Chapter -1

Introduction

1.1 Overview of Indian Public Sector

Central and state Public Sector Undertakings (PSUs) or Public Sector Enterprises (PSEs) plays a prominent role in India’s industrialization and economic development. Since independence, various socio-economic problems needed to be dealt with in a planned and systematic manner. A predominantly agrarian economy, a weak industrial base, low savings, inadequate investments and lack of industrial facilities called for state intervention to use the public sector as an instrument to steer the country’s underlying potential towards self-reliant economic growth. The macroeconomic objectives of Central PSUs have been derived from the Industrial Policy Resolutions and the Five Year Plans. State-level public sectors enterprises (state PSUs) were established because of the rising need for public utilities in the states. These PSUs operated in public utilities such as railways, post and telegraph ports, airports and power and contributed significantly towards infrastructure development in India. Since its inception during the First Five Year Plan, many public sector undertakings performed exceptionally well in wealth creation for the country.

Many Central PSUs, particularly the Maharatna, are already global players matching the best global firms in their field of operations. One of the important reasons for the excellent performances of Central PSUs during the recent years was the empowerment of the boards of such profit making Central PSUs by the Government leading to greater autonomy. Consequently, such PSUs have been able to effectively use this autonomy to enhance their performance and operate on commercial lines.
1.2 Structure of PSEs in India

The PSEs in India are basically categorized under four broad types based on their ownership structure. These include: department undertaking, statutory corporation, government-owned companies and autonomous bodies set up as registered societies.

- **Department undertaking:**

  Departmental undertakings are primarily meant to provide essential services such as railways. They function under the control of the respective ministries of Government of India. A departmental undertaking structure is considered suitable for activities the government aims to keep in its control in view of the public interest.

- **Statutory corporations:**

  Statutory corporations are public enterprises that came into existence by a special act of the parliament. The act defines the powers and function, rules and regulations governing the employees and the relationship of the corporation with government departments.

- **Government-owned companies:**

  Government-owned or controlled companies refer to companies in which 51% or more of the paid up capital is held by the central or any state government (partly or wholly by both). It is registered under the Indian companies act and is fully governed by the provisions of this act.

- **Autonomous bodies:**

  Autonomous bodies are set up whenever it is felt that certain functions need to be discharge outside the government set up with some amount of independences and flexibility without day-to-day interference from the
governmental machinery. These bodies are set up by the concerned ministries or their departments and are funded through grants-in-aid, either fully or partially, depending on the extent which institutes generate internal resources of their own. These grants are regulated by the Ministry of Finance through their instructions. They are mostly registered as societies under the ‘Societies Registration Act’ in certain cases they have been set up as statutory institution under the provisions contained in various acts.

1.3 Evolution of public sector undertaking in India

Public sector enterprises in India have grown from only five enterprises post-independence and with an investment of 0.3 bn in the year 1951 to 249 enterprises as on Mar 31, 2010. Aggregate investment in Central PSUs has been increasing over the years. Total investment, including equity plus long-term loans of Central PSUs went up from 5,135.32 billion in FY09 to 5799.20 billion in FY10, growing 12.93%.

As on Mar 31, 2010, there were 94 mega projects costing 10 billion and above and 44 major projects costing between 1 billion and 10 billion. Overall profit of all Central PSUs stood at 925.93 billion during FY10 and dividend declared by such Central PSUs stood at 332.23 bn. The CPSEs earned foreign exchange equal 777.45 billion during the year compared with 742.06 billion in FY09.

The evolution of PSUs can be divided into three distinguished phases:

1 The pre-independence era

2 The post-independence era

3 The post-liberalization period.
The fourth period could perhaps be the one following the recent global economic crisis. During the pre-independence era there were few public enterprises, namely the railways, the posts and telegraph, the port trust, All India Radio and the ordinance factories, among few other government managed enterprises.

During the post-independence era, the Industrial Policy Resolution 1956 was implemented. Moreover, several strategies specific to the public sector were defined in policy statements in 1973, 1977, 1980 and 1991. The post liberalization era which commenced from 1991 saw the Government introducing the concept of Maharatna, Navratna and Miniratna to accord greater financial and managerial autonomy with the aim of incurring higher capital expenditure apart from forming Joint Ventures within the country as well as outside.

Public Sector or the PSEs primarily constitute the corporate bodies where 51 percent or more equity is held by the government, created under the special acts of legislature, or registered under the Companies Act, 1956.

PSU companies are divided into three categories:

1. Maharatna
2. Navaratna
3. Miniratna

1.3.1 Maharatna companies

In 2009, the government established the Maharatna status, which raises a company's investment ceiling from Rs. 1,000 crore to Rs. 5,000 crore. The Maharatna firms can now decide on investments of up to 15 per cent of their net worth in a project; the Navaratna companies could invest up to Rs 1,000 crore without explicit government approval. Refer Figure - 1.1
Eligibility Criteria

The six criteria for eligibility as Maharatna are

1. Having Navratna status.

2. Listed on Indian Stock Exchange with minimum prescribed public shareholding under SEBI regulations.

3. An average annual turnover of more than Rs. 20,000 crore during the last 3 years. Earlier it was Rs 25,000 Crore.

4. An average annual net worth of more than Rs. 10,000 crore during the last 3 years. Earlier it was Rs. 15,000 crore.

5. An average annual net profit after tax of more than Rs. 2500 crore during the last 3 years. Earlier it was Rs. 5000 crore

6. Should have significant global presence/international operations.

List of Maharatna Companies

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Name of Organization</th>
<th>No. of Employees</th>
<th>Revenue US$(billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coal India Ltd.</td>
<td>3,71,546</td>
<td>▲14</td>
</tr>
<tr>
<td>2</td>
<td>Indian Oil Corporation Ltd.</td>
<td>36,198</td>
<td>▲76.05</td>
</tr>
<tr>
<td>3</td>
<td>NTPC Ltd.</td>
<td>26,000</td>
<td>▲12</td>
</tr>
<tr>
<td>4</td>
<td>Steel Authority of India Ltd.</td>
<td>1,31,910</td>
<td>▲8.4</td>
</tr>
<tr>
<td>5</td>
<td>Bharat Heavy Electricals Ltd.</td>
<td>46,274</td>
<td>▲9.07</td>
</tr>
<tr>
<td>6</td>
<td>Gail (India Ltd.</td>
<td>3994</td>
<td>▲6.9</td>
</tr>
</tbody>
</table>

Figure - 1.1
1.3.2 Navratna Companies

Navratna was the title given originally to nine Public Sector Enterprises (PSEs), identified by the Government of India in 1997 as having comparative advantages, which allowed them greater autonomy to compete in the global market. The number of PSEs having Navratna status has been raised, Refer Figure 1.2

Eligibility Criteria

The Central Public Sector Enterprises (CPSEs) fulfilling the following criteria are eligible to be considered for grant of Navratna status:

1. Having Schedule ‘A’ and Miniratna Category-1 status.

2. Having at least three ‘Excellent’ or ‘Very Good’ Memorandum of Understanding (MoU) ratings during the last five years.

3. Having a composite score of 60 or above out of 100 marks based on its performance during the last three years on the following six identified efficiency parameters:

4. Performance Parameters.
### List of Navratna Companies

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Name of Organization</th>
<th>No. of Employees</th>
<th>Revenue US$(billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bharat Electronics Limited</td>
<td>11961</td>
<td>▲930</td>
</tr>
<tr>
<td>2</td>
<td>Bharat Petroleum Corporation Limited</td>
<td>14,154</td>
<td>▲39.45</td>
</tr>
<tr>
<td>3</td>
<td>Hindustan Aeronautics Limited</td>
<td>33,990</td>
<td>▲2.2</td>
</tr>
<tr>
<td>4</td>
<td>Hindustan Petroleum Corporation Limited</td>
<td>11,226</td>
<td>▲34.44</td>
</tr>
<tr>
<td>5</td>
<td>Mahanagar Telephone Nigam Limited</td>
<td>45,000</td>
<td>▼788.7 million</td>
</tr>
<tr>
<td>6</td>
<td>Oil India Limited</td>
<td>8634</td>
<td>▲3.2</td>
</tr>
<tr>
<td>7</td>
<td>Power Grid Corporation of India Limited</td>
<td>10,000</td>
<td>▲2.3</td>
</tr>
<tr>
<td>8</td>
<td>Rashtriya Ispat Nigam Limited</td>
<td>16400</td>
<td>▲1.8</td>
</tr>
<tr>
<td>9</td>
<td>Rural Electrification Corporation Limited</td>
<td>600</td>
<td>▲1.8</td>
</tr>
<tr>
<td>10</td>
<td>Shipping Corporation of India Limited</td>
<td>3250</td>
<td>▲670 million</td>
</tr>
<tr>
<td>11</td>
<td>National Building Construction Corporation</td>
<td>2227</td>
<td>▲35.95 billion</td>
</tr>
</tbody>
</table>

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**1.3.3 Miniratna Companies**

In order to make the public sector undertaking more competitive and efficient as a policy objective, it was decided by the government to allow increased
autonomy and transferring of power to the profitable enterprises. Thus the
government created another category called Miniratna. Miniratna can also
enter into joint ventures, set subsidiary companies and overseas offices but
with certain conditions. In 2002, there were 41 government enterprises that
were awarded Miniratna status.

1. Category I

This designation applies to PSEs that have made profits continuously for the
last three years or earned a net profit of Rs. 30 crore or more in one of the
three years. These Miniratna granted certain autonomy like incurring capital
expenditure without government approval up to Rs. 500 crore or equal to their
net worth, whichever is lower.

2. Category II

These categories include those PSEs which have made profits for the last three
years continuously and should have a positive net worth. Category II
Miniratna has autonomy to incurring the capital expenditure without
government approval up to Rs. 300 crore or up to 50% of their net worth
whichever is lower.

1.4 Role of PSUs in Indian economy

The contribution of PSUs in terms of turnover to the GDP has range between
20-25 percent during FY 2011 and accounted for around 20.6 percent of the
country’s GDP in FY 2011.

The growth of PSUs has been in line with the overall economic growth of
India, recording a CAGR of 12.1 percent as against the GDP growth rate of
15.7 percent CAGR during FY 2005-2011 (at current market price). The decline
in the turnover and hence the contribution to GDP during FY 2010 and FY
2011 was primarily on account of reduction in the sales of refined petroleum,
steel, fertilizer and telecom companies whereas the turnover of the companies in other sectors (including transportation and power generation) increased.

1. Performance of PSUs during the last seven years (FY 2005-FY 2011)

The performance of PSUs during financial year financial year 2005-2011 is explained. The turnover, total income and net profit have increased at a CAGR of 12.1 percent, 12.6 percent and 5.1 percent respectively during financial year 2005-Financial year 2011. Though the pressure on their profitability was evident in a decline in their net profit margin from 8.7 percent in FY05 to 6.2 percent in FY 2011 (5.4 percent in FY2011).

2. Market share of PSUs across industry verticals

Despite the fall in market share after opening up of several sectors for private investment, CPSUs continue to hold across several industries which have been depicted two highlights the document role the PSUs play across sectors as a measure of the document output.

The CPSUs have main tend complete monopoly the other sectors where they have major share in domestic and national output (including imports) are coal, petroleum, telecommunication, power generation and fertilizer.

3. Areas for improvement

While the PSUs have shown promising figures with respect to the performance and market share across industries over the years, there some indicators drawn from their performance in FY2011 which suggest there is scope for improvement. The details of the same are discussed below.

1. The cumulative impact of rise in raw material cost, power and fuel expenses and interest rates led to a significant slowdown in overall net profit growth of the CPSUs across all segments during FY 2011.
2. Percentage of disinvestment target achieved went down from nearly 57 percent in FY 2011 to 35 percent in FY 2012. This slowdown in the PSU disinvestment can be attributed to the recurrence of an uncertain global economic situation to the fallout euro-zone crisis.

Hence, it is imperative for the CPSUs to mobilize internal resource and assets, improve operational efficiency, invest in innovation, improve customer services in order to survive and sustain the negative fallout of various global and India economics measures.

1.4.1 Enablers

1. **Issuance of sustainable development guidelines**

Memorandum of understanding (MoU) guidelines of 2010-11 awarded a 5 percent mandatory to sustainable development, thereby forcing to identify areas of concerns / potential.

2. **Increase focus on commercial interests**

CPSUs are now looking at contemporary business model and transformation strategies such as joint ventures, mergers and acquisitions. Public Private Partnership required competing on level playing fields with the private sector.

3. **Restructuring of sick PSUs**

The government has set up a board for reconstruction of public sector enterprises (BRPSE) in December, 2004 to advise the government, inter alia, on the measures to restructure/revive, both industrial and non-industrial CPSUs.
1.5 Consultants:

Consulting is derived from Latin word *consultare* which means “to discuss” and words such as *consul* and *counsel* are also derived from this Latin word.

Consultant is a professional who provides advice in a particular area of expertise. Consultant is expected to be an expert or a professional in a specific field and has wide knowledge of the subject matter.

Consultant can be an individual or a firm who provide professional service to multiple and changing clients. Through this profession clients get an advantage of getting an access to deeper level of expertise than would be feasible from in-house capability or knowledge and they can procure as much service from consultant as derived.

The consulting is changing at very rapid rate the way it used to perform in a conventional way. In today’s time the complexities of projects have assumed not only different dimensions but the expectations of clients are that the deliverables should not be limited to recommendatory in nature but should be implemented and should meet bottom line requirements of the business. In fact demands of client from consultants have changed from conventional consulting to high impact consulting.

Consultant – Client relationships are very sensitive and require work, commitment, empathy, and trustworthiness. Good relationship helps in building these values. Seems a bit difficult to see sales and being honest in the same sentence therefore a complete course or a process has been confined into a management program Customer – Relationship – Management i.e. CRM.

CRM is a concept used by companies to manage their relationship with customers, including the capture, storage and analysis of the customer information. In order to take this proactive step, it is necessary to make the
customer a priority and have sufficient information on each individual and their history with the company.

1.5.1 Types of Consultants operating in India

The opportunities for consultancy in India increased enormously as Indian economy is on the fulcrum of an increasing growth curve. Lot of Foreign Direct Investment (FDI) has been done in India and lot of sectors either in private or PSU has been benefited from the new transfer of technologies or knowledge. However in India, the demand for the consultancy services is mostly derived for PSU specific sector investment plans.

After the year 1991, policy of Govt. of India to open the economy has changed not only the competition in the market, but also creates conditions such that the rival pushes hard themselves to sustain the positions and profitability.

Lot of organizations, tend do to best from the others, takes the consultancy in technical & management field from the consulting firms, and hence create the huge opportunities to the consulting firms in India.

As the demand of the consulting services start growing in India, lot of opportunities for the consulting firms to capture the Indian market. In Indian scenario two types of consultants have proved to be useful one technical consultant and second management consultants.

Technical consultants are carrier of technologies and technical services. Technical consultants can arrange or facilitates acquisition of proper technologies. Consultants play a key role of fostering commercialization of technologies through the following ways:

1. Creating a demand for development of appropriate technology.

2. Creating expertise in detailed engineering for scale-up of technology.
3. Bridging the gap required to convert technology from bench scale to commercial scale.


5. Assessing the financial risks in the technological implementation.

6. Commercialization and upgradation of technology.

Successful innovation doesn’t only imply the development of a new technology but also a new application of an existing technology. A consultant may also help in identifying a marketable product that may be new, with enormous market potential, but may be involve existing technology.

Locally in India, technical consulting capabilities have increased over the years to also include data dissemination through national / international databases which help in identifying competent technology partners and clients.

Negotiation of fair and equitable technology transfer agreements, royalty payments and other legal aspects of technology transfer are increasingly being handled by local consultants.

Management consulting services on the other hand concentrates on various aspects of organizations for running the business. Services of management consultants are hired by customers are mostly to take care of strategic aspects rather than physical aspects of the business.

Management consulting is also multidisciplinary with wide range of services. Expertise of management consulting is distinguished based on functions rather than technology. In India, management consulting is a growing business, because lots of organizations in India are growing and do require the services of management consulting.

Some examples of domain of management consulting are as follows:
1. Business and investment strategies.

2. Financial planning and management services

3. Various aspects of Human Resource management like recruitment, Compensation, packages, performance evaluation, motivation, retention, skill development etc.

4. Various aspects of Marketing Strategies like Launching of product, Advertising, etc.

5. Various aspects of Financial Strategies like Cash flow, Budget, Capital, Costing etc.

6. Various aspects of Corporate Planning Strategies like PESTEL (Political, Economical, Social, Technological, Environmental and Legal).


10. Mergers, Joint Ventures etc.

1.5.2 Role of Consultants in PSU:

The major market for these consulting firms are those organizations, who are aggressively moving ahead with the economy growth of India, i.e. PSU (Public Sector Undertaking).

The PSUs specially hire lot of consulting firms for in following areas to sustain the standings, continuously increasing the profit, maintaining the quality of the product and all these with low price requires a lot of augmentation of the current system, best use of artificial, natural and human
resources, learning new technology from whom who already had this, upgradation of the current system and introduction of the new system, where it seems necessary is required.

Indian PSUs hiring both types of consultants i.e. Management consultants and Technical consultants depending upon the requirement.

1. Business Management Consulting; specially in the field of
   1. HR
   2. Finance
   3. Marketing
   4. Strategy
   5. Planning

2. Technical consulting; specially in the variants of
   1. EPC (Engineering Procurement Construction)
   2. FEED (Front End Engineering Design)
   3. HVAC (Heat Ventilating & Air Conditioning)
   4. BOT (Built Operate Transfer)
   5. ICT (Information & Communication Technology)
   6. PPP (Public Private Partnership)

PSUs (Public Sector Undertaking) implicitly took the expert view in the projects for the feasible study for the project, project management plan, project schedule plan, project cost plan, project risk plan, project execution work and project procurement plan to save the cost, time of the project and maintain the quality of the product.

PSUs (Public Sector Undertaking) for the augmentation of their present setup, hire the consultants in technical and management field for the specific task with limited duration known as projects.
Organizations once look for the consultants or consulting firms, they have to go through the selection criteria of the consultants, based upon the requirement of the said organization and capability of the consultants. [8] [9] [10] [11] [12].

1.5.3 Need of Consulting in PSU

The decision of hiring the consultant by a PSU depends upon the various factors and consultation with all the stakeholders in the PSU. Here we are furnishing the various considerations of PSU that lead to engagement and award of a consultancy assignment.

1. Something First time in PSU

When a PSU decides to undertake an activity, which it never done before, it would need someone to guide it and take it through the process first time, so that the PSU learn and do it thereafter. It is here that a consultant who has expertise and experience of doing that kind of activity in the past would be help to PSU.

2. Unsuccessful tries of PSU

Due to wrong process, strategies or lack in know how of the technology many a times a PSU embark upon a new initiatives on its own but failed, in such situations PSU have a option either to reject the initiative or take expert opinion from the external agencies like consultants, who had already helped other organizations in such a situation.

3. Lacks of Competencies of PSU in that Area

PSU will only engage a consultant when it find that internally it don’t have the capability to meet the said objective. The areas in which the PSU need
information no one in the organization have that and require external agency to help it.

4. When it is one time Activity

Most of the PSUs are of specialized industry and have the expertise in their own area, however a situation arise, where it have to perform an activity, which is out of the domain area of their expertise and also which is not likely to be recurring, the PSU usually engage consultant as against engaging a full time employee.

5. When Urgency with Lack of time

PSU sometimes also seek help of consultants when it may have the competence to do what it desires the consultant to do but have set their priorities on other tasks. Now if the PSU has to meet the targets of time set by senior management or budget utilization, and internal resources are unable to cope up with the priorities, the PSU would tend towards engaging consultant to meet the targets.

6. Lack of Resources

In a scenario where, when a PSU may have the knowledge of what and how but may not have the resources to get the job done in the time frame targeted. Here the issue is neither competency nor time but it is resources like man, machine etc. which forcing the PSU to hire the services of consultant.

7. When PSU wishes to establish credibility

Sometimes it is the need to establish objectivity and transparency to in the process that PSU engage consultants. To gain the faith of the stakeholder and create the credibility in the market, a PSU usually hire a world renowned multinational consultant.
8. **Requirement of Funding Agency**

Many a times project funding agencies expect consultants to be appointed by a PSU for various activities like DPR (Detail Project Report), FR (Feasibility Report) preparation, impact assessment etc. This is quiet normal in projects funded by multilateral agencies, namely World Bank, ADB etc.

9. **When PSU want to do something different**

When the PSU wants to do something different out of box, not done by anyone, then it looks for consultant, who can sit back and come up with innovative ideas to do things differently and can understand PSU expectations and come back with options.

10. **When PSU want maximum efficiency and economy**

When the objective of the PSU is to achieve maximum efficiency implementation of the project at minimum cost, one of the ways is to engage consultants. Engagement of consultants helps in getting the best expertise on the subject with total accountability for delivery as per schedule planned by the PSU.

11. **When PSU seeks transfer of knowledge & skills**

Projects where one of the requirements is to transfers of knowledge and skills to the execution team of PSU. The consultant has to play crucial role in technology transfer and helping the recipient PSU to implement execution.

12. **When PSU mitigate risk**

When a PSU is taking a project which evolves heavy investments and does not have the past experience or confidence to do it right, the need arises to engage a consultant who have executed the similar kind of project.
13. **If expert know-how is needed**

Experts are those who are recognized as a reliable source and who has the ability to judge and take correct decisions. PSU although have experienced team but may not have a proper knowledge on particular areas to solve business problem and thus lack behind and as such hire a consultant who could guide and give expert advice to resolve these problem.

Consultants are hired to provide a “short-cut” to know-how, knowledge and information that does not exist in the organization. Consultants provide a professional service that does not exist in the organization, or that is needed for a specified period of time. Consultants help to provide solutions to specific challenges and situations and to validate ideas that have already been created in the organization.

As a whole, the responsibility of the consultants is to add value to every stage of the project lifecycle.

14. **If there is a lot of uncertainty about how to proceed on a project**

A consultancy is a firm with knowledge and experience in the specialized area of assisting organizations to improve their practice of project, program and/or portfolio management. The areas these firms focus on also include the supporting environment and necessary leadership that enables projects and programs to accelerate the implementation of an organizations’ strategy and the achievement of business results.

Firms face lots of uncertainties as how to proceed on a project. They couldn’t decide their objective and also couldn’t plan their project structure, team structure, and budget. Firms then hire consultants who have the experience and with the help of their skilled employees organizations control and execute their projects in an efficient and professional manner, contributing to the quality of the deliverables and the timely execution of tasks.
15. A problem has remained unsolved for a long time

There are certain areas where problems have remained unsolved and consultants are hired for solving these problems. The organization has limited or no expertise in the area of need, for example, to develop a new product or program for customers and clients. The time of need is short-term, for example, less than a year, so it may not be worth hiring a full-time, permanent staff member.

The organization’s previous attempts to meet its own needs were not successful, for example, the organization developed a Strategic Plan that was never implemented. Organization members continue to disagree about how to meet the need and, thus bring in a consultant to provide expertise or facilitation skills to come to consensus.

All the projects do have unresolved issue(s) that needs an outside source for resolution. It is the function of Project Management Consultants (PMC) to provide a staff of problem solvers, option providers, and counter measure developers who can help to work through the issue that is presenting difficulties in project execution. A straight forward assessment of the situation with suggestions that will be thought through with end result in mind should be provided by the PMC.

16. PSU operator feels a situation requires specialized knowledge

Consultants are hired for profitable purposes and are hired only to solve business problem. Consultants are hired when the organization feels that they need expertise knowledge that they don’t have and could be a threat in future.

Consultants help to provide end to end solutions and also provide new, specialized and emerging technologies to their customers. Consultants work with the different vendor in providing the technical skills required to introduce and service new and emerging technologies into the market.
17. A generally profitable idea needs fine tuning

Hiring a consultant can be a very profitable move. When a generally profitable idea needs fine tuning or there's a need to confirm issues or concerns where there may be some doubts about, bringing in an outside view may just be about the best decision made.

Consultants provide whole range of services both, technical and management consultancy services. The services include activities during all phases of a project/ scheme including, planning, conceiving, designing, engagement, implementation and evaluation.

18. An unbiased or a fresh insight is required to solve an old problem

Often times, a problem has remained unsolved and an owner/investor feels the situation requires specialized knowledge. When this is the case, it's a good time to call for another professional opinion, because an unbiased and fresh insight is usually required to solve an old problem.

Consultant’s role is to provide companies with advice on their goals and future direction so that they can plan effective strategies for growth. These consultants use expertise, industry experience and analysis to help their clients identify strategies that will increase revenue and market share by improving competitive advantage. Strategy consultants can help companies grow faster and increase the value of their business.

19. An overhaul is needed on an existing concept

The time to hire a consultant is when there is a need to modify and individualize popular concepts to make them appear fresh and innovative. When planning a new operation and minimizing the challenges while facing with new openings. When major expansion or diversification requires that
management, operations and production be scaled from small to large and an interim team is necessary to lead that growth.

1.5.4 Benefits of PSUs collaboration with Consultants

A consultant can bring a high level of technical knowledge and expertise and services to the company. The solutions they deliver often more than pay for themselves in reduced costs, increased productivity, and other tangible benefits, and there are other benefits to hiring a consultant, such as reduced/eliminated payroll taxes, no pension or profit-sharing expenses, and the flexibility to use their skills on an as-needed basis.

In addition, consultants can often see the “big picture” objectively, identifying opportunities for improving business that firm may not have considered.

The benefits of hiring consultants are as follows

1. **Better use of expert employees**

   Introduction of consultants help companies to have an added feather of expertise. Consultants help to improve performance and productivity. Consultants have skills and abilities that are not available in organization. They can be engaged to provide special talent as needed and can often pass those skills on to regular staff.

2. **Successful execution of Projects**

   Companies find difficulty in executing projects due to lack of experience /lack of resources. Consultants play a vital role in overcoming these problems. Consultants have skills and methodology.

   If companies don’t have in-house expertise, say sales process or strategy development, it’s very much essential to bring in an outside expert. If consultant is the right kind of partner, customer will learn
those skills and be able to continue using those tools after he or she is
gone.

3. **Roadmap to solve unsolved problems**

Consultants use their experienced team to solve problems which
company couldn’t solve for years. They use their experience and
knowledge to solve these problem providing possible solutions/provide
training to the staff member on areas where they lack knowledge.

4. **Provide business development solution**

Consultants provide business development solution to companies for
eg: the development of new markets and new revenue stream
development, new sales development, Ongoing business development,
training and motivation of staff, opening up of new markets & the
gaining of new business in those new markets quickly, day to day tasks
that detract firm from pushing their business forward, practical hands
on help when and where required.

5. **Economic and more productive**

After add in overhead and management costs, hiring consultants is
often less expensive. Highly skilled professionals are often more
productive than in-house staff. People who freelance their skills
usually have many years of solid experience to draw on. Often older,
they are less distracted by outside concerns and have acquired a
healthy work ethic.

6. **Cost avoidance**

Using consultants at the beginning of a project or change in business
methods can often save hundreds of thousands of dollars down the
road. Good consultants have seen what works and what doesn't work. Their experience can steer firm away from pitfalls that firm may not know.

1.6 Project Management

A project is an effort undertaken to create a unique product or service. The temporary nature of products indicates a definite beginning and end. The end is reached when the project’s objectives have been met or the project is terminated because of not meeting the objectives as required.

Project management is the art of organizing the components of a project, whether the project is developing a new product or launching of a new service or marketing of the product. Project management is the discipline of planning, organizing, motivating and controlling resources to achieve specific goals. The primary challenge of project management is to achieve the project goals.

Project management is the application of knowledge, skills, tools and techniques to project activities to meet the project requirements. Project management is accomplished through the appropriate application and integration of the 42 logically grouped project management process comprising the five process groups.

These five process groups are:

1. Initiation of Project

In this stage the Project Manager defines what the project is all about and what the users hope to achieve by undertaking the project. This phase also includes a list of project deliverables, the outcome of a specific set of activities. The Project Manager works with the business sponsor or manager who wants to have the project implemented and other stakeholders those who have an interest in the outcome of the project.
2. Planning of Project

First of all define the project activities. In this stage the Project Manager lists all activities or tasks, how the tasks are related, how long each task will take, and how each tasks is tied to a specific deadline. This phase also allows the Project Manager to define relationships between tasks. For example, if one task is x number of days late the project tasks related to it will also reflect a comparable delay. Likewise the Project Manager can set milestones, dates by which important aspects of the project can be met.

Define requirements for completing the project. In this stage, the Project Manager identifies how many people (often referred to as “resources”) and how much expense (“cost”) is involved in the project, as well as any other requirements that are necessary for completing the project.

The project manager will also need to manage assumptions and risks related to the project. The project manager will also want to identify project constraints. Constraints typically relate to schedule, resources, budget and scope.

A change in one constraint will typically affect the other constraints. For example, a budget constraint may affect the number of people who can work on the project, thereby imposing a resource constraint. Likewise, if additional features are added as part of project scope, that could affect scheduling, resources, and budget.

3. Execution of Project

Here the project team is being created. In this phase, the Project Manager knows how much resources and budget he or she has that can be used for the project. The Project Manager then assigns those resources and allocates budget to various tasks in the project. Then the project work begins.
4. Monitoring and Controlling of Project.

The Project Manager is in charge of updating the project plans to reflect actual time passed for each task. By keeping up with the details of progress, the Project Manager is able understand how well the project is progressing overall.

5. Closing of Project

In this stage, the Project Manager and business owner pull together the project team and those who have an interest in the outcome of the project (stakeholders) to analyze the final outcome of the project.

1.6.1 Managing Project

Managing a project typically includes:

1. Identify requirements.

2. Addressing the various needs, concerns and expectations of the Stakeholders as the project is planned and carried out.

3. Balancing the competing project constraints including, but not limited to:

   1. Scope
   2. Quality
   3. Schedule
   4. Budget
   5. Resources
   6. Risk

The specific project will influence the constraints on which the Project Manager needs to focus. These factors are related with each other in such a
way that if one of these factors changes at least one or more of the factors will get affected.

For example, if the schedule of work is to be lessened, often the budget needs to be increased so as to add additional resources to complete the same amount of work in less time.

If increase in budget is not possible, then scope or quality of the product may be reduced to deliver the product on time. Also there is a risk in changing the requirements of the project. The project team must be able to assess the situation and balance the demands in order to deliver a successful project.

1.6.2 Relationship between Project, Program & Portfolio Management

1. Project Management

We all know what a project is. A project is defined as “A temporary endeavor undertaken to create a unique product or service”. A project has a specific start and end date with a clearly defined deliverable produced. Project Management is the application of knowledge, skill, tools, techniques and processes to effectively manage a team towards the final delivery of the product. In real life this means the management of a specific project (e.g. implementing a new accounting system).

This project will start on a specific date and end according to the project plan with the delivery of new accounting system.

Project management is the art of organizing the components of a project, whether the project is developing a new product or launching of a new service or marketing of the product. Project management is the discipline of planning, organizing, motivating and controlling resources to achieve specific goals. The primary challenge of project management is to achieve the project goals.
Project management is the application of knowledge, skills, tools and techniques to project activities to meet the project requirements.

2. Program Management

A program is a group of related projects managed together to obtain specific benefits and controls that would likely not occur if these projects were managed individually. While Project Management focuses on delivering the specific objectives of the project, Program Management focuses on achieving the strategic objectives and benefits of the integrated program.

The implementation of an Enterprise Resource Planning (ERP) system is often performed as a program. The ERP system will include several specific individual projects (i.e. Finance, Purchasing, Materials Management etc.). Each of these specific projects should be run by a Project Manager using a formal Project Management approach. The overall grouping of these related projects will be run by Program Manager.

The Program Manager will be responsible for the rolling up of information from each of the projects and ensuring the overall program is driving towards achieving the business objectives. This requires each of the Project Managers to manage their individual projects in a fashion that easily integrates into the overall program plan.

The Program Manager is also responsible for tracking and analyzing across the entire program. This involves considering risk management strategies not only for each individual project but also analyzing the “collective” risk across the program. The same goes for Quality Management, Schedule Management, Cost Management, Communications etc.
3. Portfolio Management

A portfolio is a collection of projects or programs grouped together to facilitate effective management efforts to meet strategic business objectives. These projects or programs are not necessarily interdependent or directly related. Portfolio Management is the centralized management of multiple projects, programs and possibly portfolios.

This typically includes identifying, prioritizing and authorizing projects and programs to achieve specific strategic business objectives. The group of projects and programs within a specific business division could be an example of a portfolio.

This might include the implementation of a Customer Relationship Management (CRM) program, Sales Data Warehouse program, Commission Tracking project and a project to launch a new product within the Sales & Marketing Division.

In this case the Portfolio Manager is managing this broad range of somewhat unrelated programs and projects towards a specific set of strategic divisional business objectives.

The Portfolio Manager will become very involved in the front end activities of identifying, prioritizing and initiating projects and programs. All of these activities will be within the context of achieving the strategic business objectives.

The Portfolio Manager will also track these projects or programs to ensure they continue to deliver towards the expected strategic outcome in terms of quality, cost, schedule and scope. They will also be responsible for analyzing and tracking project management elements across the entire portfolio looking for ways to leverage economies of scale, reduce risk and improve the probability of successfully delivering expected business results.
<table>
<thead>
<tr>
<th>Scope</th>
<th>Projects</th>
<th>Programs</th>
<th>Portfolios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projects have defined objectives. Scope is progressively elaborated throughout the project life cycle.</td>
<td>Programs have a larger scope and provide more significant benefits.</td>
<td>Portfolios have a business scope that changes with the strategic goals of the organization.</td>
<td></td>
</tr>
</tbody>
</table>

| Change | Project manager expect changes and implements process to keep the changes managed and controlled. | The program manager must expect changes from both inside and outside the program and be prepared to manage it. | Portfolio managers continuously monitoring changes in the broad environment. |

| Planning | Project managers progressively elaborate high-level information into detailed plans throughout the project life cycle. | Program managers develop the overall program plan and create high-level plans to guide the details of planning at the component level. | Portfolio managers create and maintain necessary process and communication relative to the aggregate portfolio. |

| Management | Project manager manages the project team to meet the project objectives. | Program managers manage the program staff and the project managers. They provide vision and overall leadership. | Portfolio managers may manage or coordinate portfolio management staff. |

| Success | Success is measured by product and | Success is measured by the degree to which | Success is measured in terms of aggregate |
1.6.3 Projects and Strategic Planning

The projects and programs that businesses pursue often vary greatly from one company to another, even among businesses that operate in the same industry. The projects businesses choose to pursue are determined in part, by strategic planning. Strategic planning describes a process where managers form business objectives and create a strategy to achieve those objectives.

Strategic planning is a fundamental part of business management because it guides the overall direction of a company. During the strategic planning process, managers begin by creating a mission which acts as the guiding purpose of the business and goals that fulfill the mission. Managers then study the business environment that they face and create a business strategy that they believe will best allow the company to fulfill its goals and its mission.
The projects and programs that a business pursues are the implementations of a strategic plan. In other words, projects are the concrete actions that a business takes to execute its strategic plan. For example, during strategic planning, managers might see a certain weakness in a competitor that they might be able to exploit to gain more customers.

As a result, the business might launch a new advertising campaign pointing out the weakness. In this case, the advertising campaign is a project that is implemented as a result of the strategic planning process.

A SWOT analysis is a strategic planning tool that business managers use to help formulate plans and determine what projects to pursue. A SWOT analysis involves creating a list of a company’s Strengths, Weaknesses, Opportunities and Threats, and using those lists to form decisions about strategy and future projects.

Projects are often utilized as means of achieving an organizations strategic plan. Projects are typically authorized as a result of one or more of the following strategic considerations:

1. Market demand.
2. Strategic opportunity or business need.
3. Customer request.
4. Technological advance.
5. Legal requirements.

Projects within programs or portfolios are a means of achieving organizational goals and objectives.

1.6.4 Project Management Office

A Project Management Office (PMO) is a group or department within a business, agency or enterprise that defines and maintains standards for project
management within the organization. The Project Management Office strives to standardize and introduce economies of repetition in the execution of projects.

The PMO is the source of documentation, guidance and metrics on the practice of project management and execution. In some organizations this is known as the Program Management Office.

A Project Management Office may be delegated the authority to act as an integral stakeholder and a key decision maker during the beginning of each project, to make recommendations or to terminate projects or take other actions as required to keep business objectives consistent.

In addition, the PMO may be involved in the selection, management and deployment of shared or dedicated project resources.

The primary function of PMO is to support managers in a variety of ways which may include, but are not limited to:

1. Managing shared resources across all projects administered by the PMO.
2. Identifying and developing project management methodology, best practices and standards.
3. Coaching, mentoring, training and oversight.
4. Monitoring compliance with project management standards, policies, procedures and templates via projects audits.
5. Developing and managing projects policies, procedure, templates and other shared documentation.
6. Coordinating communication across projects.
1.6.5 Project Management and Operations Management

Project management is the art of organizing the components of a project, whether the project is developing a new product or launching of a new service or marketing of the product. Project management is the discipline of planning, organizing, motivating and controlling resources to achieve specific goals. The primary challenge of project management is to achieve the project goals.

Project management is the application of knowledge, skills, tools and techniques to project activities to meet the project requirements.

Operations management is an area of management concerned with overseeing, designing and controlling the process of production and redesigning business operations in the production of goods or services. It involves the responsibility of ensuring that business operations are efficient in terms of using as few resources as needed and effective in terms of meeting customer requirements.

It is concerned with managing the process that converts inputs (in the forms of materials, labor and energy) into outputs (in the form of goods or services).

Operations Management is a part of Project management, but there are few differences between them. These differences are as follows:

1. On the basis of scope constraints

The typical view of project management is that a project is temporary while operations have more permanence or business as usual. For instance, renovating a store is a project while procuring goods and selling these are operations.

Considering management style perspective from the point of view of the store owner who hires a contractor to renovate a store, the renovation is a project. However, from the point of view of the contractor who specializes in store
renovations, the contract for the store's renovation is part of its operations as a service suite.

2. On the basis of time constraints

Projects have definite beginnings and endings while operations are typically repeated over time. For instance a business owner who hires a systems integrator to install, customize and roll-out a customer relationship management system or CRM in several of his office branches will usually require a definite date of deployment and a definite date of turnover after the roll-out.

From the point of view of the business owner, the CRM is a project. Meanwhile from the point of view of the systems integrator, the CRM deployment is operations as the system integrator has deployed similar CRMs to number of clients.

3. On the basis of budget constraints

The traditional view of the budget in project management is that a project has to stick with a definite budget while operations have to maintain a specific profit margin, for instance an institutional client who hires a consulting firm to implement a specialized system for its operations will allot a specific cost for the project as detailed in its Request for Proposals.

On the other hand, the consulting firm will need to ensure a 30% profit margin on the project and work on the remaining 70% as its cost of operations with taxes and all as part of its cost structure.

1.6.6 Role of Project Manager

A project manager is a professional in the field of project management. Project managers can have the responsibility of the planning, execution and closing of
any project, typically relating to construction industry, architecture, aerospace and defense, computer networking, telecommunications or software development. Many other fields in the production, design and service industries also have project managers.

A project manager is the person responsible for accomplishing the stated project objectives. Key project management responsibilities include creating a clear and attainable project objective, building the project requirements, and managing the constraints of the project management triangle which are cost, time, scope, and quality.

A project manager is often a client representative and has to determine and implement the exact needs of the client, based on knowledge of the firm they are representing. A project manager is the bridging gap between the production team and client.

So a project manager must have a fair knowledge of the industry they are in so that they are capable of understanding and discussing the problems with either party. The ability to adapt to the various internal procedures of the contracting party, and to form close links with the nominated representatives, is essential in ensuring that the key issues of cost, time, quality and above all client satisfaction can be realized.

The term and title “Project Manager” has come to be used generically to describe anyone given responsibility to complete a project. However, it is more properly used to describe a person with full responsibility and the same level of authority required in completing a project. If a person does not have high levels of both responsibility and authority then they are better described as a project administrator, coordinator, facilitator or expeditor.

The role of project manager is different from a functional manager or operations manager. Functional manager is focused on providing management
supervision for an administrative area whereas an operations manager is responsible for the core business.

Depending upon the organizational structure, a project manager may report to a functional manager. In other cases he/she may report to a portfolio or program manager that is ultimately responsible for organizations wide projects.

Many of the tools and techniques for managing projects are specific to project management. However understanding and applying the knowledge, tools and techniques that are recognized as good practices is not sufficient for effective project management. In addition to any area specific skills and general management proficiencies required for the project, effective project management that the project manager possess the following characteristics:

1. **Knowledge**: - This refers to what the project manager knows about project management.

2. **Performance**: - This refers to what the project manager is able to do or accomplish while applying their project management knowledge.

3. **Personal**: - This refers to how the project manager behaves when performing the project or related activity. Project manager must possess the leadership quality to guide the project team while achieving project objectives and balancing the project constraints.

### 1.6.7 Enterprise Environmental Factors for Project Success

Enterprise environment factor refers to both internal and external environmental factors that surrounds or influence a project’s success. These factors may come from any or all of the enterprises involved in the project. Enterprise environmental factors may enhance or constrain project
management options and may have a positive or negative influence on the outcome. They are considered as inputs to most planning processes.

Enterprise environmental factors include, but are not limited to:

1. Organizational culture, structure and process.
2. Government or industry standards.
3. Infrastructure.
4. Existing human resources.
5. Personnel administration.
6. Company work authorization system.
7. Marketplace conditions.
8. Stakeholder risk tolerances.
10. Organization’s established communications channels.
12. Project management information system.

1.6.8 Project Life Cycle and Organization

A project life cycle is a collection of generally sequential and sometimes overlapping project phases whose name and number are determined by the management and control needs of the organization or organizations involved in the project, the nature of the project itself, and its area of application.

While every project has a definite start and a definite end, the specific deliverables and activities that take place in between will vary widely with the project. The life cycle provides the basic framework for managing the project, regardless of the specific work involved.

Projects vary according to size and complexity. No matter how large or small, simple or complex all projects can be mapped to the following life cycle structure
1. Starting the project.
2. Organizing and preparing.
3. Carrying out the project work.
4. Closing the project

This generic life cycle structure is often referred to when communicating with upper management or other entities less familiar with the details of the project. This high level view can provide a common frame of reference for comparing projects—even if they are dissimilar in nature Refer figure -1.4. The generic life cycle structure generally displays the following characteristics:

1. Cost and staffing levels are low at the start, peak as the work is carried out and drop rapidly as the project draws to a close.

2. Stakeholder influences, risk and uncertainty are greatest at the start of the project. These factors decrease over the life of the project.

3. Ability to influence the final characteristics of the project’s product without significantly affecting cost is highest at the start of the product and decreases as the project progresses towards completion.

Figure -1.4 Cost and staffing levels across the project life cycle
Here’s a graph in Figure - 1.5 that represents the cost of changes and the stakeholder influence, risk and uncertainty during the course of a typical project life cycle.

The risks and uncertainty are greatest at the beginning of the project and gradually decrease through the course of the project.

This is because risks are events which may occur at different points along the way. The further you get along the way the more of those “risk points” have been passed and therefore the risk decreases as you go along.

The stakeholder influence is the greatest at the beginning of the project as well, that is why the initiating and planning phase are so important. The cost of changes is the greatest towards the end of a project and that is one reason why the stakeholder’s ability to influence the project decreases.
With the context of the generic life cycle structure, a project manager may determine the need for more effective control over certain deliverable. Large and complex projects in particular may require this additional level of control. In such instances, the work carried out to complete the project objective may benefit from being formally divided into phases.

### 1.6.9 Product VS Project Life Cycle Relationship

#### 1. Product Life Cycle

The product life cycle represents the amount of revenue a product generates over time from its inception to the point where it is discontinued. The five stages of a product's life are development, introduction, growth, maturity, and decline. In the development stage, the product isn't being sold, so there is no revenue.

During introduction stage, sales are small as people begin to try the product. Sales increases during the growth phase and take the peak during maturity phase and eventually decline as the market shifts or better alternatives become available.

There is no set time span for a given stage. The entire cycle may last only months or a product like the refrigerator may remain in the maturity phase for decades.

#### 2. Project Life Cycle

A project life cycle measures the work that goes into a project from beginning to end. The phases in product life cycle are initiation, planning, execution and closure. During initiation phases a business goals are created and resources are assigned. During planning phase the team researches solutions to reach the project goals and creates a plan and decides timeline to complete the project.
Execution phase involves following each step on the project plan and adjusting as necessary along the way. Finally, in the closure phase, the project's final details are wrapped up and deliverable items like final reports are given to the appropriate parties.

Thus Project life cycle is the link between product life cycle and methodology used for creating the product. Further review for the product development and adaption phase can be identified based on the activities that take place during each step of the methodology applied to create or adapt the product.

Mapping the product life cycle with the project life cycle helps the management to improve performance at every point of the product life cycle and the project life cycle. It helps to detect the errors during the development of the process map.

### 1.7 Project Phases

Project phases are divisions within a project where extra control is needed to effectively manage the completion of a major deliverable. Project phases are completed sequentially; also it can overlap in some project as per the situation. The high level nature of project phases makes them an element of the project life cycle. A project phase is not a Project management Process Group.

The phase structure allows the project to be segmented into logical subsets for ease of management, planning and control. The number of phases, the need of phases and the degree of control applied depend on the size, complexity and potential impact of the project. Regardless of the number of phases comprising a project all phases have similar characteristics:

1. When phases are sequential, the close of a phase ends with some form of transfer or handoff of the work product produced as the phase deliverable. This phase end represents a natural point to reassess the effort underway and to change or terminate the project if necessary.
These points are referred to as phase exits, milestones, phase gates, decision gates, stage gates or kill points.

2. The work has a distinct focus that differs from any other phase. This often involves different organizations and different skill sets.

3. The primary deliverable or objective of the phase requires an extra degree of control to be successfully achieved.

1.7.1 Project Governance across the Life Cycle

Project governance is the management framework within which project decisions are made. Project governance is a critical element of any project since while the accountabilities and responsibilities associated with an organizations business as usual activities are laid down in their organizational governance arrangements, rarely does an equivalent framework exist to govern the development of its projects.

For instance, the organization chart provides a good indication of who in the organization is responsible for any particular operational activity. But unless an organization has specifically developed a project governance policy, no such chart is likely to exist for project development activity.

Therefore, the role of project governance is to provide a decision making framework that is logical, robust and repeatable to govern an organizations capital investments. In this way an organization will have a structured approach to conducting both its business as usual activities and its business change or project, activities.

There are three pillars of project governance. These pillars are

1. Structure

This refers to the governance committee structure as well as there being a
Project Board or Project Steering Committee; the broader governance environment may include various stakeholder groups and perhaps user groups. Additionally, there may be a Program Board governing a group of related projects of which this is one, and possibly lists of decision making group. The decision rights of all these committees and how they relate must be laid down in policy and procedural documentation. In this way the project’s governance can be integrated within the wider governance area.

2. People

The effectiveness of the committee structure is dependent upon the people that live with various governance committees. Committee membership is determined by the nature of the project, other factors come into play when determining membership of Program and portfolio boards which in turn determine which organizational roles should be represented on the committee.

3. Information

This concerns the information that informs decision makers and consists of regular reports on the project, issues and risks that have been set up by the Project Manager and certain key documents that describes the project, foremost of which is the business case.

1.7.2 Single Phase Project

Most organizations use some sort of organized methodology to manage projects. The project life cycle connects a variety of phases that are undertaken to effectively produce a product or service from start to finish. Many projects have similar phase names with deliverables, few are identical. Some projects have only one phase. These are known as single phase project. Refer Figure - 1.6.
The steps of single phase projects are:

1. Initiation of Project

In this stage the Project Manager defines what the project is all about and what the users hope to achieve by undertaking the project. This phase also includes a list of project deliverables, the outcome of a specific set of activities.

The Project Manager works with the business sponsor or manager who wants to have the project implemented and other stakeholders those who have an interest in the outcome of the project.

2. Planning of Project

First of all define the project activities. In this stage the Project Manager lists all activities or tasks, how the tasks are related, how long each task will take, and how each tasks is tied to a specific deadline. This phase also allows the Project Manager to define relationships between tasks.

For example, if one task is x number of days late the project tasks related to it will also reflect a comparable delay. Likewise the Project Manager can set milestones, dates by which important aspects of the project can be met.

Define requirements for completing the project. In this stage, the Project Manager identifies how many people (often referred to as “resources”) and how much expense (“cost”) is involved in the project, as well as any other requirements that are necessary for completing the project.

The project manager will also need to manage assumptions and risks related to the project. The project manager will also want to identify project constraints. Constraints typically relate to schedule, resources, budget and scope.

A change in one constraint will typically affect the other constraints. For example, a budget constraint may affect the number of people who can work
on the project, thereby imposing a resource constraint. Likewise, if additional features are added as part of project scope, that could affect scheduling, resources, and budget.

3. Execution of Project

Here the project team is being created. In this phase, the Project Manager knows how much resources and budget he or she has that can be used for the project. The Project Manager then assigns those resources and allocates budget to various tasks in the project. Then the project work begins.

1. Monitoring and Controlling of Project.

The Project Manager is in charge of updating the project plans to reflect actual time passed for each task. By keeping up with the details of progress, the Project Manager is able understand how well the project is progressing overall.

2. Closing of Project

In this stage, the Project Manager and business owner pull together the project team and those who have an interest in the outcome of the project (Stakeholders) to analyze the final outcome of the project.

1.7.3 Phase to Phase Relationship

When projects are multi-phased, the phases are part of a generally sequential process designed to ensure proper control of the project and attain the desired product, service or result. However, there are situations when a project might benefit from overlapping or concurrent phases.

There are three basic types of phase-phase relationships:

1. A sequential relationship, where a phase can start only when the
previous phase is complete. This sequential relationship approach reduces uncertainty, but may eliminate options for reducing the schedule.

![Diagram of project phases]

Figure – 1.6 Single phase project cycle.

2. An overlapping relationship, where the phase starts earlier before completion of the previous phase. This type of relationship may increase risk and can result in rework if a subsequent phase progress before accurate information is available from the previous phase.

3. An iterative relationship, where only one phase is planned at any given time and the planning for the next is carried out as work progress on the current phase and deliverables. This approach is useful in largely undefined, uncertain or rapidly changing environments such as research, but it can reduce the ability to provide long term planning.

The scope is then managed by continuously delivering increments of the product and prioritizing requirements to minimize projects risks and maximize product business value.
Based on the above considerations, all three relationships could occur between different phases of a single project.

### 1.8 Stakeholders

Stakeholders are persons, group or organization that has an interest or concern in an organization, who are actively involved in the project or whose interest may be positively or negatively affected by the performance or completion of the project.

Stakeholders can affect or be affected by the organization’s actions, objectives and policies. Some examples of key stakeholders are creditors, directors, employees, government (and its agencies), owners (shareholders), suppliers, unions, and the community from which the business draws its resources.

Not all stakeholders are equal. A company’s customers are entitled to fair trading practices but they are not entitled to the same consideration as the company’s employees.

An example of a negative impact on stakeholders is when a company needs to cut costs and plans a round of layoffs. This negatively affects the community of workers in the area and therefore the local economy.

Someone owning shares in a business such as Microsoft is positively affected, for example, when the company releases a new device and sees their profit and therefore stock price rises.

Stakeholders have legal decision-making rights and may control project scheduling and budgetary issues. Most project stakeholders have responsibilities to businesses that include educating developers, financing projects, creating scheduling parameters and setting milestone dates.
Project management stakeholders may have financially invested in the projects they oversee or may have non-monetary interests in the outcome of their projects. Project stakeholders may work with private companies or work on government contracts and projects. On specific government projects, project stakeholders may own the equipment and supplies but lease them to government agencies.

Stakeholders also have the duty to the companies they manage, including the responsibility to report exceeding their budgets and reporting scheduling oversights or failure to meet milestone dates. Team leaders and project managers are examples of project stakeholders. Team leaders and project managers may consist of company staff members or outside consultants specifically hired to oversee larger project issues. They may hire other professionals to oversee the smaller project issues and require their consultants to report to them on a daily, weekly or monthly basis.

**1.9 Organizational Influences on Project Management**

Organizational influences directly affect a project’s success either positively or negatively. These influences include the organization’s culture, its structure,
and its general style. Although organizational influences fall under the umbrella of enterprise environmental factors, it is important to grasp their unique importance to a project.

One of the first things a project manager must consider is the organization’s culture, those beliefs, values and traditions that define the organization’s members and how they work. Culture is an important consideration because it alone can determine the success of a project.

For example, if a stakeholder of a conservative organization wants to implement a radical new program, the project manager must take this into consideration before starting the project. In this case it is more likely that the project will meet with resistance, so one of the project manager’s most important tasks is to define the scope of work and expected deliverables.

Another organizational influence is a firm’s structure. It might be a functional organization where each employee has one supervisor and employees are grouped by department and the project manager has little authority or it could be an organization where most employees are involved in project work along with their teams and groups report directly to the project manager who has an appropriate level of authority. A third type of organization is the matrix, a combination of the functional and projectized organizations. Matrix organizations range from weak to strong with the project manager’s authority corresponding to the organization’s structure. Finally, an organization’s style affects how projects get done.

For example, an organization doing top secret government work might severely limit access to employees and resources, dramatically slowing down the project’s process. A more casual organization might allow the project manager total access to employees and any other resources required. The project manager must consider all organizational influences in order to complete a project successfully.
1.9.1 Organization Structure

Organizational structure is an enterprise environmental factor which can affect the availability of resources and influence how projects are conducted. Organizational structures range from functional to projectized, with a variety of matrix structures between them. Figure 1.8 below shows key project-related characteristics of the major types of organizational structure.

<table>
<thead>
<tr>
<th>Organization Structure</th>
<th>Functional</th>
<th>Matrix</th>
<th>Projectized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Characteristic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weak matrix</td>
<td>Strong Matrix</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Balanced Matrix</td>
<td></td>
</tr>
<tr>
<td>Project Manager’s Authority</td>
<td>Little or None</td>
<td>Limited</td>
<td>Moderate to High</td>
</tr>
<tr>
<td>Resource Availability</td>
<td>Little or None</td>
<td>Limited</td>
<td>Moderate to High</td>
</tr>
<tr>
<td>Who controls the project budget</td>
<td>Functional Manager</td>
<td>Functional Manager</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Project Manager’s Role</td>
<td>Part-time</td>
<td>Part-time</td>
<td>Full-time</td>
</tr>
<tr>
<td>Project Mgmt. Admin Staff</td>
<td>Part-time</td>
<td>Part-time</td>
<td>Full-time</td>
</tr>
</tbody>
</table>

Figure – 1.8 Organizational Influences on Projects

51
The above is a figure of a functional organization where the head is the chief executive. Under the umbrella of the chief executive, works the functional manager who coordinates the projects of the organization. Under each functional manager several staff members work.

Each staff has its own role play in the organization. The tasks allotted to each staff member of the organization are given by their respective managers. The staff member has to report about their day to day work to their superior.

Matrix organizations are a blend of functional and projectized characteristics. Weak matrices maintain many of the characteristics of a functional
organization and the project manager role is more of a coordinator or expeditor than of a true manager. Strong matrices have many of the characteristics of the projectized organization and can have full time project managers with considerable authority and full time project administrative staff. While balanced matrix organization recognizes the need for a project manager, it does not provide the project manager with the full authority over the project and project funding.

Figure – 1.10 Weak matrix Organization

Figure above represents a weak matrix organization. In a weak matrix organization project manager with only limited authority is assigned to oversee the cross-functional aspects of the project. The functional managers maintain control over their resources and project areas.

A two-dimensional management structure (matrix) in which employees are assigned to two organizational groups; a functional group based on skill sets which has a functional manager (vertical) and a specific project group where
employees report to a project manager (horizontal).

In a balanced matrix the managers have an equal level of authority with different roles. The project manager defines the skills needed for the project and the functional manager assigns personnel to fill those needs.

In balanced matrix organization a project manager is assigned to oversee the project. Power is shared equally between the project manager and the functional managers. It brings the best aspects of functional and projectized organizations. However, this is the most difficult system to maintain as the sharing of power is a delicate proposition.

![Diagram of Balanced Matrix Organization]

Figure – 1.11 Balanced matrix Organization

Strong Matrix is a type of matrix organization where the project manager has moderate to high authority and in most cases is in a full-time role. The project manager has more control over the budget and resources compared to a functional manager and PMO is generally staffed full-time.

In strong matrix organization a project manager is primarily responsible for the project. Functional managers provide technical expertise and assign
resources as needed.

Figure below is a diagram of a projectized organization. A projectized organization structure is just opposite to the functional organization structure. In projectized organization, the project manager has all the power and authority and everybody directly report to the project manager. Here, either no functional manager exists, or if he exists, he will have a very limited role.

In projectized organizations, most of the organization’s resources are utilized in the project work. These types of organizations are only interested in the project work which is undertaken for external clients. Here, the project manager has full time project team members working under him. Usually, all personnel working for a particular project are grouped together and are often co-located for the duration of the project.

![Project Coordination](image)

Figure – 1.12 Projectized Organizations
1.10 Organizational Process Assets

Organizational process assets are tools (usually document or database) that can be used as template, guidance or reference toward current project. These documents are like policies, standard or procedures or maybe best practice of the company in order to run a project.

An organization might keep a good interest and more likely to run similar projects with the last successful (proven track record) project; that's why it is a good idea to reuse the document template in order to start the next project.

Despite of storing only referenced files from last projects, an organization process assets also include the current running project's documents such as Project Charter and scope statement. That is why the collection of organizational process assets is usually called Knowledge Base of the project.
All of predecessor process group’s output will be stored in the knowledge base, for example plans, procedures, lessons learned, historical information, schedules, risk data and earned value data.

Organizational Process Assets fall into two broad categories i.e. Processes and Procedures and the Corporate Knowledge Base. The key concept is that these are assets a project manager may use for the benefit of the project. They work together with Enterprise Environmental Factors to bring those things outside the project team into focus.

Organizational process assets may be grouped into two categories:

1. **Processes and Procedures**

   The organizations processes and procedures for conducting work include but not limited to:

   1. Organization standard processes such as standards, policies, standard product and project life cycles and quality policies and procedures.

   2. Standard guidelines, work instructions, proposal evaluation network diagram and measurement criteria.

   3. Templates for example risk, work breakdown structure, project schedule network diagram. Guidelines and criteria for tailoring the organizations set of standard processes to satisfy the specific needs of the project.

   4. Organization communication requirements

   5. Project closure guidelines or requirements.

7. Issue and defect management procedures defining issue and defect controls, issue and defect identification and resolution and action item tracking.

8. Procedures for prioritizing, approving and issuing work authorizations.

2. Corporate Knowledge base

The organizational corporate knowledge base for strong and retrieving information includes but is not limited to:

1. Process measurement database used to collect and make available measurement data on processes and products.

2. Project files for example scope, cost, schedule and performance measurement baselines.

3. Historical information and lessons learned knowledge bases.

4. Issue and defect management database containing issue and defect status, control information, issue and defect resolution and action item results.

5. Financial database containing information such as labor hours, incurred costs, budgets and any projects cost overruns.

1.11 Project Management Process for a Project

Project management is the art of organizing the components of a project, whether the project is developing a new product or launching of a new service
or marketing of the product. Project management is the discipline of planning, organizing, motivating and controlling resources to achieve specific goals. The primary challenge of project management is to achieve the project goals.

Project management is the application of knowledge, skills, tools and techniques to project activities to meet the project requirements. Project management is a process of leading a team of capable people in planning and implementing a series of related activities that need to be accomplished.

Process is asset of interrelated actions and activities performed to achieve a pre-specified product, result or service. Each process is characterized by its inputs, the tools and techniques that can be applied to get the desired output. Project manager must consider organizational process assets and enterprise environmental factors.

These must be taken into account for every process, even if they are not explicitly listed as inputs in the process specification. Organizational process assets provide guidelines and criteria for tailoring the organizations processes to the specific needs of the project. Enterprise environmental factors may constrain the project management options.

In order for a project to be successful, the project team must

1. Select appropriate processes required to meet the project objectives.
2. Use a defined approach that can be adopted to meet requirements.
3. Comply with requirements to meet stakeholder needs and expectation
4. Balancing the competing demands of scope, time, cost, quality, resources and risk to produce the specified product, service or result.

Project processes are performed by the project team and generally comes under two major categories: First is the Project management process to ensure
the effective flow of project.

This process covers the tools and techniques involved in applying the skills and capabilities. Secondly is the Product oriented processes that specify and create the project's product.

A systems approach requires the identification of the processes that make up the entire project management framework. This framework helps understand the basic structure required to properly manage a project, by identifying the most important elements that need close supervision and careful analysis.

There are nine management processes on a development project. These are designed to help manage the different elements of a project, different projects may have different needs from each process; for example, a project that has identified that cost is a critical success factor will spend more time and effort in developing a cost management plan. These processes are the key knowledge areas a project manager must master.

One of the most critical roles of the project manager is the integration of these nine processes to ensure they all are properly coordinated. In many cases it could result in making trade-offs among the different competing expectations from stakeholders.

These nine processes are all integrative, that is, they need to be managed in a combining and coordinating manner to bring these diverse elements into a whole.

The nine management processes occur during the entire project life cycle and each one of them requires a cyclical approach that consists of planning, doing, checking and learning to ensure process quality. The effort and detail required for each process depends entirely on the size, complexity and risk of the project.
Large, highly complex projects will require specialized resources to manage each process making the role of the project manager as the coordination of these processes.

Smaller less complex projects may not even need all nine processes, the project manager after making an analysis of the project risks and constraints will decide which processes require more effort than others. The nine project management processes are:

1. Scope Management
2. Schedule Management
3. Budget Management
4. Quality Management
5. Team Management
6. Stakeholder Management
7. Information Management
8. Risk Management
9. Contract Management

2 Scope of Research Work

Post 1994 Indian PSU has shown upward growth and professional excellence. In this achievement the consultants had played an important role. The participation of the consultant in the PSU is either direct or indirect, but it is always real and measurable.

It is also being observed that PSU usually hires the consultants for different reasons to achieve economic efficiency, proficiency in project execution and risk mitigation. This research work is only based for Government sector enterprises and is not applicable for private sector enterprises. Also this research is applicable for large projects such as construction of bridges or any
rail projects which cost more than 10 crore. This research work will be implemented only for huge projects and not for small projects.

PSUs spend lot of efforts in terms of funds, resources and time for the selection and evaluation of the capacity of the consultants. The magnitude of these efforts not only depends upon the complexity, uniqueness, need, legality evolved in the project but also depends upon the qualification, expertise of the consultants.

The selection and evaluation methods get converted into the contracts depends upon the risk and type of proposal. The contracts may be of lump sum, times based retainer and / or success fee, percentage and indefinite delivery.

The PSUs usually use the following type of proposals as follows

1 **Expertise based (EB)**

Here when PSU decides to hire a consultant purely on the basis of expertise and excellence of the consultant. This is normally used for individual experts of eminence, who would not like to go through any selection process or in case where the PSU is convinced of the credibility of the consultant based on past success that no other basis is required to evaluate the consultant.

For example if the client requires services of a consultant for a project involving design of a nuclear power plant, it would be ideal for the client to look at profile of experts who have executed such work in the past and based on his specific experiences decide to engage the consultant.

2. **Judgment Basis (JB)**

When the PSU based on their judgment on the capabilities of the consultant decides to invite the consultant to submit a proposal and based on the single proposal take administrative decision to award the contract. The sole basis of
decision making is the scope of work and financial negotiations.

This practice is normally adopted in respect of government organization or academic institution providing services as consultant, where it is easier to justify award of contract on invitation basis. The sole basis of decision making is the scope of work and financial negotiations. The client organization is convinced that a particular consultancy organization has capabilities to deliver the assignment.

E.g. if a client or organization has an assignment in the area of leather technology, it will be a right judgment to go to central leather research institute, Chennai, to be engaged as consultants for the assignments, since they are leading institute in the area with total expertise.

3 Fixed Budget Bases (FBB)

When scope of work is clearly defined and PSU is able to quantify the scope of work, effort, time and cost components, then in case PSU is able to clearly say what it is willing to pay for this assignment. Under these criteria, the prospective consultants are told upfront the value of the consultancy assignment, and only technical bids are invited. The decision to award contract is taken on the basis of technical bid.

The best technical bid based on the score in the TER (Technical Evaluation Report) would be invited to do the assignment at the cost already fixed. For example if client has a budget of Rs. 10 Lakhs allocated in annual budget for preparation of a feasibility reports for setting up a new center of excellences then there is no point in client seeking both technical and financial bids, as with open ended financial bids, there are chances of bids being higher than the budget and the client would find it difficult to award the contract. With the fixed budget selection, the criteria for selection would shift to scope of converge, speed and methodology.
4. Least Cost Basis (LCB)

Under this system, the PSU invites both technical and financial bids. However, technical bid is only used to determine suitability. The technical evaluation would be to qualify those bidders whose financial bids will be opened. Only those bidders who meet the minimum eligibility criteria (pre-determined) would be considered for financial bid opening.

The financial bid of all technically eligible bidders are opened and the bidder who has quoted least price (Lowest One i.e. L1) is awarded the contract.

There is risk in LCB method, that a consultant who may not have the competence to deliver or has faulty approach or methodology end up winning the contract, consequently creating difficulties for the client either in delivering a poor quality services or may abandon the project midway or may take much large than planned, there by defeating the purpose of the consultancy assignment.

5 Quality cum Cost Basis (QCBS)

In this method, the client predetermines the eligibility criteria for qualifying of bidders for financial bid opening. The Total Evaluation Report provides score to bidders and for all those who meet the minimum eligibility criteria, the financial bids are opened.

The technical bid evaluation is only for the purpose of determining eligibility/competence to deliver. The decision on who would get the contract is taken based on L1 out of the bidders, who technically qualify as per minimum eligibility criteria.

Here the client ensures that the consultants beings considered for award of contract have competence to meet the expectations and would be able to accomplish the task, the client through evaluation of document, presentation
on experiences, competencies-qualification & skills of team, approach, methodology work plan and schedule of deliverables, makes a judgment on the capability of the consultant. All those who meet the minimum eligible criteria (preset) are eligible for opening of financial bid and award of contract. Contract is awarded to party which has quoted lowest fee (L1).

6. Combined Quality cum Cost Basis (CQCCBS)

This is the most prevalent method in selection of consultants by PSU. Under this method the PSU predetermines the weight age for quality and cost. Mostly the proposals are evaluated on the bases of the quality required and evolved cost in the proposal. Refer to the Figure – 1.14, the evaluation block consists of quality and cost of a proposal submitted by a consultant.

The TER awards a score to each bidder based on the quality requirement. Thereafter financial bids of all the bidders who are eligible are opened. Both technical bid scores and financial bid values are subjected to weight ages predetermines and the H1 (Highest one) party – Highest score gets selected.

The ratios on be decided by the client organization depending on complexity of project more the complexity higher the weightage for quality.

E.g. A project on design of dam in a remote area would have high quality component while a project involving preparation of a DPR for a setting up a soft drink bottling plant would have high cost weightage.

<table>
<thead>
<tr>
<th>Quality Q</th>
<th>Cost C</th>
</tr>
</thead>
</table>

Figure – 1.14

Let the weighted value of the Quality and Cost be Q and C and Evaluation as E, Relationship can be expressed as
E = x*Q + y*C  

Where x, y are percentage weight age provided to Q and C respectively by the customer at the time of evaluation and can be expressed as

x + y = 100%  

The PSU usually fixes the values of x & y as 90:10, 80:20, 70:30 or 60:40

6. Quality Basis (QBS)

Here the nature of the project does not permit the PSU to take any risk. The PSU has to go to the best consultant. In such an eventuality the client organization lays focus on quality of the consultant. Cost is not important at all. Those who score the H1 (Highest one) party – Highest score in the TER gets selected.

The selection process will have total weightage for quality and there is no weightage for cost. Meanings thereby the selection of consultant is on technical evaluation. The one scores highest in technical evaluation gets awarded contract at the values quoted by him.

In the above evaluation and selection method, it has been observed that a lot of issues have been raised at the time of execution of the services due to advertent nature adopted by the consultant and client PSU for the cost and quality and conflict of interest between the two.
The constraint that act as a catalyst and becomes the prominent for the loss of productivity are detailed below

1. **Change in Scope of Work**

Scope of work detailed in the contracts usually get changed due to client PSU request, client PSU usually want to have the particular enhancement in work without increasing the cost, while consultant desires to be paid for the same.

2. **Change in availability of the Resources**

Resource availability as committed in the contract by the consultant usually gets changed due to frequent unavailability of the human resources and non-availability of raw materials and equipment due to logistics problems. Unavailability of these resources makes loss of client PSU’s productivity and time.

3. **Change in Scheduling**

Change in scheduling due to unforeseen circumstances, or due to improper scheduling device, either by the consultant or client PSU.

Delay in start of a certain phase or part of the service generally increases the cost of the project due to economic factors.

4. **Budget Issues**

Figure – 1.15, illustrates that the cost of change increases towards the completion of the project, and do require strict monitoring from the client PSU side. Issues discussed become the catalyst for increase change of cost and hence give birth to the budget problem from the client PSU’s side.
6. Communication Problems

Sometimes consultants do face problems in identifying the real client PSU, as regard to their consulting activities.

When multiple owners exist from the client PSU’s side, it creates multiple faces of the client PSU confusing the consultant, as to whom amongst the multiple owners has obligation for the payment and authority on requesting the consultant for the change in scope of work, and signing off.

7. Conflict of Interest

Conflict of Interest, both from the consultant’s side and client PSU’s side, affects the productivity of the services.

8. Payment Issues

Payments issues arise between client PSU and consultant due to disputes as discussed in above.

This may lead to affect the services offered by the consultant. Consultant thinks he has performed as per satisfaction of the client PSU and has the right to get the payment, but the client PSU thinks otherwise.
Figure – 1.15

Figure – 1.16
Figure - 1.16 illustrates the two component QC (Quality & Cost) model, where the selection and evaluation of the consultant is based on only two parameters i.e. Cost and Quality. In this model client PSU and consultant have their own obligations and benefits, in such a fashion that the obligation of one’s becomes the benefit of other.

In the present Cost and Quality model, client PSU who is hiring the services of a consultant can only put these Q and C parameters which serve the purpose for the selection and evaluation. This present model usually creates the tussle between client PSU and consultants for stretching and shrinking of Q and C until the project ends.

The Objective of this research work is to develop an efficient method for the selection of consultant in Indian PSUs. The objective also includes the mathematic modeling of that efficient method.

The research meant to move ahead of cost based selection QBS and quality and cost based selection QCBS, also the new model other than cost and quality, will introduce other factors which will proved to be the necessary ingredient of the project.

The new method will be catalyst for the selection of consultants, in Indian PSU scenario for any arbitrary project for any PSU organization.

3 Review of the Literature:

The review of the literature has been divided in three parts

In earlier days (pre 1992), Indian PSUs were hiring the consultants for their projects based on cost based selection (CBS), and presently (past 1992) most of the PSUs are hiring based on Quality based selection (QBS), and in some cases both quality and cost based selection (QCBS). [1] [2] [3] [4] [5] [6] [8] [9] [10] [11] [12]
To achieve the objectives of the current studies, the previous studies, manuals, guidelines and books are referred. For the international guidelines the World Bank prepared the guidelines (World Bank 2004) for the selection and evaluation of the consultant proposal followed by Asian Development Bank (ADB 2007) and African Development Bank (African Development Bank 2008). These guidelines used in a customized manner by the different countries, states, ministries and organizations based on their requirement.

In India, Ministry of Finance, Govt of India has issued Manual of Policies and Procedure of Employment of Consultant (Ministry of Finance, Govt. of India 2006). The Secretariat for the Committee on Infrastructure, Planning Commission Govt. of India has prepared the document (Planning commission, Govt. of India 2009) for the Best Practices Selection of Consultants, and also by The Directorate of Town & Country Planning Department, Govt. of Chhattisgarh, India for the Selection of Consultant for preparation of Regional Plan for the Development of Region, comprising Korba – Janjgir-Champa – Raigarh – Bilaspur- Koriya – Ambikapur in Chhattisgarh (The Directorate of Town & Country Planning Department, Govt. of Chhattisgarh, India 2009).


Due to present selection method lots of issues are growing between consultant and client PSU (Sunil Abrol, ICPR 2010) about payment, quality and foul play by client PSU and consultant and handling the issues (Barbara Kibbie et al, 1992) for effective project execution and smooth closing of the project.

Based on the literature survey, it has been found that different types of consultant selection methods are available and client PSUs spend lot of efforts in terms of funds, resources and time for the selection and evaluation of the capacity of the consultants by using these methods.
The magnitude of these efforts not only depends upon the complexity, uniqueness, need, legality evolved in the project but also depends upon the qualification, expertise of the consultants.

The selection and evaluation methods get converted into the contracts depends upon the risk and type of proposal. The contracts may be of lump sum, times based retainer and / or success fee, percentage and indefinite delivery. The client PSUs usually use the following type of consultant selection methods, explained as follows.

1. **Expertise based (EB):**

When PSU decides to hire a consultant purely on the basis of expertise of the consultant, this method being used. This is normally used for individual experts of eminence, who would no like to go through any selection process or in case where the PSU is convinced of the credibility of the consultant based on past success that no other basis is required to evaluate the consultant.

2. **Judgment Basis (JB):**

When the PSU based on their judgment on the capabilities of the consultant decides to invite the consultant to submit a proposal and based on the single proposal take administrative decision to award the contract. The sole basis of decision making is the scope of work and financial negotiations.

3. **Fixed Budget Basis (FBB):**

When scope of work is clearly defined and PSU is able to quantify the scope of work, effort, time and cost components, then in case PSU is able to clearly say what it is willing to pay for this assignment.

Under these criteria, the prospective consultants are told upfront the value of the consultancy assignment, and only technical bids are invited. The decision
to award contract is taken on the basis of technical bid.

The best technical bid based on the score in the TER (Technical Evaluation Report) would be invited to do the assignment at the cost already fixed.

4. Least Cost Basis (LCB):

Under this system, the PSU invites both technical and financial bids. However, technical bid is only used to determine suitability. The technical evaluation would be to qualify those bidders whose financial bids will be opened.

Only those bidders who meet the minimum eligibility criteria (pre determined) would be considered for financial bid opening. The financial bid of all technically eligible bidders are opened and the bidder who has quoted least price (Lowest One i.e. L1) is awarded the contract.

5. Quality cum Cost Basis (QCB):

In this method, the client PSU predetermines the eligibility criteria for qualifying of bidders for financial bid opening. The TER provides score to bidders and for all those who meet the minimum eligibility criteria, the financial bids are opened.

The technical bid evaluation is only for the purpose of determining eligibility/competence to deliver. The decision on who would get the contract is taken based on L1 out of the bidders, who technically qualify as per minimum eligibility criteria.

6. Combined Quality cum Cost Basis (CQCB):

This is the most prevalent method in selection of consultants by PSU. Under this method the PSU predetermines the weightage for quality and cost. Mostly the proposals are evaluated on the bases of the quality required and evolved cost in the proposal. Refer to the Figure – 1.17, the evaluation block consist of
quality and cost of a proposal submitted by a consultant.

The TER awards a score to each bidder based on the quality requirement. Thereafter financial bids of all the bidders who are eligible are opened. Both technical bid scores and financial bid values are subjected to weight ages predetermines and the H1 (Highest one) party – Highest score gets selected.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Q</td>
<td>C</td>
</tr>
</tbody>
</table>

Figure – 1.17

Let the weighted value of the Quality and Cost be Q and C and Evaluation as E, Relationship can be expressed as

\[ E = xQ + yC \hspace{1cm} \text{(i)} \]

Where x, y are percentage weight age provided to Q and C respectively by the customer at the time of evaluation and can be expressed as

\[ x + y = 100\% \hspace{1cm} \text{(ii)} \]

The PSU usually fixes the values of x & y as 90:10, 80:20, 70:30 or 60:40

7. Quality Basis (QB):

Here the nature of the project does not permit the PSU to take any risk. The PSU has to go to the best consultant. In such an eventuality the client PSU organization lays focus on quality of the consultant. Cost is not important at all.
Those who score the H1 (Highest one) party – Highest score in the TER gets selected. In Quality Basis (QB) only Quality which mandate the selection procedure of the bidder.

4 Problem Identification

In the above evaluation and selection method, it has been observed that a lot of issues have been raised at the time of execution of the services due to advertent nature adopted by the consultant and client PSU for the cost and quality and conflict of interest between the two. Cost is one dimension which consultant interesting in, while Quality is another dimension for which PSU looks for.

The shrinking and stretching of Q and C by both the PSU client and consultant develop the certain constraints which act as a catalyst and also become the prominent for the loss of goodwill, productivity strained relation are detailed below:

1. Change in Scope of Work

Scope of work detailed in the contracts usually get changed due to client PSU request, client PSU usually want to have the enhancement in work without increasing the cost, while consultant desires to be paid for the same.

2. Change in availability of the Resources

Resource availability as committed in the contract by the consultant usually gets changed due to frequent unavailability of the human resources and non availability of raw materials and equipments due to logistics problems. Unavailability of these resources makes loss of client PSU’s productivity and time.
3. Change in Scheduling

Change in scheduling due to unforeseen circumstances, or due to improper scheduling device, either by the consultant or client PSU. Delay in start of a certain phase or part of the service generally increases the cost of the project due to economic factors. Economic factors foster the increase of costs of the project and are directly linked to the delay caused in the project.

4. Budget Issues

Figure - 1.18, illustrates that the cost of change increases towards the completion of the project, and do require strict monitoring from the client PSU side. Issues discussed in Para [1] to [3] become the catalyst for increase change of cost and hence give birth to the budget problem from the client PSU’s side.

![Figure – 1.18](#)
5. Unsatisfactory Quality

Dissatisfaction express by the client PSU in terms of quality set, may create the dispute between him and consultant. Quality is the centre entity around which client PSU and consultant activities rotate around and any deficiency related to the quality may leads to contract closure and payment problems.

Unsatisfactory Quality due to dissatisfaction expressed by the PSU customer may delay in contract closure and finally sign off. This leads to delay in related output to realize into the market.

6. Communication Problems

Sometimes consultants do face problems in identifying the real client PSU, as regard to their consulting activities. When multiple owners exist from the client PSU’s side, it creates multiple faces of the client PSU confusing the consultant, as to whom amongst the multiple owners has obligation for the payment and authority on requesting the consultant for the change in scope of work, and signing off.

In some situation even the real customer or EIC (Engineer in Charge), who is the decision making authority for project execution, planning and payment unable to take the decision and wants more time and lot of documentation before it.

7. Conflict of Interest

It has been observed that a lot of issues have been raised at the time of execution of the services due to advertent nature adopted by the consultant and client PSU for the cost and quality and conflict of interest between the two. Cost is one dimension which consultant interesting in, while Quality is another dimension for which PSU looks for.
Conflict of Interest, both from the consultant’s side and client PSU’s side, affects the productivity of the services. Both consultant and customer hide their self in their domains and unable to break the ice in tough situation.

8. Payment Issues

Payments issues arise between client PSU and consultant due to disputes as discussed in above Para. This may lead to affect the services offered by the consultant. Consultant thinks he has performed as per satisfaction of the client PSU and has the right to get the payment, but the client PSU thinks otherwise.

Figure -1.17 illustrates the two component QC (Quality & Cost) model, where the selection and evaluation of the consultant is based on only two parameters i.e. Cost and Quality. In this model client PSU and consultant have their own obligations and benefits, in such a fashion that the obligation of one’s becomes the benefit of other.

In the present Cost and Quality model, client PSU who is hiring the services of a consultant can only put these Q and C parameters which serve the purpose for the selection and evaluation. This present model usually creates the tussle between client PSU and consultants for stretching and shrinking of Q and C until the project ends.