), there is no empirical analysis showing that market failure exists in the Korean training market. The study also presents empirical data supporting the assertion that there is no undersupply of training in the labor market, and therefore concludes that government intervention in the field of training should be reduced in the long term. However, the dependency of enterprises on the government for the training of workers has not been reduced yet. SMEs are still suffering from shortages of skilled workers, skilled or experienced workers are frequently scouted by or move to, large companies, and there is a growing need to provide training to vulnerable groups, such as non-regular workers and the unemployed. Given the nature of training as a public good, more profound studies are needed on the issue of whether government intervention is reasonable and appropriate.

government-led and inflexibly-applied compulsory in-plant training system⁷ was not enough to address the resulting market failure. Kil-Sang Yoo (2007) describes the vocational training pursued so far by the South Korean government as 'training for activity', meaning that the government was often a step behind rather than effectively implementing necessary policies in a timely manner in response to changing circumstances.

Thirdly, there is an issue of how effective establishing public training institutes with assistance from international organizations or advanced countries. There is no doubt that South Korea set up many public vocational training facilities with help from international organizations and advanced countries can be, and was able to supply excellent workers necessary for economic development within a short period of time through such facilities. However, it is hard to judge how successful South Korea's growth model is for other developing countries. Since the 1990s, South Korea has taken its role as a donor country to spread its growth model to other developing countries. Nevertheless, they could not achieve as much as Korea had, due to cultural differences, difficulties in knowledge delivery, and inadequate training equipment, etc. In order to get better outcomes from vocational training programs, individual countries should make a thorough analysis of their social and economic situation and afterwards establish a specific strategy. They need to design and implement their contextualized policy that suits their unique domestic situation.

5. Conclusion

South Korea has upgraded its economy and industrial infrastructure over the past four decades and has, at the same time, upgraded its skills development system (Marcus Powell and John Lindsay, 2010). With the rapid economic attainment, South Korea achieved \$20,165 per capita (nominal) in 2010 and was now emerged as a major economic power ranking as the 11th largest economy worldwide. As earlier discussed in this paper the vocational training system in South Korea changed and improved a lot in

⁷ In the early days of the system, the number of workers that must be trained by enterprises was determined in a one-size-fits-all manner regardless of industry or enterprise size. But later the system was improved to set and announce the number differently according to industry. However, such an improvement did not win support from enterprises amid economic downturn (Sang-sun Suh, 2002).

response to changing economic development strategies. Table 9 summarizes developmental changes of South Korea's vocational training system including labor market conditions and major training policy changes according the five-year economic development plans

The basic features and successful factors of South Korea's government-led vocational training system could be pointed out as follows;

Firstly, South Korean vocational training system was thoroughly planned with the aim of supplying the skilled workforce needed for industrial development under the five-year national economic development plan. South Korea's case shows that the government's supervisory role has been in effect. Secondly the principal system of vocational training in South Korea was also the system of compulsory in-plant training. In the initial stage policy measures were also needed to encourage investment in training among employers, which would essentially be the final user of a qualified workforce. The compulsory in-plant training system was a very strict measure under which employers should provide initial training program to a certain number of employees, if not, they should pay training levy. Thirdly technical qualification was served as an incentive as well as training objective of training course. It motivated unskilled people to participate in vocational training and then was possible for unskilled youth to take the first step into developing their careers as skilled workers in an industrialized society by acquiring the necessary qualification. Finally, there were available foreign capitals in order to secure enough public vocational training facilities. It relieved the burden of financing training facilities and equipment of the government.

It is often considered that South Korea's economic growth is the most remarkable and successful case of economic and social development among developing countries since the World War II. The root of its success lies in the excellent workforce trained through HRD programs, which is recognized as a success model for developing countries (Young-Sun Ra and Soon-Hee Kang, 2011). South Korea's experience in economic development and creating a skilled workforce through strategic training system which has shored up such development have been acknowledged by the World Bank and the ILO as a genuine success model (Powell and Lindsay, 2010; Young-Sun Ra and Kyung-Woo Shim. 2009; ILO, 2008), and is expected to offer informative lessons for other developing countries that intend to use vocational training strategy to achieve economic development and sustainable growth.

South Korea's experiences can provide notable policy implications as follows; it is necessary to implement government-led vocational training policy closely linked to the national economic development plan. Regarding funding strategy, the matching general budget with private fund is useful at the initial stage of industrialization. While globalization gives countries opportunities to create more economic wealth thanks to increased trade between countries, the spread of knowledge, and more, it is highly likely to intensify polarization by widening the knowledge gap, which puts developing countries in a more vulnerable position. A government-led vocational training policy designed to address resolve shortages of skilled workforce can also contribute to social integration by encouraging the vulnerable groups to improve their potentials. Vocational training system is a useful means to bring into formal sector those who are the socially excluded population not protected by a social safety net and vulnerable groups that have special social needs.

Table 9: Changes in Vocational Training System at Each Stage of Economic Development Plan

	1960s	1970s	1980s	1990s
Each stages of economic development plan	1 st and 2 nd five-year economic development plan (export-oriented strategy)	3 rd and 4 th five-year economic development plan (Industrialization driven by heavy and chemical industries, takeoff of high growth)	5 th and 6 th five-year economic development plan (economically stable)	7 th five-year social - economic development plan
labor market condition	Rising demand for skilled workforce due to shift from agriculture to modern industry	Unlimited supply of workers caused by mass migration from rural to urban areas, serious shortages of skilled workers resulting from shift to heavy and chemical industry-focused economy,	Overall high economic growth (7%) shift from labor-intensive industry to technology-intensive industry	Almost full employment with the unemployment rate of 2.4% before the IMF crisis
GDP Per capita	\$80(1961)	\$254(1970) →\$1,676(1979)	\$1,645(1980) → \$5,418(1989)	\$6,417(1990) →\$9,438(1997)
Vocational training legislation and main policy	Vocational Training Act(1967) in-plant training subsidy	Vocational Training Special Measures Act (1974), Basic Vocational Training Act (1976) and Vocational Training Promotion Fund Act (1976) compulsory in-plant training(levy system) and establishment of public training institutes	4 th amendment of Basic Vocational Training Act (1987) Reform of in-plant training system (change from the number of employee to total payroll)	Employment Insurance Act (1995) training provision as social safety net for the unemployed
Training outcomes	2 nd : 98,863 persons	3 rd : 312,736 persons, 4 th : 495,759 persons	5 th : 273,151 persons 6 th : 313,275 persons	7 th : 1,006,822 Persons

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