

FUTURE STRATEGY FOR KOREAN FIRMS INVOLVED IN OVERSEAS MARKETS

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ABSTRACT: Despite very good reputation that Korean construction industrial firms had enjoyed until early 1990's in overseas markets, their participation abroad drastically declined after the delivery of two(2) million unit-housing project in the early 1990's and the foreign currency crisis that took place in the late 1990's. The revival of booming construction industry in domestic market is far beyond the expectation due to the long recession of the construction economy and government's severe restriction against real estate development. Under such crucial circumstances, the construction industrial firms' strategy to survive is the more active business promotion in overseas markets. However, the Korean construction industrial firms have to abandon the labor intensive strategy, through that they have enjoyed until the early 1990's, and turn to management oriented strategy which may be a new prosperous horizon and a new challenge as well, because the labor cost of newly developing countries is much more competitive. The aim of this study is to suggest how to cope with current market situations through a chronological survey based on the cost data prevailed during four decades from the 1960's until the 1990's in overseas markets.

Key words: Overseas Markets, Labor Intensive, Technology Intensive, Construction Management, Management Intensive

1. INTRODUCTION

1.1 Background and objective of research

The current business index of construction industries in Korea shows rather slow upturn than that of manufacturing industries from the severe economic recession caused by the foreign currency crisis that took place in 1997.

Also the constitutional court's decision, made in last November, against the Government's aggressive plan to relocate the administrative capital from Seoul to Choong Cheong region, which is very close to Daejeon, caused another down slope of the business index in construction industries in the domestic market.

Actually the current business index shows 30~40% comparing with that of the beginning of 2005 and no indication of recovery is being seen.

Contrary to such poor circumstances in the domestic market, the economic growth in overseas is maintaining 4.5% of growth by the economy boosting in the U.S.A. and Japan due to the devaluation of U.S. Dollars and the incredibly rising crude oil price. In addition, BRICs(Brazil, Russia, India and China) are enjoying their high economic growth of 6%.

Therefore, it is imperative and recommendable for Korean firms that are engaged in construction and consulting services to expand their business activities in overseas markets from the depressed domestic market.

Vietnam is the first country where Korean firms participated in overseas construction in the 1960's. Korean firms' turnover had been greatly accumulated in the Middle

East in the 1970's.

However, the increase of labor cost caused by the growth of economy and the highly educated workforce with high wage drove Korean firms to lose the competency in overseas construction markets.

Hence, this research is made to suggest the future strategy of Korean construction industrial firms to turn into management, by analyzing their competent elements in the view point of cost based on the prevalent projects in the Middle East since the 1970's and comparing with the building construction cost data published by R. S. Means Co.

1.2 Limit and methodology of research

The scope of this research is limited to the structural works that weigh almost half of the total cost of a building, which are rather simple to compare and have less deviations from building to building than the finishing works that call for completely different cost level due to the usage of buildings.

The construction cost comparison of Korean contractors with others, the competitors from advanced countries, was made by analyzing the costs composing of the reinforced concrete structure of which type of structure was commonly selected and designed among many other types of building structures.

The form-work, reinforcing steel work and concrete placing works, mostly representing the structural work in general, are selected for the cost comparison in this research, because of that the finish works in building construction differ from building to building in accordance with the purpose of the designated building.

In this research, the labor cost actually prevailed in the domestic construction sites and announced by the Korean association of general contractors is used rather than the official labor cost announced by the Ministry of Construction because of the official labor cost was not really adopted at all in domestic construction sites.

2. STATUS OF OVERSEAS CONSTRUCTION MARKETS

2.1 The Status of overseas construction market in the 1970's

Having long enough construction experience involved in military construction led by the U.S. Armed Forces after the Korean war, Korean contractors launched first in Vietnam in the 1960's in the form of subcontract to American firms in relation with the Vietnamese War.

Korean contractors' participation in overseas construction markets had been activated after the highway project between Patani and Naratiwat in Thailand by Hyun Dai Construction Co. Ltd. who pioneered as first Korean general contractor in 1965. Table 1 below is the list of overseas projects that firstly Korean contractors won as general contractor in the regions and countries.

Table 1 Pioneer Contractors

| Year | Region | Country | Firms |
|------|----------------|--------------|-----------|
| 1965 | S.E. Asia | Thailand | Hyun Dai |
| 1966 | S.E. Asia | Vietnam | Sam Whan |
| 1970 | Micronesia | Guam | Jin Heung |
| 1973 | M.E. Asia | Saudi Arabia | Sam Whan |
| 1975 | Central Africa | Malawi | Kong Yung |

Korean contractors had accumulated construction experience through the successive 5-year economical development plans led by the Government of Korea from 1962. And diligent workforce both leading engineers and skilled labors, with comparatively low wage, enabled and drove Korean firms to successfully launch operations in overseas markets.

In addition, the technical gains through both overseas training since 1967 and joint domestic training programs by the industrial, academic and research circles since 1975 initiated by the Ministry of Construction enabled Korean contractors achieve remarkable performance in overseas markets.

Thus, Korean contractors' total contract amounts in overseas were consistently increased due to the various efforts rendered by the Government and contractors as shown on the Table 2 on the right. Particularly, when the oil crisis took place in 1973, the drastically increased orders from the Middle East made the contract amounts almost double every year.

Meanwhile, the sever competition among the contractors, gathered in the Middle East, made the markets owner-oriented and accordingly profit out of the construction work was much reduced, and they were very difficult to survive. Therefore, the construction industries in overseas gradually turned into the capital-intensive market from that of labor-

intensive at the late 1970's.

Table 2 Contract Amount in 1970's

| Year | Amount | Year | Amount |
|------|--------|------|--------|
| 1970 | 48 | 1975 | 833 |
| 1971 | 56 | 1976 | 2,502 |
| 1972 | 83 | 1977 | 3,502 |
| 1973 | 174 | 1978 | 8,145 |
| 1974 | 261 | 1979 | 6,350 |

On the other hand, the countries of project owners strictly induced the joint-venture participation between foreign contractors therein and local contractors in tender and implementation of the projects in order to maximize the countries' effect of employment by localizing. Accordingly maintaining cooperation and relationship with local partners became very important factor to promote the construction business in overseas.

In 1979, the success of Islamic Revolution in Iran caused the evacuation of foreign contractors from Iran because of the high pressure from the revolutionary committee against the non-Islamic countries and the war between Iran and Iraq, that went on for 8 years since 1980, made the contract volume of the contractors severely reduced in the Middle East markets, and much less the contraction of project budget from Saudi Arabia made the market situation worse.

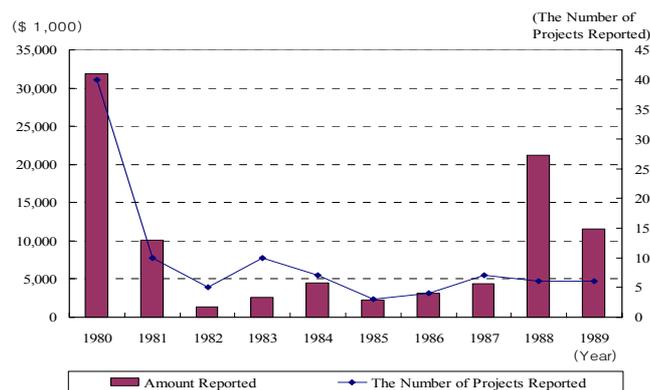


Figure 1 Number/Amount of Contract Reported in

The foresaid good construction business in overseas made the base of very sound and quick upturn of the domestic economy but it brought the inflation in consumer market and the labors' wage went up due to the reduction of skilled labors, contrarily.

Thus, the unique competitive factor of Korean contractors, in labor, became very weak and lost power in overseas. The lack of manpower drove Korea to hire the foreign labors and the side effects, social chaos we have to suffer, arose.

2.2 The status of overseas construction in 1980's.

The overseas construction volume of the Korean contractors was at its peak in 1980 and gradually dropped down, making its turning point upward in 1988. But the effect of low cost in labor, that Korean contractors had enjoyed, lost its power and the contract amount in overseas was being decreased, again.

The gradual decline of contract amount was appeared in Saudi Arabia and the Middle East. At the bottom level, the contract amount reached 11% of that in 1988 comparing with the amount in 1981. However, the evident increase of contract amount of Korean firms didn't appear again despite the upturn starting in 1990, comparing with the rate of world business taken in one decade thereof. In the meantime, the increase of contract amount of Korean contractors in South East Asia and the North-west Pacific rim showed the diversification of Korean contractors' overseas activities from the skew weighed to the Middle East region.

Table 3 Contract Status in 1980's

| Year | Total Amount | Saudi Arabia | Libya | Iraq | Total M.E. | S.E. Asia | Micro nesia | Africa | M.S. America |
|------|--------------|--------------|-------|-------|------------|-----------|-------------|--------|--------------|
| 1980 | 8,259 | 5,239 | 1,366 | 431 | 7,831 | 409 | 0.4 | 15 | - |
| 1981 | 13,681 | 7,763 | 2,946 | 1,946 | 12,674 | 838 | 2 | 166 | - |
| 1986 | 2,239 | 517 | 353 | 25 | 1,242 | 872 | 83 | 37 | 5 |
| 1988 | 1,602 | 433 | 618 | 24 | 1,251 | 240 | 62 | 48 | 1 |
| 1989 | 2,412 | 272 | 772 | 4 | 1,442 | 766 | 164 | 40 | - |
| 1990 | 6,770 | 253 | 4,754 | 11 | 5,812 | 712 | 123 | 106 | - |

2.3 The status of overseas construction in 1990's.

The two(2) million unit housing project itself, during 5 years from 1989 to 1994, was the great demand of construction in domestic market. Therefore, the contractors concentrated their efforts into the domestic market and reduced their marketing activities in overseas. Only five projects were contracted according to the reports to the Ministry of Construction, which were quite unsatisfactory.

In this time, Korean contractors mainly focused on the domestic market. While the contractors who showed less interests in overseas markets at the beginning of the 1990's suddenly changed their strategy and acquired much more projects since 1993. However, foreign currency crisis, taken place in 1997, brought another downturn and made the construction industry to enter into a deep and long recess.

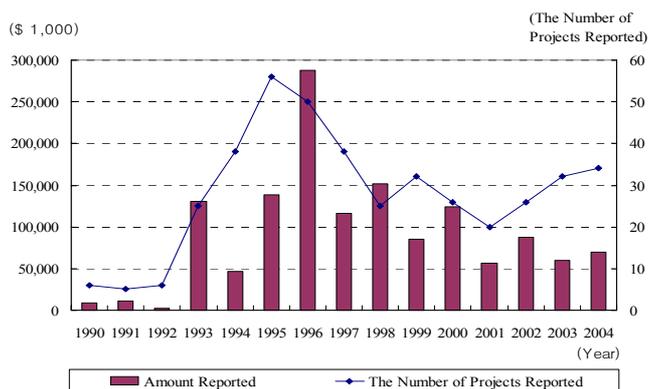


Figure 2 Numbers/Amount of Contracts reported in

Contrary to the increased numbers of the project contracted, the total amount of contract was much decreased. It is considered that Korean contractors lost the large sized projects in the competition against contractors from the advanced countries and acquired small projects instead.

Figure 3 shows the average of annual contracted volume in oil industries during the 7 years from 1994 to 2001. It was reported as US\$35.2 billion which is greater than US\$28.5 billion in building construction in terms of cost. But the contract volume in oil industries drastically declined while that of building construction and transportation remarkably increased.

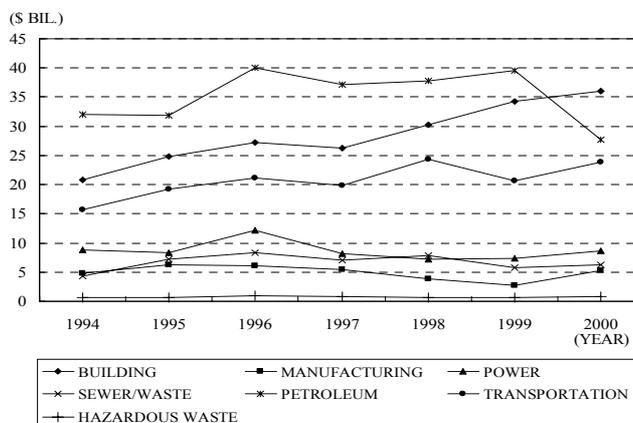


Figure 3 Contract Amount in World Market

Figure 4 on next page shows the actual contracted volume of Korean firms in overseas by industries during the same period as forementioned.

This table shows that Korean firms had different contract pattern in overseas markets. In spite of the volume of building construction was increasing, Korean contractors acquired much less volume in building projects comparing with the projects in other industries after the foreign currency crisis took place in 1997.

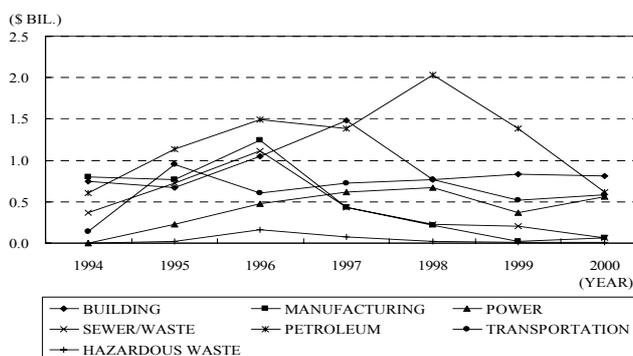


Figure 4 Contract Amount in Overseas Markets

Figure 5 indicates the overseas markets rapidly shrunk. Even the shrinking ratio is rather small comparing with the ratio in the past, about 8.1% was shown as the shrinking ratio for 2001.

This reveals the fact that the opportunities for foreign contractors except those from developing countries had continuously diminished. Therefore, Korean contractors' overseas market will be reduced unless they find new markets in other region like Asia and Africa.

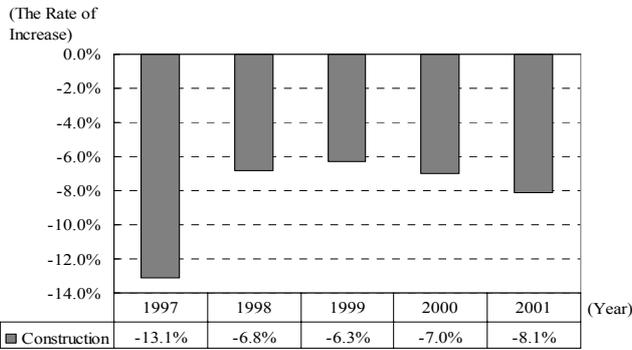


Figure 5 Latest Trend of Overseas Markets

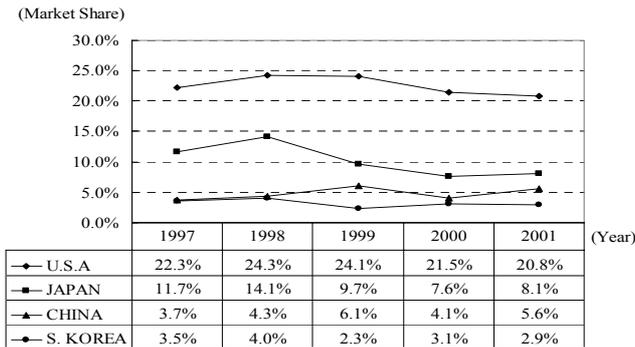


Figure 6 Latest Market-share of Competitors

Figure 6 shows the market share among major countries in overseas. The U.S.A. was steadily keeping its place on top. On the other hand, Japan's share is much dropped down. Contrary to such circumstances, China's share is consistently increasing owing to the low labor cost. And Korean share was comparatively stable with minor deviation.

Classifying contract amount in overseas by industries, the rate of civil and building works, in which Korean contractors had competence, went severely down and the rate of plant construction drastically went up as shown on Table 4.

Table 4 Contract Status in 2000's

(Unit: %)

| Year | Total | Civil | Bldg. | Plant | Elec. | Com. | Servi. |
|------|-------|-------|-------|-------|-------|------|--------|
| 2000 | 100 | 50.9 | 13.5 | 31.3 | 3.9 | 0.1 | 0.2 |
| 2001 | 100 | 19.1 | 16.6 | 62 | 1.3 | 1 | 0 |
| 2002 | 100 | 8.8 | 9.9 | 78.8 | 2.1 | 0.1 | 0.3 |
| 2003 | 100 | 13 | 10.2 | 75.6 | 0.3 | 0.1 | 0.8 |

In the past, the lower labor cost was the winning weapon in the labor-intensive construction industries but it is no longer of use because the big gap in labor between Korea and developing countries. More marketing efforts should be concentrated poured in plant construction that is regarded as a technology-intensive industry.

Table 5 shows the total contribution of Korean top class contractors' financing in overseas market in order to find the rate out of total contracted volume they actually acquired, during the 3 years since 2000.

Table 5 Financing Status

(Unit: %)

| Year | 2000 | 2001 | 2002 |
|------------------------|------|------|------|
| General Contracting | 97.3 | 100 | 88.2 |
| Contractor's Financing | 2.4 | 0 | 10.7 |
| Development Projects | 0.3 | 0 | 1.1 |
| Total | 100 | 100 | 100 |

The survey outcome revealed that the portion of general contracting dropped down from 97.3% in 2000 to 88.2% in 2002. And the contractors' financing pattern in contract increased from 2.4% in 2000 to 10.7% in 2002. It is quite evident that even the volume was not big but the trends of contractors' financing scheme were getting greater.

Being called for contractors' financing in recent tenders issued in overseas markets, the capability of financing will be the key factor of contractors' competent marketing strategy that meets the owners' needs. Cooperation among public financing institutions and private financing houses in the interested countries for project promotion were required because the multi-financing schemes are generalized nowadays.

Table 6 Failure Cases in Overseas Markets

(Unit: %)

| Country | Project title | Failure in | Year |
|-------------|---------------------------------|-----------------------------|---------|
| U. A. E. | Gas Project Jabel Ali | Submitting Performance Bond | 2000.7. |
| Taiwan | LNG Terminal | Pre-qualification | 2000.8. |
| Singapore | LRT Project | Pre-qualification | 2000.7. |
| Philippines | Co-generation Plant | Pre-qualification | 2000.8. |
| Vietnam | Hanoi Drainage Project | Submitting Performance Bond | 2000.8. |
| Bangladesh | Gas Pipelines North East Region | Submitting Performance Bond | 2000.6. |
| | New Airport Terminal | Submitting Performance Bond | 2000.9. |
| Malaysia | MLNG Tiga Project | Submitting Performance Bond | 2000.7. |

For instance, the failure in pre-qualification and in providing bonds were revealed as the direct reason in marketing failure in 2000 as shown on Table 6. We found that the unsound financial status of Korean contractors and poor credit rate greatly affected the marketing power and led the contractors to lose the projects.

3. ANALYSIS OF MARKETING SUPERIORITY

3.1 The status of marketing in 1970's.

The oil producing countries in the Middle East established and implemented their development plans on the strong ground of the wealth from exporting crude oil, in the 1970's. However, in the execution of the plans, they had to rely on the foreign firms specialized in engineering and construction for developing their countries, in the construction of roads and bridges, apartment houses, offices and so on because mostly they had very limited local hands available.

In Korea in the 1970's, we suffered of unstable economy like increased unemployment, rise in prices, national deficit, poor growth in economy, etc. In order to get rid of such circumstances, Korean contractors found and launched operations in the Middle East market by utilizing the equipment and manpower used in Vietnam.

At this time, the work forces in advanced countries were very reluctant to work in the Middle East where the working environment was obviously worse than their homeland. They could enjoy and satisfy their highly advanced public welfare and comfortableness, thus European and American contractors gradually suffered of difficulties in mobilizing manpower with their own nationals to the Middle East region. The monetary policy adopted by the Middle East countries brought higher currency evaluation of advanced countries and it caused the shrinking of market share of the contractors from advanced countries in the Middle East, and in parallel the political supports to enhance their contractors' profit were less of use than they aimed.

In the Middle East countries, the project budget estimations were mostly made by the design professionals on the basis of imported materials (including cost, freight, insurance and custom duties) and prevailing wages in the advanced countries where the architects and engineers carried out the design works. The project budgets figured out in such ways attracted Korean contractors who were quite competent through employing highly skilled labors with much lower wages than that adopted in the project budgets. Under such circumstances between the Middle East and advanced countries, Korean contractors could enlarge their market share without big difficulties.

3.2 The status of marketing in 1980's

The achievement of construction industries in the Middle East was at the best in the 1980's. The second oil-shock brought the highest peak of construction boom in the Middle East, and Korea took second place right after America as a construction exporting country, and this motivated Korea to leap up to the other markets.

However, at this time the over-competition took place among Korean contractors who already launched into the overseas market and accordingly their profit margin began to be reduced. The more they acquired the projects the less skilled labors they could assign to the projects, and such expanded marketing caused the financial institutions' hesitation to provide the bonds required to support the contracts that Korean contractors secured.

In 1984 and onward, the construction industries began to shrink. The main reason was the dropped oil price that made the oil producing countries in the Middle East unable to invest in both construction and infrastructures, and the volume of tender drastically reduced, accordingly.

The contractors from advanced countries began to turn their interest into facility management rather than new construction and expanded their trades in new field of construction, and tried to upgrade their level of technology and diversify their service area with enhancing ability in marketing.

At this time, the oil producing countries in the Middle

East put the technology intensive plants on tender in order to restructure their industrial system along with their policies to encourage and induce heavy industries along with light industries. By this time, heavy burden was imposed to Korean contractors. It was the rise of wages in Korea in the 1980's and short engineering capability to compete against the competitors from the advanced countries. In other words, Korean contractors had two different groups of competitors, one from advanced countries who were superior in engineering and the other from developing countries that had labors with lower wages.

3.3 The market situations in the 1990's.

As the GNP drastically increased, Korean laborers desired higher level of welfare and wages. Thus, Korean contractors were faced to losing competency caused by wage hikes. Accordingly, the profit margin of Korean contractors was decreased. As a result, Korean contractors were defeated in the competitions against the contractors from the advanced countries.

Especially, being treated as one of the 3D (dangerous, difficult and dirty) industries, construction industries lost workers and suffered of shortage of hands. The shortage in manpower brought the rise of wages, and thus they chased endless circle of misfortune. As an alternative, Korean contractors hired the labors from developing countries and restructured their operation system to improve their business in overseas.

The 2 million-unit housing project in the domestic market attracted the contractors, who had suffered of difficulties abroad, to turn their efforts in the domestic market. In result, this was that Korean contractors closed, somehow, their overseas market they built up by spending lots of time, efforts and financial assets, and lost their ground in overseas.

In order to escape from such hard situations, Korean contractors tried to transform their business from the labor-intensive industry to technology-oriented industry. The wages kept on rising while their technology improvement was not much, and they lost their competency to survive. In order to break out such market situations, they invested in research and development, and trained their engineers and staffs to increase their management capability. They also broke through present environment by transforming their business into the form of engineered constructor and adoption of joint-venture operations with local partners.

4. LABOR COST COMPARISON

4.1 Wages in domestic market

The average of domestic market wages in 1970 was W1,345 and that in 1980 was W9,379, showing 23.5% of increase rate during one decade. The average wage in 1990 was W30,447, showing almost 23 times of increase during past two decades.

On Table 7 on next page, 39.4% of increase rate in 1977 and 61.6% of increase rate in 1978 respectively are shown. Such high increase rates were caused and influenced by the imbalance of manpower demand and supply due to the large scale of employment in overseas along with the booming

construction in the Middle East, and SOC projects in the local market along with the improved economy and the labors' high income through the employment in overseas.

Table 7 Trend of Market Wage

| Year | Market Wage | Rate increased |
|------|-------------|----------------|
| '71 | W1,453 | 8.0% |
| '72 | W1,518 | 4.5% |
| '73 | W1,773 | 16.8% |
| '74 | W2,133 | 20.3% |
| '75 | W2,559 | 20.0% |
| '76 | W3,081 | 20.4% |
| '77 | W4,296 | 39.4% |
| '78 | W6,942 | 61.6% |
| '79 | W8,357 | 20.4% |
| '80 | W9,379 | 12.2% |
| '81 | W9,502 | 1.3% |
| '82 | W9,635 | 1.4% |
| '83 | W9,685 | 0.5% |
| '84 | W10,172 | 5.0% |
| '85 | W11,566 | 13.7% |
| '86 | W12,243 | 5.9% |
| '87 | W14,854 | 21.3% |
| '88 | W18,519 | 24.7% |
| '89 | W24,285 | 31.1% |
| '90 | W30,447 | 25.4% |

Entering the 1980's, the social movement calling for democratization in civil rights and promotion of social welfare brought wage rise, and two million-unit housing project, expanding SOC projects and the construction of office/commercial buildings like the so-called "officetels" brought further imbalanced demand and supply of manpower to the market. Due to such imbalance in labor, the wage soared up to 4.5 times during 4 years from 1987 to 1990.

4.2 Cost comparison of structural works.

The structural work costs of 1981, 1986, 1993 and 1999 were used in this analysis and comparison. In detail, the cost of structural work was obtained by means of multiplying the work volume of daily output of the trades picked up from the cost data to the market wages announced by the contractors' association of Korea. For the purpose of comparing convenience, wages were converted into US Dollars using the official rate prevailed at the corresponding years.

Table 8, on the right, shows the labor costs in 3 major trades of structural work consisting of formwork, reinforcing steel work and concrete placing work out of many trades related to building construction, in the year randomly selected as aforementioned from 1981 to 1999. This table explains the background best that the low wages in Korea enabled Korean contractors could activate their marketing in overseas despite hard competition against those from advanced countries.

Table 8 Comparison of Structural Work Cost

| (Unit: W) | | | |
|-------------------|-----------|-----------|--------|
| Year | Domestic | Overseas | Remark |
| 1981 | | | |
| Form | 1,828.6 | 11,601.5 | 16.18% |
| Reinforcing Steel | 44,502.0 | 229,110.9 | 19.42% |
| Concrete Placing | 2,591.2 | 120,713.5 | 2.15% |
| 1986 | | | |
| Form | 2,316.2 | 18,483.6 | 12.53% |
| Reinforcing Steel | 56,574.0 | 374,709.0 | 15.10% |
| Concrete Placing | 3,349.0 | 197,426.0 | 1.70% |
| 1993 | | | |
| Form | 8,741.8 | 21,036.7 | 41.55% |
| Reinforcing Steel | 212,800 | 416,171.5 | 51.13% |
| Concrete Placing | 12,319.0 | 166,159.9 | 7.41% |
| 1999 | | | |
| Form | 13,494.4 | 34,362.0 | 39.27% |
| Reinforcing Steel | 333,166.0 | 767,418.0 | 43.41% |
| Concrete Placing | 20,123.6 | 232,514.6 | 8.65% |

However, from the beginning of the 1990's, the wages in domestic market rose incredibly and in a few years they reached up to 2 times of that of the previous decade. Accordingly Korean contractors lost their competency in labor, they had enjoyed.

In total and rough comparison, it was found that the construction cost in domestic market in 1999 showed as 2 to 4 times of that of 1981. A little rise during a short period in 1999 was most possibly construed as the reduction of GNP caused by the foreign currency crisis took place in Korea in 1997.

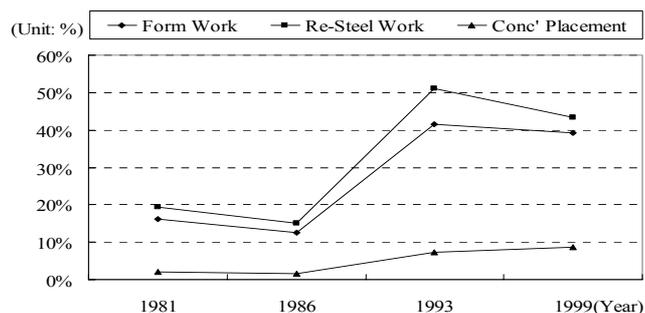


Figure 7 Wage (Domestic vs Overseas)

The labor cost of formwork in the U.S.A. was 9 times higher than that of Korea in 1981 but it was only 4 times higher in 1999. This explains enough that the increase rate of wages in Korea was much higher than in the U.S.A. In formwork, the ratio, U.S.A. versus Korea, of the daily wage and GNP in 1999 was revealed as much less than that in 1981.

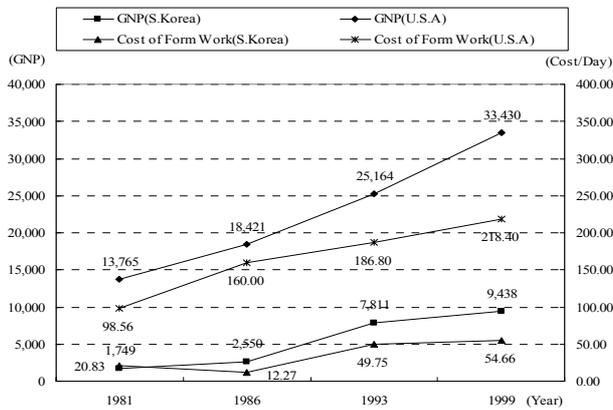


Figure 8 Cost of Form Work vs GNP

In reinforcing steel work, the labor cost in the U.S.A. was 10 times higher than that in Korea in 1981 but only 4 times in 1999. The ratio, daily wage divided by GNP in Korea, was shown as 0.58 percent in 1981 and 0.59 percent in 1999 while 0.716 percent and 0.653 were shown in the U.S.A.

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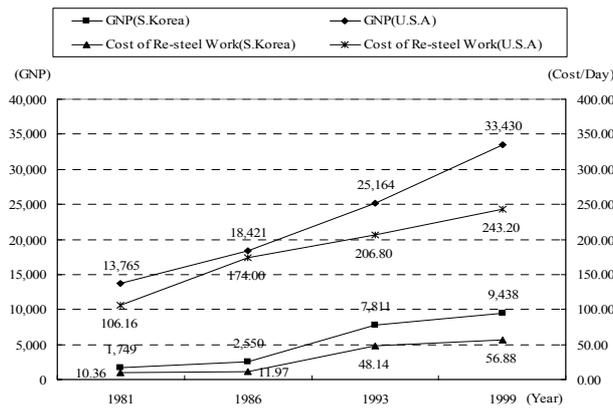


Figure 9 Cost of Re-steel Work vs GNP

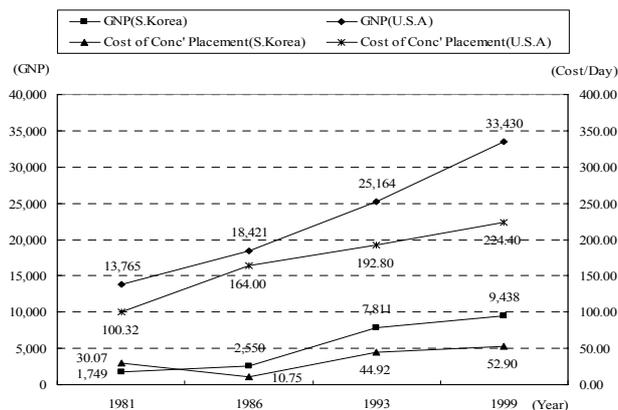


Figure 10 Cost of Concrete Placement vs GNP

In concrete placing work, the labor cost in the U.S.A.

was 9.4 times higher than that in Korea in 1981 and only 4 times higher in 1999. The ratio, daily wage versus GNP in Korea, was increased from 0.527 percent in 1981 to 0.671 percent in 1999 while that decreased from 0.729 percent down to 0.671 percent in the U.S.A.

5. FUTURE STRATEGY IN OVERSEAS MARKET

Despite having achieved successful performance in overseas markets in both turnover and quality meeting international level of acceptance, in the domestic market Korean contractors have shown poor performance generally in quality and even in structural stability.

The governmental authorities that permit the projects had absolutely not enough hands to take care of the project in the respect of supervision to prevent the poor performance in execution stage comparing with the volume of projects tendered/issued by the owners in both public and private sectors. In order to prevent and avoid such disastrous problems including corruptions, the Korean government adopted as of August 1, 1994, the supervisory consultancy system that had been proved as successful in Japan even it was somehow resisted by in-house officials.

This supervisory consultancy was proved and supported as the very best measure for the government to take care of the foresaid disastrous problems by the collapsing of Seongsu Bridge across the Han River in November 1994, the original year of the supervisory consultancy adoption, and the collapsing of Sampoong Department Store in June 1995. The projects issued after August 1994 were well controlled and monitored by the firms specialized in supervisory consultancy in the respect of quality control, safety program and environment control strictly with the relevant government guide lines and were accepted by the owners with satisfaction as outlined/specified in the original design.

But the scholars and experts who studied abroad exclaimed that the complete system to manage the whole construction life cycle which has 5 phases(pre-design, design, procurement, construction and post construction) has to be adopted rather than the supervisory consultancy, because the supervisory consultancy covers only construction phase among the 5 phases of the construction life cycle. After several public hearings, the government came to preannounce that the supervisory consultancy shall be replaced by CM(Construction Management System) gradually from 2002 and completely till 2005. CM system seems to be on the trend of stable adoption in Korea through pilot projects in both public and private sectors.

Korean firms that have overseas markets unavoidably have to turn and transform their business structure into management-intensive from their previous labor-intensive business structure. Yes, the future strategy of Korean firms that have overseas markets is Construction/Project Management oriented formation.

Under close cooperation with CMAA and PMI of America, many organizations in Korea are consistently offering the education services related to CM/PM and there are many capable experts certified by CMAA and PMI as human

resources for CM/PM in Korea. Utilizing the available resources specialized in CM(either Agency CM or CM at Risk), Korean firms of which main business is related to construction industries are able to participate in the overseas markets in the form of Construction/Project Management. In accordance with the exclusive agreement between CMAA and Korean association, the ground of joint-venture operation with American firms was firmly established and formalized. We have an enquiry from America to participate jointly in New Orleans Rebuilding project utilizing CM system. Several top ranked firms are positively considering participation in the form of joint-venture with American CM firm.

6. CONCLUSION

This study suggests that Korean firms of which main business are involved in construction industries are to turn their labor-intensive business into management/capital-intensive business on the ground of chronological review as fore-described in this study.

Highly appreciating contribution rendered in control of quality, time, safety and environment by the adoption of supervisory consultancy system in construction industries, this study team hereby exclaims that the necessity of Construction Management System that will bring the improvement and success during the whole life cycle of construction industries in Korea and overseas.

The volume of projects in the public sector has been greater than that in the private sector and the public owners have led construction industries in Korea. Therefore, for the settlement and activation of Construction Management System in Korea and overseas, the relevant legislature has to be provided by government in further advance. Being a pragmatist society, the owners' legal interest and/or profit is protected in America but the owners in Korea are only entitled to claim their interest/profit under legal provisions and evident previous practices. However, the private sector follows the public sector's practice in Korea. The government officials' interpretation on Construction Management seems to be not so much serious.

No matter how good the CM is, without qualified resources, the implementation of CM will not be carried out. Many private organizations, in lieu of governmental organizations, produced qualified/certified experts/specialists. The adoption of CM is recommended in the public sector that will lead private sector.

It is deemed to be quite confident that the management-intensive construction industries will be competent in the overseas markets for Korean firms engaged in construction industries and the utilization of the exclusive agreement between Korean organization and CMAA is desirable. The joint-venture participation/operation with the corporate member of CMAA would be welcome in overseas markets if Korean firm alone has any difficulties.

This study was focused only on the cost of structural works in the viewpoint of the competency of Korean firms in the overseas markets. Only the American references were used in comparison of this study. In the respect of

supplement to this study, the references from Europe should be used in such studies in the future because European consulting engineers and contractors are active in the regions/markets where Korean firms are working. We expect more practical references would be used in the future by the ones who will carry out such or similar studies, and corrections on the mistake(s) if there is(are) any in this study would be very much appreciated.

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