CHAPTER - VIII
CHAPTER - VIII
FINDINGS AND SUGGESTIONS

8.1 Findings

8.1.1. General findings for the industry as a whole

The general findings of the industry are enumerated as under:

i) Since the cost of debt, during 80's has caused the burden on the increase in debt services, there was tendency in decline of asset base, leading to erosion in financial stability and concern over the performance of the industry.

ii) Formulation of capital adequacy norm based on some of the economic fundamentals such as changes in the environmental opportunity like recent reduction in interest rate structure, drop in rate of inflation, good monsoon etc. and threats like increase in competition from MNC etc. for the construction industry, assumed importance to cope up with its asset base at appropriate level.

iii) Capital flow into construction sector has not been encouraging on account of existing inter-sectoral imbalances resulting from priority treatment given to selected sectors by the Government. Hence construction industry suffered from capital inadequacy.

iv) Decline in productivity of the capital employed in construction sector has been noticed. This may be attributed to the reason for the inability of the construction industry to attract funds of sizeable order. This has an important
bearing on the question of creating environment of competition among construction sector activities for profit and affordability in case of residential and non-residential constructions.

v) Inflow of fund from capital market to the construction industry has not been adequate due to marginal growth in equity shares and dividend unlike impressive growth in other industries.

vi) The growth rate of gross billing of works (sales) has not been impressive for the construction industry during mid 80’s compared to other industries.

vii) The investment of Central Government, State Government and Union Territories on plan outlays during late 80’s contribute an aggregate construction content of 48.12% to 49.60% (i.e.) an average of 48.59% which is nearly half of the plan outlays.

viii) The employment generation of the above construction content works out to 3.25 million jobs per year for skilled, semi-skilled, managerial and technical categories (i.e.) roughly 10% of the organised sector as a whole.
ix) The econometric relationship between Gross Domestic Capital formation (GDC) and employment of construction content of plan outlay in late 80's has been with an elasticity coefficient of 1.285 at 5% significance level.

x) The industry averages of selected construction companies growth performances on exports and sales, average export to sales percentage during late 80's were not impressive. This strengthened the requirement of export growth oriented strategy at industry level.

xi) The R&D expenditure of all industry including construction industry has been lower than the other countries performance (i.e.) 1% of GNP against 2% to 4% of GNP in other countries. The index of R&D on sales turnover has been 0.66% compared to 3.15% in the west. There is a requirement of R&D strategy in the industry to create abilities to respond to users and markets and take steps for linkages between institution and users.

xii) Management techniques such as CPM, PERT and BAR CHART, are used as a matter of routine, whereas a critical evaluation and review with managerial implications are seldom done in the industry level. There is a need for Quantitative Performance Evaluation Model (QPEM) at the industry level for assessing the job condition and management conditions. Use of computer application in the industry needs encouragement for project scheduling and other applications.
8.1.2 Findings for the representative company M/S Simplex Concrete Piles (India) limited

The findings for the representative company M/S Simplex Concrete Piles (India) Ltd., in particular are presented as under:

i) 'Z' score (asset based), an indicator for financial stability and overall performance stood at 3.03 as on March 1991 compared to 5.74 during December 1980. Though marginally more than 3.00 indicating strong position, there is a disturbing aspect in the declining trend to half its level in March 1991 compared to December 1981. This shows the erosion of asset base. If the trend is projected, ('Z' score being marginally close to cut of score) the position is likely to lead to potential bankruptcy state unless precautions are taken to arrest the erosion of asset base appropriately.

ii) There exists liquidity problem during the period of study.

iii) Increase in rate of reserves and surplus position, show satisfactory throughout the period under study. But the rate of asset side is not impressive.

iv) Productivity measure parameter fluctuates during this study period and the picture is not generally bright.

v) Debt services capacity of the company has been stable to meet the cost of debt.
vi) Use of asset in turnover of works progressed by the company show deteriorating trend in effective use of asset during the later part of the years under study.

vii) The performances of equity shares in march 1990 has been the best buy.

viii) Price Earning Ratio (P/E Ratio) has been consistent without extra-ordinary fluctuations and the Earning Per share has been on the declining trend.

ix) The risk adjusted rate of return expected on equity shares of the company has been more than the prevalent bank interest rate.

x) The key performance indicators such as net sales, gross billing, total income, net asset value added of the company and the operating profits, pre tax and post tax profits and the profits retained by the company, the growth rate of gross fixed asset and net fixed asset have recorded more than the industry averages which can be termed as satisfactory, though there was sluggishness in business activity of construction industry during mid 80's.

xi) The current ratios and acid test ratios of the company during the period under study have been fluctuating and marginally above industry average. The trend of cash ratio has been more or less stable. The utilisation of
current asset in the asset portfolio is not satisfactory (i.e.) more amount is invested in current asset than desirable.

xii) The inventory turnover's declining trend since December 1986 does not portend efficiency.

xiii) Ascending trend of average collection period from December 1983 to March 1991 calls for toning up to the company's system and procedure for collection.

xiv) Ascending trend of average payment period portrays the slackness in efficiency in maintaining the standing of the company in credit clearance.

xv) Declining trends of fixed asset turnover and total asset turnover show that more amount is invested. Fixed asset status calls for critical review in order to arrest the declining management efficiency.

xvi) The company has been continuously earning profit during the period under study. The fluctuating trends in gross margin to the gross billing of works done can be attributed to the nature of the works undertaken and competition in the tender stage for bagging the works from the clients at lower margin in their bid. The fluctuating trends in operating margin ratio, net margin ratio after tax and interest and net margin ratio before tax, portend for managerial critical review.
xvii) The declining trend in ROI, since January 1985 needs management's attention for remedial measures and actions.

xviii) The performance of ROE, has been very good as the % recorded has been more than 12% during the year under study. This is corroborated in the strength of equity multiplier computed.

xix) The ROCE has registered more than 20% for all the years under study which has been satisfactory.

xx) The company's debt, equity ratios have been below 1.50 during the period under study and within the norms, indicating the comfortable debt position.

xxi) Interest payable position as evaluated through the parameters of 'times interest' has been on the declining trend since January 1982. Interest as % of operating profit which has been fluctuating and declining trend from January 1986, has not been encouraging. The declining trend needs to be arrested.

xxii) The aggregate capital employed by the company grew by 23.01%, and the borrowed funds increased by about 28.85%. The mobilization of fund norm by the company has been satisfactory.

xxiii) The econometric relationship between gross value added and employment of the company has been with an elasticity coefficient of 1.14 at 1% significance level.
Hence the productivity of the company compares well with the industry level productivity.

xxiv) The company has fared well in the average growth ratio and compound growth rate on export front, compared to industry level. But it lagged behind in average export to sales percentage.

xxv) The compound growth rate of foreign exchange earned and used by the company stood at 7.30% and 13.56%. Hence an export oriented strategy is required to be formulated.

xxvi) Compound growth of sales (Gross billing of work) of the company has been 15.91% whereas the compound growth rate of export has been 6.38%, which also strengthens the requirement of an articulated export oriented strategy.

xxvii) The R&D expenditure of the company has not been adequate compared to the industrial expenditure of 0.71% of their sales turnover in 1984-85.

xxviii) There has been no visible improvement in % share of the project earnings of the company during 1986 to 1991 except January 1989 - March 1989, compared to the years prior to 1984.

xxix) The company has followed the Government stipulation, pursuant to the technology policy statement for TAAT in addition to taking efforts at stimulating and
accelerating indigenisation/import substitution of know-how
exercises/product improvement and optimisation following
TASS initiated by Government.

xxx) QPE of the company shows that the job conditions
are good and the management condition under good job
condition has also been good.

xxx) Senior level managers of the company personally
get involved in preparation of net work scheduling and
implementation.

xxxii) Lack of trained personnel for computer
application has been the reason for the company for the non
use of computer project scheduling.

xxxiii) The perception of the difficulties in the
ranking of 11 factors in project completion by B.M, Simplex
and the ranking as surveyed by IIT, Madras are not
identical. There is seriousness on the part of management in
tackling the difficulties.

8.2 Suggestions: Suggestions for improvement of
performances in domestic arena and international
arena for industry and representative company are
as under

8.2.1 Construction industry (Domestic Arena)

i) Erosion of asset base noticed in the construction
sectors is required to be arrested by the following three
pronged strategies.
(a) Reduction of debt by increasing the equity base to reduce debt servicing charges is the first route.

(b) Deciding the access route for debt at lower cost taking the advantages of the present environmental opportunities like recent reduction in interest rate by financial institutions, resulting lending rate at home internationally competitive and likely drop in inflation and good monsoon, can be the second route.

(c) Creating close relationship between the construction industry and financial system, for an easy and effective access to the capital market by creating investors confidence to facilitate capital flow into construction sector, is suggested as the third route.

ii) Policy initiatives by Government for more 'level playing field' to incorporate correction of inter sectoral imbalances, resulting from priority treatment given to selected sectors in the past, are suggested for efficiency in allocation and utilisation of scarce financial resources to the construction sector and creation of competition.

iii) Failure to attract funds of sizeable order is one of the causes for low productivity. This warrants creating an environment of competition among constructors for profit and affordability in case of various construction such as residential and non-residential. A strategy for public and private sector construction companies is suggested for creating an environment to work in partnership and supplant
each others effort, by way of deploying their resources to their areas of competitive strength. This will create better management of resources. Government has a major role in ensuring that affordability component merge with the overall sectoral strategy.

iv) The construction industry's constituents should create an atmosphere of a free and unobstructed flow of fund from the investors by keeping up their P/E ratio above 5 through better management of resources, growth through affordability to the users on account of lower cost of construction, stability in dividend policy with long run dividend pay out ratio in order to take the investors overwhelming inclination factor to reduce their uncertainty.

v) There is a threat in the environment for the domestic construction industry due to likely entering of multinational in the construction sector. This will reduce the growth rate of bagging new works from the construction market by the domestic companies on account of cut throat competition. Hence, an articulated strategy by the domestic companies through the rout of well planned scheme of acquisition and merger according to the strength and weakness of the companies which will enable to strengthen the construction capability base in a rightly competitive market, is suggested to increase the market share. The
alternate strategy can be of becoming minor player in the business where the company had earlier been dominant or seek out new fields in the construction business.

vi) It is also suggested for domestic construction companies to get rid of commercially non-viable and financially lacklustre construction divisions, shed non-performing assets and operating expenses and to address the problem of generating adequate return on the existing as well as new equity.

vii) In order to improve the financial health, it is suggested to keep capital cost low on construction project and turn it into competitive edge through the routes of tie-up with a leading global company for technical know-how, recruiting the best professional in the industry, nibbling into market by securing small work orders at home, keeping overheads low and concentrating on long term gains in the construction market.

viii) A debt strategy with an objective of achieving sustainable growth, payments viability, normal relations with creditors including access to financial markets is suggested through the rout of growth oriented adjustments in the type of construction work, creating favourable environment to secure cost effective debt and debt service reduction through efficient use of scarce resources, equity trading and raising other income sources.
ix) In order to initiate change and development through skill formation and economic conditions of workers, in the construction industry, the strategies suggested in the succeeding para [xvii(a)] under 'MEN' may be adopted.

x) It is also suggested for the long term strategy for a sustainable skills development programme by setting building labour board through legislation and institutional reorganisation.

xi) In the light of changing complexion of market, it is suggested to have a strategy of business re-engineering which is similar to zero based budgeting, with a new set of tools and tactics in a systemised manner, to process oriented jobs rather than division of labour and task oriented labour. Process oriented construction will make decision making as a part of every one's job, good use of bench marking of a well done company, the customers oriented thinking with a vision, which will fetch dividend in the form of more output in works and bagging new works globally thereby generating employment.

xii) Export earnings can be enhanced by way of longer shares in the global construction market and getting better unit value realisation by a dent of higher level of quality construction. It is suggested that a strategy of maintaining and enhancing the momentum gained in construction projects and turn key projects and attempting relentlessly to recover
lost ground in West Asian and African countries for larger share in the world market, has to be adopted with a sustained focus on the consultancy projects which have recently fared well.

xiii) Quality being the prime factor for customers' need satisfaction, construction industry's efforts towards Total Quality Management (TQM) and ISO 9000 certification should not be minimised. It is also suggested to formulate strategy to have strong marketing techniques and preferential attitude towards construction business.

xiv) The strategy of standardisation and cost cutting to make more competitive overseas manufacturing flexibility, technology management and sourcing strategies with effective logistics are also suggested to be adopted by the industry to utilise resources more effectively.

xv) In the area of R&D, it is suggested that the Government construction industry should devote attention on indigenous technology through proper selection and process development and management know-how instead of importing technologies year after year or discovering the knowledge that is already there.

xvi) Government should formulate policies to utilise Indian Scientist and technical pools to cooperate with the R&D cells of advanced countries for benefit of both and remove hindrances and assist for promoting such tie-up.
xvii) There were presentation of position papers in various seminars, national debates on the suggestions for improving the construction industry's performances and efficiency. They are based mostly on 5M's (viz), Men, Material, Machines, Money and Market relevant to construction sector. These suggestions which lead to logical conclusion on 5M's, are as under:

(a) Men: There is need for institutionalisation of role relationship of the company's internal organs and stabilisation of labour force by professionalisation of function. This can be through managerial training on the areas of industrial relations and manpower management, management of skills through in-service training and Workers Education scheme, implementation of labour legislation and effective administration in construction and building data base for research. Skill formation for construction industry is one strategic area where the following requirements are necessary.

(aa) Conditions are required to be imposed on contractors to employ only those workers whose skills are certified in either of the three categories viz. skilled, semi-skilled and unskilled.

(bb) Institutional mechanism that imparts skills in construction trades in a manner that is acceptable to workers as well as contractors, are to be established.
(cc) A skill delivery system that creates skill in new workers, upgrades the skill of the existing work force with flexibility to give a fair chance of entry into construction job market to all those who desire to do so, is to be instituted.

(dd) The quality of construction and its timely delivery are largely dependent on the technical competition, managerial capabilities and motivation to those who work on it (viz.) worker, supervisor and manager. Their education and training are the major instruments of manpower development since there is need for re-orientation of the construction education curricula and training in engineering colleges and polytechnics, to practical construction practice and technology, management of contracts, resources, materials, money, men, machines and manpower with more weightage to the execution and construction management areas.

Materials

(a) Construction materials involving an investment of 45% to 65% in construction sector, should get serious consideration from planning stage onwards. Their shortages, price control and quality control need greater attention. Lending financial institutions and Government's assistance to manufacturers of building materials if stepped up from the present level, will not only improve the quality, and bring down cost.
(b) A great deal of attention was paid by HUDCO on soil-cement and mud technology, and use of local materials manufactured by waste and natural resources of the area. NBO has also put up 114 clusters of low cost demonstration rural houses to promote use of local material mud technology using appropriate structural techniques and stabilisation measures, which have been successful in almost all the climate. Popularisation and implementation of mud technology, the CBRI's (Central Building Research Institute) now erodible water repellant mud plaster, use of stabilising agents identified by the researchers including cement, lime and bitumen to improve bearing strength of bricks, use of rice husk cement as a soil statistics, will aid to bring down cost and solve the problem of National Policy for "Shelter for every one." Action oriented strategies to implement on the ground are suggested.

Machines

(a) R&D activities of manufacturing should be strengthened in the areas of materials and metallurgies, hydraulics, electronics, prime movers and computerisation.

(b) Since 15% of the cost of construction project is accounted for machines, proper use of the appropriate construction equipments will contribute to economy, quality, safety, speed and timeliness of a project. Hence stringent measures for capacity utilisation is suggested through legislation, for strict compliance.
Money

(a) Availability of money to the construction sector depend upon the State investment in 5 year plans and it's proper implementation. Stepping up of State investment in construction sector along with Government action to give construction sector a status of 'Industry' to reap the financial assistance from lending FIs at par with the other industry, is suggested.

(b) Privatisation and globalisation should be given further thrust in the policy formulation to make foreign investment to flow to our country for construction sector.

Market

(a) The emerging trend of open market economy in the country, should be coupled with an element of compulsion on the inhouse R&D investment by the construction companies for technology upgradation. This will create competency in dealing with stiff national and global competition.

(b) Getting the works from private and public sector construction works by competitive bidding, is prime task for the growth of the construction companies. Hence scientific management in bidding cost of index analysis, contracting documents need faster implementation.

8.2.2 Representative company (Domestic Arena)

i) Though the asset based Z-score financial model, depicts the financial stability and overall performance rating as stronger, the declining trend as on March 1991,
show the deteriorating position compared to the past. The management attention is warranted on the following:

(a) Earnings before taxes and interest's declining trend which are indicators of productivity, need to be arrested by effective deployment of assets. Servicing of debts should be brought down and action to improve performance level in order to boost productivity, is suggested.

(b) As can be seen from declining trend of the parameter for an effective use of assets in improving the turnover of works progressed and completed, there has been no increase. Efforts to bag more works by modernising the bidding performance in the competitive market are suggested.

(c) The Z-score financial model does not take into account the qualitative aspects of management strength, quality of work, changing economic environment and market. Hence, it is suggested to strengthen these aspects by updating the policies, programmes and strategies. Some of them are brought out in the succeeding paragraphs.

i) Though the performance of the equity shares of the company has been good, efforts are required to improve the P/E ratio to attract more public, by listing the equities shares in the recognised stock exchanges in India in accordance with securities contract (Regulation) Act, 1956 for deriving tax benefits as the company will have chances to be treated as one of the companies interested
substantially by the public. This will again increase the earnings after taxes and the share value in the market.

ii) Consistency in dividend pay out ratio have been an indication of future earnings for the share-holders. But the long term debt burdens (secured and unsecured) have increased over the years, thereby increasing interest payment and reducing the profit. Hence, it is suggested that the company should resort to more equity financing. If the dilution of ownership interest by way of increasing equity financing is not acceptable to the existing share holders, the management should explain the motives for retaining a large percentage of earnings, causing the fluctuations in dividends by following "residual dividend policy" for future investment in the growth and earnings of the company. Since the cost of the external financing is more, the management of the company has to find source for internal financing and widening the equity base.

iii) The liquidity ratio is below 2:1 ratio. It is suggested for improving upon this ratio either by increasing the current asset base or by reducing the current liabilities by managerial pruning.

iv) On the activity ratio analysis, the results show decline in inventory turnover, slackness in collection of receivable and delay in payment to the creditors. This
depict the deteriorating efficiency. Hence, it is suggested
to adopt efficiency based incentive policies and
modernisation in project management system.

v) In order to improve the profitability ratio, it is
suggested for action in reduction of servicing of loans by
expanding equity base and increasing the retained earnings
by dividend policies suggested earlier, reduction in tax
liabilities as suggester earlier by listing the equity share
in the recognised stock exchanges, and increasing the gross
works by way of efficient competitive bidding by
construction technology transfer, adaptation and diffusion.

vi) Though the debt position of the company is
comfortable, caution is sounded on the interest payment as
the ratio of times interest earned ratio is on the declining
trend.

vii) The company’s contribution to the employment
generation is in tune with the all India elasticity index
level. This should not give complacency as maintaining a
break-even point for efficiency in productivity aspects
depend on bagging more than sufficient works for the already
employed and keeping their morale, skill and knowledge in
tact, in tune with the technology upgradation and change in
economic environment of India. This is needed by the
company’s effort in training, re-training, updating the
knowledge, skill and effectiveness of the employees by
proper goal oriented strategic management policies and programmes periodically with corrections/amends in tune with the change in the environment.

viii) In the export earnings, it is suggested to improve upon the technical capabilities and infra structure development of the company with an emphasis on Quality Management System (QMS) to compete in global markets. The knowledge of international construction market, corporate performance improvement, Project Management Techniques (PMT) need updating by the company.

ix) R&D efforts are the key in the present world, to achieve higher productivity and performance standard of the company. The company needs to go in for the study of its production function and technological change, technology development and acquisition, technology absorption, adaptation and diffusion to have its 'Niche Market' in domestic and international competitive markets.

8.2.3 Industry and representative company (International arena)

The suggestions are given in the succeeding paragraphs on carving niche market, tackling import constraints, improvement in economic value addition, scientific construction management, productivity efficiency, corporate performance improvements, construction design cost optimisation to cope with the international competitiveness.
i) **Carving niche market**: (a) There is a growing tendency for firms including construction companies to cross boundaries and invade each other's patches which end up in cut throat competition. In order to increase the market prospects within the country and abroad, there is the need for an independent appraisal by an outside agency and the demand for continuous innovation and specialist advise to face competition to increase the company's demand in the market.

(b) Continuous pursuit of technology upgradation and quality excellence are: *Sine qua non* with adequate public relation to sell the type of services in the project export in new areas and region.

ii) **Tackling import constraints**

During the period under study of the company, there were import constraints coincided with a noticeable decleration in the pace of industrial growth. The Indian Economy is indeed an integral part of the global economy and if we seek to isolate ourselves into cocoon, we will end up in trouble. The construction industry depends heavily upon external inputs. As the complexity of construction operation increases in response to the need of global quality and performance standards, it causes more dependant on international linkages for servicing capital equipment as well as for relevant technology which is closely linked with the ability to maintain imports of materials, services and technology. It is possible to reduce the gap between export
earnings and use by conserving the imported inputs through
the promotion of efficient uses of energy and capital asset.
Feasibility of observance of this, may need examination by
the company and industry.

iii) Improvement in economic value addition

In the changed scenarios, the primary response from the
company must be to improve economic value addition in
project implementation operations. Since quality is the
undisputed hallmark of the economic value of a product or
service, the agenda for action must include a drive,
firstly, to attain global quality standard and then to
exceed them. This will involve operations like cost
reduction which maximises value addition. Hence thoughts are
to be bestowed on improvement in quality and of the input
level of technology and equipment and the level of knowledge
and of skills of manpower engaged in the construction
operation.

Since technology and skills will play a very important
role in the efforts of cost control, a drive towards to go
global in attaining quality and cost reduction to provide
counter to the threats of imported competition and
simultaneously sustain the drive for gaining export markets,
is necessary.

iv) Scientific construction management

Construction management is defined as the management in
which group of people of different categories works
together, to execute the project economically without affecting quality in a well planned and organised manner.

The main principles of scientific management such as work-study, work-planning, availability of labour, selection and training, tools and equipment, materials, management-worker relation, wage system, are to be reviewed and updated to the changing environment to increase effectiveness as well as efficiency in the pursuit of cost reduction in the management of arranging various activities and group of people to achieve the common goal of the company. A review periodically will help doctoring the pitfalls.

v) Productivity efficiency

Past few years have witnessed a growing concern about an apparent decline in the productivity of the construction industry. In the absence of any scientific investigations and analysis, it is difficult to conclude that the productivity has decreased. On the other hand, no evidence exist to say that it has increased either. It, probably, is true that the productivity increases have been slower than in other industries in the country.

This should be sufficient to appreciate that a productivity problem exists which needs attention on the implements such as nature of the project undertaken, technical and market features and strategy for skill formation.
vi) Corporate performance improvement

Since the Government has initiated performing, enabling supportive and catalytic role in the project exports, procurement and execution, the benefits have to be reaped to become competitive in relation to its foreign counterparts on the parameters of price, qualities, time and technology. The analysis of bid failures of Indian exporters revealed that the two main factors responsible for failure were the high price quotation and absence of attractive credit terms to foreign clients.

It is revealed that 74% of bids were lost on price factor alone. The bid failure on account of acceptable credit facilities accounted for only 8%. Further, Indian exporters were relatively more successful in small value bids. The Governmental institution can assist in arranging credit facilities from the international financial market. The bids must be made competitive by the exporters themselves. The failure of Indian Project exports is therefore, significantly related to the innovations and productivity, introduced by the construction companies.

While the rationalisation of procedural and fiscal aspects should continue, the construction company should match its capabilities and output by corporate performance improvement in financial aspects, equipment, materials, manpower, quality assurance and modern project management techniques. Drafting the services of consultants, in helping planning, control and operational technical areas, at times, need examination with cost benefit analysis.
vii) Construction design cost optimisation

Optimisation of construction cost during design will mean different things to the various members of the project team. To the client, optimisation is the point of maximum return on expenditure. To the architect, it may be maximum aesthetic quality to minimise expenditure, whereas the engineer will judge cost in relation to the minimum standard of design that makes the building safe.

To the construction company, this means reduction in capital cost, time duration of the project and durability which will be competitive in successful quoting of the bids, to enhance the award of works and growth of the company's foreign exchanges earning.

viii) Human resources development

The existing arrangements for training workers, supervisors, engineers, managers, contractors, women workers are inadequate and these are required to be strengthened by creation of new and appropriate institution in different parts of the country. Construction agencies, contractors and trade-unions should be encouraged to come forward with proposal for such training.

ix) Construction industry development

(a) Contracting system, technical specifications, work methods and financial pattern in the industry need to restructured so as to absorb the benefits of new
technologies, better work methods, innovative materials and modern management practice.

(b) In order to improve the information base of the industry, and to create support system, Ministry of Urban Development should establish a Construction Industry Information Centre to undertake compilation construction cost indices, information on upcoming projects abroad and documentation/abstracting service on the latest development in construction technology, materialism methods and management.

x) Effects of foreign aid on the construction industry

The aid coming into the country from abroad, though helpful to the developments of economy, there are drawbacks as the aids are mostly in the form of loans rather than grants and the interest charges are very substantial. This pushes the total cost up on account of their use of capital intensive method, use of more sophisticated design than the project needs and the huge rush of expatriate contractors working in unknown conditions adding their additional profits mark. In order to reverse this trend and avoid feeling of frustration amongst local contractors and designers, the following basic tactics are suggested.

(a) The Government should negotiate with donors more strongly to ensure that aid is in the form which not only produce a profit but also produces at a price which the
economy can afford and buy a method which enhances the capability of the local construction industry.

(b) The construction industry should be encouraged by the Government to develop so that it is able to undertake the design and construction of substantial projects, increasingly.

(c) It is suggested to bring changes in implementation of the requirement that a certain specified percentage of work be left to local contractors by setting limit under which the tenders do not have to go to international tender. If there is a limit, progressive lifting of the limit letting management (only) contracts to expatriate contractors with main contracting organisations become local contractors for design and execution, will help the local contractors.

xi) Strategic management practices

Strategies decide success and survival of companies and industries in competitive environment. Strategic Management (SM) practices in construction industry will have significant effects on success, structure and management practices. Graphical forms for definition of strategic management, strategic management process and a conceptual model of a formal SM system are suggested in exhibit 8.1, 8.2 and 8.3 respectively, which will help to understand this dynamic domain and identify the sector which are likely to benefit the most from advances in information system. SM and
particularly strategic planning are very creative process with lot of human interaction and hence defy any systematisation. But an effort by the construction managers to implement and produce results, will help the industry in the long run to compete globally.