CHAPTER - VI
CHAPTER VI
CONSTRUCTION PROJECT EXPORT AND R & D

6.1. ROLE OF CONSTRUCTION INDUSTRY IN EXPORT PERFORMANCE

"Annual global expenditure on construction activity is estimated at around Rs. 7,50,000 crore. But barely one percent of this market is tapped by the Indian Construction project exporters. Indian project exports have so far secured projects worth about Rs. 11,000 crores, out of which projects worth Rs. 5,000 crores were secured between 1975 and 1981. Between 1981 and 1993, the construction project exporters secured projects worth Rs. 6,000 crores only". °° This is despite the advantage of cheap labour supply in India which constitutes a vital input of the construction industry.

At present a number of World Bank and ADB funded projects offer attractive opportunities to the Indian construction project exporters. In addition, there are excellent opportunities in South-East Asia, UAE, Oman, Iran, CIS and the neighbouring countries like Nepal, Bangladesh and Sri Lanka. Hence the construction industry has a larger role to play in earning foreign exchange by cornering more construction activities through global competition and tap more share in the expanding market.

6.2. BACK GROUND :– Foreign trade contributes to growth and development of a developing country by offering opportunities to expand its output base, specialise in certain areas and acquiring latest technological know how. Foreign trade in India, particularly since Independence, has offered these opportunities

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in an ample measure. A number of significant changes in the various spheres in the international trade of India are discernible.

The successive Five Year Plan laid a great emphasis on infra structural development - irrigation, energy, transportation and communication, health, housing, social welfare, rural development, civic amenities and other with the objective of improving the quality of life of our people. Since the above sectoral activities contain construction element, it probably contributed to construction becoming the second largest economic activity in India. "Its share in capital outlay of various development plans ranged from 40% to 50% of the total. Simultaneous attention was paid to increase the availability of trained technical and managerial manpower and to enhance the Research and Development capability of the country. Today India has the third largest technical manpower in the world. Its research and design laboratories rank amongst the best in the world." 

In keeping with our policy of peace and friendship with all countries and of developing helpful relation with the new nations, India's expertise, including civil construction works, was made available to all developing countries who sought it. India entered the international contracting and export construction projects in the early seventies, particularly after the oil boom in West Asia and North Africa. They competed with international giants and were successful in gaining foothold in selected segments of the world market.

86. VAID, K.N., "Overview of India exports of construction projects," (NICMAR, Published in 1991, Bombay) Page-82.
6.3. STATISTICS ON CONSTRUCTION PROJECT EXPORTS:

The growth of Indian exports of construction projects has been quite impressive, though not significant considering the global construction market.

"During the period 1975-81, 54 Indian Construction companies were able to secure 321 Overseas projects worth of Rs. 42,959.82 million. This experience exposed them to the highly competitive and technologically exacting international construction contracting business. Barring exceptions, Indian companies lived up to the challenges posed by the stringent design specifications as well as the quality and time standards laid down by the clients and internationally reputed consultants." 87 Productivity levels and management of projects need greater improvement if the construction industry is to be globally competitive. The construction sector has to give much greater attention to the marketing of the projects, improving competitive abilities of the exporters and making bid prices competitive.

The construction industry is a major foreign exchange earner in terms of both project exports as well as remittance to the native land by Indian workers engaged at the foreign construction work. "The Builders Association of India established the Overseas Construction Council of India (OCCI) which has played a vital role in project export. This council was later taken over by the Government and made one of the official export promoting

87. Vaid, K.N., op. cit, page. 82 & 83.
agencies. It helped project exports worth Rs. 5,000 crores during 1973-81 which also triggered an export of construction labour."

The Eighth Five Year Plan envisages a growth rate of about 6% as against 4.3% in earlier plan for construction sector.

6.4. INDUSTRY AVERAGE OF EXPORT EARNINGS IN LATE 80's :-

The value of project exports from India stood at Rs. 232 crores in 1975-76. The peak was reached in 1981 at Rs. 1205 crores, followed by a drastic slump in the wake of the Gulf war. It was low as 271 crores in 1984, Rs. 480 crores in 1987 and Rs. 383 crores in 1988. With the end of the Gulf war, hope was raised for increase in construction markets. Table 6.1 shows the project exports figure from 1985 to 1988.

The overall project exports registered a compound growth of 0.93% from 1985 to 1988 and an average annual growth of 4.59%. Construction projects registered a compound growth of (-7.91%) and an average annual growth of 11.18%.

Export earnings of 7 selected public limited construction companies and 17 selected private limited construction companies released in RBI Bulletin April '89 and march '90 are given in Table 6.2 along with export earnings to sales percentage (average) in Table 6.3.

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6.4. EXPORT PERFORMANCE SIMPLEX COMPANY

The abstract of various details worked out in Table 6.4 is given below.

i) Average annual growth from Dec '81 to March '91
   Export = 55.99%
   Sales = 17.44%

ii) Average export to sales % from Dec '81 to March '91 = 0.87%

iii) Compound growth % from Dec '81 to March '91
    Export = 6.38%
    Sales = 15.91%

iv) Average annual growth from Jan '84 to Dec '87
    
    \[
    \frac{59.71\% - 39.65\% - 65.86\% + 200.14\%}{4} = 38.59\%
    \]
    Export = 38.59%
    Sales = 12.56%

v) Average export to sales % from Jan '84 to Dec '87 = 0.75%

vi) Compound growth % from Jan '84 to Dec '87
    Export = (-)11.32%
    Sales = 8.34%

The percentages share of export earning to gross billing of work done, each year from Dec '81 to March '91 are displayed in Exhibit 6.1.

6.5. EXPORT EARNING POTENTIAL OF SIMPLEX CONCRETE (PILES)

INDIA LTD. :-

Simplex Concrete Piles Ltd., a civil engineering and construction company has gone global in a big way. The company is gearing up to expand its activities to countries of the Confederation of Independent States, Malaysia, Indonesia and East European and Afro-Asian countries.
According to a press release Simplex's orders at hand include overseas contracts, with different valuation, aggregate $100 million. Negotiations are under way abroad for construction of shopping and housing complexes, office buildings, hotels and power projects in these countries. Already the company has constructed a five-star hotel complex in Uzbekistan and other projects in Sri Lanka and Abu Dhabi. “

The export earnings of the above company stood at Rs.29.63 lakhs against construction contract work during the year 1990-'91. The company in their advertisement for Equity shares floated on 15-1-93 in the Economic Times claimed that they have been receiving number of enquiries from CIS, Middle East countries, Malaysia, Burma, Bangladesh which reflects on the growing export potential.

6.6. GROWTH OF FOREIGN EXCHANGE EARNED AND FOREIGN EXCHANGE USED :-

The compound growth rate of foreign exchange earned on account of construction project export by the company and the foreign exchange used is tabulated in Table 6.5. The net foreign exchange earned by the company is also shown in Table 6.5 and Exhibit 6.2. Except from Jan '86 to Dec '87 and April '89 to March '91, the net earning shows positive figure. The excess expenditure of foreign exchange from April '89 onwards need to be arrested by export growth oriented strategy.

6.7. DEDUCTION :-

i) The industry averages of selected construction companies' growth performances on exports and sales based on data in RBI Bulletin during late 80s have been (-)36.59% and 3.06%, average export to sales percentage of 16.32% and a compound growth rate of (-)28.83% and 1.90% respectively. Compared to this, the Simplex company's performance during the same period (nearly) have been 38.59% and 12.56%, 0.75% and (-)11.32% and 2.34% respectively. The overall project exports registered a compound growth and annual growth rate of 0.93% and 13.77% in late 80s.

ii) The company's performances from Dec '81 to March '91, in the average export to sales percentage and compound growth rate have been 55.99% & 17.44%, 0.87%, 6.38% and 15.91% respectively. The company has fared well in the average growth rate and compound growth rate compared to industry level. But it lagged behind in average export to sales percentage.

iii) The compound growth of foreign exchange earned and used by the company stood at 7.30% and 13.36%. Export growth oriented strategy is required to offset the import expenditure.

iv) Compound growth of sales (gross billing of works) of the company has been 15.91% whereas the compound growth rate of company has been 6.38%. This again strengthens the requirement of export growth oriented strategy.

6.8 ACTION SUGGESTED :-

It is imperative that growth oriented strategy is required at industry and company level. In case of construction projects the major reasons for the decline are due to long drawn Iran-Iraq
and Gulf conflicts, fall in oil revenues in OPEC countries of Asia and Africa and foreign exchange problem faced by many African countries.

"By 1995, the volume of Indian export of construction contracts is expected to reach Rs. 20,000 crores." The strategy can be on the following lines, to tackle the major supply side constraints (viz) out dated technology, low levels of productivity, high costs and inferior quality and infrastructural problems like inadequate shipping, telecommunications, air cargo and road service, in addition to tackling the demand conditions.

i) Indian construction industry should aim at higher export earnings by way of longer shares in the global construction market and getting better unit value realisation by a dint of higher levels of quality in construction. The strategy should be to maintain and enhance the momentum gained in construction projects and turn key projects, relentless attempt at recovering the lost ground in West Asian and African countries for larger share in the world market and sustained focus on the consultancy projects which have recently fared well.

ii) Good quality construction and competitive price can win a larger share of the market in the reforms process. The customers need satisfaction should form the core strategy while taking measures to bring about a positive image for the company and industry. This can be brought about by making efforts towards Total Quality Management (TQM) and ISO 9000 certification.

iii) Since the export market in contrast is largely a buyers market, a minor difference in cost of construction or quality can turn the buyer towards another exporter who gives him higher value for money. Construction industry and company should formulate strategy to have strong marketing techniques, preferential attitude towards construction business. Technology upgradation and promoting buyers awareness are the two areas where the industry should seek Govt's help and assistance in addition to own efforts.

iv) The success of East Asia at achieving sustained high growth is the result of getting the basics right, says a new World Bank report entitled 'The East Asian Miracle'. The Govt's strategy for creating growth in export of construction projects should be on the basis of human capital growth, openness of foreign markets, intervention within bounds, maintaining limited price distortions and good micro-economic policies that will keep inflation low, interest rates stable and positive and moderate taxes on export incomes.

v) Indian construction companies should take advantage of wider consumer choice, technological progress and expansion and learning curve leverage and introspect and emulate to establish international presence to ward off threats from MNC with multipronged strategical policies and action in aggressive marketing efforts in Asian countries which can prove to be big market, growing exponentially. Govt should help in keeping up its present encouraging policies and create a well developed infrastructure to increase exports in a big way.
vi) The strategy of standardisation and cost cutting could make construction companies even more competitive overseas as this strategy has been yielding dividend in export growth in Japan.

vii) Construction management will become an area where cost reduction and quality control assume central importance. The strategies of inducting advanced techniques with qualified managerial and technical personnel, manufacturing flexibility, technology management and sourcing strategies with effective logistics have to be adopted to utilise the resources more effectively.

viii) Short term strategies of construction companies can be of using strategic alliance to explicit foreign brand name in the construction methodologies and construction materials with their local expertise, building barriers to entry in their overseas market using their distribution infrastructure. For long term survival, sustainable advantages are to be built based on the core value of their construction quality, cost reduction efforts in overhead and standing cost, evaluation and efficient organisational structure.

6.9. RESEARCH AND DEVELOPMENT IN INDIA :-

6.9.1. R & D AND ITS OBJECTIVES :-

"Technology generation and development is often synonymous with the term "Research and development" (R & D). However technology generation involves efforts while technology development involves further stages of translating R & D efforts
into marketable products, processes and services." 91

R & D process has four distinct stages (viz) need recognition for idea generation (Need pull), knowledge advance for helping idea generation (Technology push), Engineering and marketing. The objectives of corporate R & D and R & D projects are to support current business, provide new ventures, explore possible new technology basis.

6.9.2. R & D AND RELATION TO CONSTRUCTION PROCESS:

R & D in relation to construction process is rather weak. The total cost of civil engineering construction can be subdivided into the following components.

i) Materials and semi processed articles at site = 50.65%
ii) Equipment hire cost = 5.10%
iii) Conversion of materials to structures
   a) Structural design know how = 5-10%
   b) Construction know how = 25.30%

"Almost all R & D efforts on the conversion aspects in civil engineering in the country are confined to the design know how." 92

Research on construction know how is neglected. It is even a matter of dispute as to who should do R & D on construction know how. Hence companies and builders prefer to import know how from abroad through tie-ups with foreign agencies. Once imported, this

91. "Technology management MS-94 IGNOU, New Delhi, 1992 April, P-33.

92. Zacharia George, Sr. Scientist & Head, Construction Engineering Group, SERC, Madras. "Productivity in construction Industry" (NICMAR, op. cit, 1989, oct., P-34.)
know how remains with them as monopoly user and they seek to perpetuate their superiority and to generate high demand for their products, projects and techniques. No efforts are made to transfer their know how to a wider base and thereby to popularise this technique. Hence constraints in the field of piling system, ship forming, prestressed concrete are created. Since simplex company is in this field, it will be interesting to study their performance and implementation of the R & D programme.

6.9.3. STATUS OF R & D IN INDIA AND THE WORLD:

The status of R & D is generally measured in terms of financial outlay and expenditure. The Table 6.6 shows the progress of Science and Technology (S & T) in the Five Year Plan.

The ratio of the R & D expenditure to the GNP, which was 0.62 in 1980-81, has risen to 1.00 mark in 1988-89. R & D expenditure in terms of this ratio for India, continues to be very low in comparison to the figures of advanced countries as can be seen from Table 6.7.

It may thus be seen that though R & D expenditure is about 1% of GNP, the amount in absolute terms is rather small, compared to other countries. For really meaningful R & D to have substantial innovations and technology development, the quantum has to be increased. The efforts have been more of incremental nature or in the form of basic research in R & D institution.

"Total industrial R & D investment is just a fifth of the total national expenditure on R & D while in developed nation it is the opposite. Even a company like Maruti Udyog Ltd spends a mere 0.1% of the sales turnover on R & D. Hence, the industrial
R & D investment in absolute terms, is too small to significantly alter the technological scenario of the country or generate exports and global competitiveness."

6.10. R & D IN SIMPLEX CONCRETE PILES (INDIA) LTD:

6.10.1. PRESENT: "The company is carrying on research and development in various construction activities, particularly geotechnical engineering. Recently the company has developed its own jointed precast piling system and an integrated system of Modular Mounted Computer Aided Soil Testing Laboratory Equipment (AMSTAR). The R & D cell is manned by a number of experts having proven ability and recognition at national and international levels. Some of the company's engineers and technicians are members of committees of the Bureau of Indian Standards."

The above was the advertisement given by the company while floating Equity shares in January 1993. The company has not published any details of their R & D expenditure up to the Annual Report for the year ending Dec 1986. However now as per the company's Act the expenditure on R & D should be reflected in the annual reports of the companies. Hence the analysis was restricted to 3 years, as per the expenditure reflected in Schedule 15 of the Company's annual reports. It is only from the January 88 to March 89 onward, Form 'B' as an Annexure to Directors' report was published. The above details are tabulated in Table 6.8, Table 6.9 and Table 6.10.


94. Memorandum of the company to Equity shares floated in Economic Times, 1993, Jan, op. cit.
6.11. DEDUCTIONS :-

i) Compared to the "Industrial establishment expenditure on R & D as 0.71 % of their sales turnover in 1984-85," the R & D expenditure of Simplex company is not adequate. India's expenditure on R & D in 1988 stood at 1% of GNP against other country's figure of 2 to 4% of their GNP. "During 1990-91 R & D of 1178 Industrial inhouse and development units registered 0.66% of their sales turn over as against 3.15% in the west."

ii) Though the company has claimed benefits of achievement of international standard, import substitution and modification to imported machinery improving productivity, there was no visible improvement in percentage share of project export earnings during 1986 to 1991 except during Jan 89-March 89, compared to the years prior to 1984.

iii) The company has followed the Govt stipulation, pursuant to the technology policy statement that industries using foreign technologies should bring out comprehensive Technology Absorption, Adaptation and Improvement (TAAI) plans. The company has also taken efforts at stimulating and accelerating indigenisation/ import substitution/ know why exercises/ product improvement and optimisation, following the technology Absorption and Adaptation Scheme (TAAS) initiated by the Govt (DSIR) as a pilot scheme during the 7th Plan.

95. "Research & Development Statistics, 1984-85 DST Delhi (published by controller publication, Delhi-110064)

96. Gharpure V.H. "Development of Technology & hitech transfer, The Economic Times 1993 September P-VIII Technology IV."
6.12. ACTIONS SUGGESTED :-

Govt of India is committed to the development of Science and technology by its policy decision formulated in March, 1958. The highlights of drafted Technology policy, 1983 are to create abilities to respond to users and markets and take steps for linkages between institutions and users of R, D and E.

i) Since India cannot go on importing technologies year after year, it is worthwhile not to spend the limited resources in rediscovering the knowledge that is already there. Hence Government and construction industry in particular should devote attention on R & D and indigenous technology through proper selection and process development, with a strategic thrust on application know how and management know how.

ii) Indian scientists and technical personal pool could be utilised to co-operate with the R & D cells of advanced countries for the benefit of both. In fact such tie ups have yielded success in construction industry areas. Govt should formulate strategic policies to remove hinderances and assist for promoting such tie ups.

iii) There is reluctance for utilisation of indigenous technology due to tendency to reduce risk rather than cost on account of sellers' market condition, average Indian mindset of taking foreign technology as superior, multiple decision levels and reluctance to accept risk. The industry's reliance on always looking to Govt for everything should go. The major driving force has to come from changes in the attitude by interaction and dissemination of informations strategies from the top management
to create an ever changing panorama of technologically creative society within the industry.

iv) R & D and import of technology should be complementary. The backing of R & D at company level is essential to get the maximum advantage. Hence the construction company's strategy should be guided by imports of technology on merit, absorption improvement & horizontal transfer and R & D thrust in selected areas, in order to get assimilated successfully on the export fronts.