Chapter - I

Introduction
This thesis is an outcome of the research study conducted during the last six years. The research study focuses on a comprehensive analysis of Program and Project Management practices and implementation adopted at select Government and Private Enterprises in Karnataka.

Human race, started inhabiting earth many years ago, has constantly been looking at various methods to improve the quality of its life. Its efforts were aimed at ensuring food availability during all times, clothing for comfort and shelter to protect them. Mankind has always dreamt of a well-balanced creation that aimed at overcoming limitations posed by its environment, so that its effort reduces, generating a path breaking outcome that was not normally possible till then. It is this dream that has made man an innovator and developer of methods, devices, tools, complex structures and myriad systems. To realize his innovations, man developed practices and procedures in management that have now developed into a separate stream of study called Project or Program Management.

In recent times, Project / Program management has been recognized as a specialized area in technology sectors like Telecom, Information Technology and Bio Technology. These sectors have management teams, work teams and customers located at different parts of the Globe. The Challenges of Project/ Program Management are addressed with a host of tools and processes enabled by IT and Internet. This congruency of technological innovations in IT and the applied project management tools have ensured the goals of the Program be achieved in the face of globalization challenges.

Public Sector Institutions like Government Departments, Semi Government Institutions and autonomous bodies are some of the major institutions that run projects and programs on an on-going basis funded by local, national and international
agencies. Management of these projects and programs has been a challenge in recent times as their size, spread, and impact have enormously increased. All stakeholders demand professional management of the projects and the implementing agencies have developed different methods, policies and procedures to cope with such demands. Many public sector organizations are under pressure to meet targets, deliver major change programs and demonstrate significant improvement across all aspects of their activities. This puts a significant challenge in performance coupled with compliance on the practitioner leading to innovation.

A project is a unique endeavour to produce a set of deliverables within clearly specified time, cost and quality constraints (Westland Jason, 2006). Projects are different from standard business operational activities as they are:

a) *Unique in nature*: They do not involve repetitive processes, whereas operational activities often involve execution of repetitive processes.

b) *Bound by a defined timescale*: Projects have a clearly specified start and end date within which the deliverables must be produced to meet a specified customer requirement.

c) *Confirm to an approved budget*: Projects are allocated a level of financial expenditure within which the deliverables are produced, to meet a specified customer requirement.

d) *Having limited resources*: At the start of a project an agreed amount of labour, equipment and materials is allocated to the project. Projects entail a level of uncertainty and therefore carry business risk.

e) *Expected to achieve beneficial change*: The purpose of a project is typically to achieve organizational goals through the implementation of business change.
Therefore, the term Project management is all about skills, tools and management process required to execute the project successfully within the specified time, cost and quality. Project management is accomplished through the application and integration of the project management process of Initiation, Planning, Executing, Monitoring, Control, and Closing.

1.1 The Evolution of Project Management

Project Management is an important topic because all organisations, be they small or large, at one time or other, are involved in implementing new undertakings. These undertakings may be diverse, such as, the development of a new product or service; the establishment of a new production line in a manufacturing enterprise; a public relations promotion campaign; or a major building programme. To keep ahead of their competitors, organisations are continually faced with the development of complex products, services and processes with very short time-to-market windows combined with the need for cross-functional expertise. In this scenario, project management becomes a very important and powerful tool in the hands of organisations that understand its use and have the competencies to apply it.

The development of project management capabilities in organisations, simultaneously with the application of information management systems, allow enterprise teams to work in partnership in defining plans and managing take-to-market projects by synchronising team-oriented tasks, schedules, and resource allocations. This allows cross-functional teams to create and share project information. However, this is not sufficient, information management systems have the potential to allow project management practices to take place in a real-time environment. As a consequence of this potential project management proficiency,
locally, nationally or globally dispersed users are able to concurrently view and interact with the same updated project information immediately, including project schedules, threaded discussions, and other relevant documentation. In this scenario the term dispersed user takes on a wider meaning. It not only includes the cross-functional management teams but also experts drawn from the organisation's supply chain, and business partners.

On a macro level organisations are motivated to implement project management techniques to ensure that their undertakings (small or major) are delivered on time, within the cost budget and to the stipulated quality. On a micro level, project management combined with an appropriate information management system has the objectives of

(a) Reducing project overhead costs

(b) Customising the project workplace to fit the operational style of the project teams and respective team members

(c) Proactively informing the executive management strata of the strategic projects on a real-time basis;

(d) Ensuring that project team members share accurate, meaningful and timely project documents; and

(e) Ensuring critical task deadlines are met.

1.2 Brief History of Project Management

Project management has been practiced for thousands of years dating back to the human settlements like Egypt, Mesopotamia, India and China. It was in the mid 1950's that organisations commenced applying formal project management tools and techniques to complex projects. Modern project management methods had their
origins in two parallel but different problems of planning and control in projects in the United States. The first case involved the U.S Navy, which at that time was concerned with the control of contracts for its Polaris Missile project. These contracts consisted of research, development work and manufacturing of parts that were unique and had never been previously undertaken.

This particular project was characterised by high uncertainty, since neither cost nor time could be accurately estimated. Hence, completion times were based on probabilities. Time estimates were based on optimistic, pessimistic and most likely. These three time scenarios were mathematically assessed to determine the probable completion date. This procedure was called program evaluation review technique (PERT). Initially, the PERT technique did not take cost into consideration. However, the cost feature was later included using the same estimating approach as with time. Due to the three estimation scenarios, PERT was found to be best suited for projects with a high degree of uncertainty reflecting their level of uniqueness. The second case, involved the private sector, namely, E.I du Pont de Nemours Company, which had undertaken to construct major chemical plants in U.S. Unlike the Navy Polaris project, these construction undertakings required accurate time and cost estimates. The methodology developed by this company was originally referred to as project planning and scheduling (PPS). PPS required realistic estimates of cost and time, and is thus a more definitive approach than PERT. The PPS technique was later developed into the critical path method (CPM) that became very popular with the construction industry.

During the 1960s and 1970s, both PERT and CPM increased their popularity within the private and public sectors. Defence Departments of various countries, NASA, and large engineering and construction companies world-wide applied project
management principles and tools to manage large budget, schedule-driven projects. The popularity in the use of these project management tools during this period coincided with the development of computers and the associated packages that specialised in project management. However, initially these computer packages were very costly and were executed only on mainframe or mini computers. The use of project management techniques in the 1980s was facilitated with the advent of the personal computer and associated low cost project management software. Hence, during this period, the manufacturing and software development sectors commenced to adopt and implement sophisticated project management practices as well. By the 1990s, project management theories, tools and techniques were widely received by different industries and organisations.

An example of a major project undertaken during recent times is the Year 2000 (Y2K) project. The Y2K Project, known as the millennium bug referred to the problem that computers may not function correctly on January 1, 2000 at 12 AM. This was a global phenomenon and was highly problematic because resolving the problem at one's organisation did not guarantee immunity, since a breakdown in the organisation's supply chain could affect the organisation's operating capability. Many organisations set up a project office to control and comply with their stakeholders regarding the Y2K issue. Furthermore, use of the Internet was common practice that led to the establishment of the virtual project office. The goal of the virtual project office was: (a) to deliver uninterrupted turn-of-the-century; (b) monitor Y2K project efforts; (c) provide coordination; (d) develop a risk management plan; and (e) communicate Y2K compliance efforts with various stakeholders. Thus, the virtual project office was a focal point for all the project works, and it increased the awareness and importance of risk management practices to numerous organisations.
A project is a one-time exercise which varies in duration. It is undertaken to address a specific need in an organisation, which may be to create a product or service or to change a business process. This is in direct contrast to how an organisation generally works on a permanent basis to produce their goods or services. For example, the work of an organisation may be to manufacture trucks on a continual basis, therefore the work is considered functional as the organisation creates the same products or services over-and-over again and people hold their roles on a semi-permanent basis.

A disciplined project management process is important to any project. Project managers are expected to deliver results, on time and on budget. Solid project planning reduces the risks associated with any project. There is no doubt that organisations today face more aggressive competition than in the past and the business environment they operate in is a highly turbulent one. This scenario has increased the need for organisational accountability for the private and public sectors, leading to a greater focus and demand for operational effectiveness and efficiency. Effectiveness and efficiency may be facilitated through the introduction of best practices that are able to optimise the management of organisational resources. It has been shown that operations and projects are dissimilar with each requiring different management techniques. Hence, in a project environment, project management can: (a) support the achievement of project and organisational goals; and (b) provide a greater assurance to stakeholders that resources are being managed.
1.3 Program management

Program Management as differentiated with Project Management is the process of managing several related projects many a time with the intention of improving an organization's performance. The Program Manager has an overview of the purpose and status of all projects in a Program and can use this overview to support project-level activity to ensure the overall program goals are met, by providing a decision-making capacity that cannot be achieved at project level or by providing the Project Manager with a program perspective whenever required, or as a sounding board for ideas and approaches to solving project issues that have program impacts. Typically in a program there is a need to identify and manage cross-project dependencies and often the PMO (Program or Project Management Office) may not have sufficient insight of the risk, issues, requirements, design or solution to be able to usefully manage these. The Program manager may be well placed to provide this insight by actively seeking out such information from the Project Managers although in large and/or complex projects, a specific role may be required. However, this insight arises, the Program Manager needs this in order to be comfortable that the overall program goals are achievable. Often this calls for generating choices, analyse the issues and risks, and the impacts of the program from stake holders perspective and set priorities on an ongoing manner.

1.4 Need for study

From the literature survey conducted (details are presented in the next chapter), it is clear that there is a huge volume of research work done in the area of project management. Articles and papers have been published based on the experiences and study conducted by various practitioners and researchers. These
studies bring forth a wealth of knowledge that is of immense use for the research community. However, a research study conducted in India, relevant to our times, studying the practices and processes amongst the various practitioners was felt appropriate. Apart from this, Bangalore is home to quite a lot of world class business organizations in IT, Telecom, Infrastructure and public sectors. Study of the Project Management practices at these institutions is expected to yield wealth of information and knowledge that could help understand the nuances and the experiences among the practitioners. When the researcher discussed this project with many experts in the field, they felt that such an exercise was most essential and appropriate. They were also happy to contribute to the knowledge sharing process. With such a positive environment created by the project management community, the researcher was greatly elated to pursue the research study with renewed interest and vigour.

1.5 Objectives of Study

This research study is mainly understand and analyse Project Management practices and Implementation at Government and select private enterprises in Karnataka. The specific objectives of the study are as follows:

- To understand the unique nature and attributes of the government and the private sector.
- To study the existing project management processes followed in both the sectors.
- To identify the tools and aids followed for monitoring /control of projects.
- To understand the issues that impacts project implementation plan and process.
• To undertake comparison of both sectors to identify uniqueness and commonalities in project management between the sectors.
• To bring out the common methods, processes and framework for programs in both the sectors to make final recommendations.

1.6 Approach to research study

Project management as a practice has been deployed by various sectors across the countries at the global level. Projects in each of the sectors have their own attributes and variables that need adaptations of the basic Project Management theory. Some of the sectors that use project management practices are IT, Telecom, Infrastructure, Public Sector, Pharmaceuticals, Retail, Manufacturing, Defence sector, Law Enforcement agencies, Railways, Public works department. Among them IT, Telecom and Infrastructure have been chosen from private sector whereas Government Departments and Public sector companies have been chosen from Government Sector.

To choose the sectors that are appropriate for this study at Bangalore, it was necessary to consider the major contributors to the Project Management (PM) practices located in Bangalore. It was also required to ensure that key aspects of PM practices do not get diluted while studying the sector, hence it was decided to choose IT, Telecom, Infrastructure from among the private sector; in government sector ISRO, Indian Railways, KRIDL, CPWD, KPWD were selected; and from among public sector organisations BSNL, KPTCL, Rural Electrification Corporation, BESCOM were considered. Some of the largest contributors to the country’s GDP are IT, Telecom, and Infrastructure. They spend significant amount of time, effort and
money on projects. They have the largest talent pool working on project management, and hence it is considered that these are appropriate sectors for our research study.

1.7 Research Design

With the above organizations being considered for the study and keeping the required objectives in mind, an exploratory research design methodology was followed in the research study.

Problem Statement and Definition:

Statement: “Program and Project Management process and Implementation, A study with reference to Government and select private enterprises in Karnataka.”

Definition: This research work is aimed at understanding project Management practices, methodologies, tools and techniques followed by different organisations at Bangalore in private, public and government sectors. It also aims to figure out the best practices used in these sectors and to make suggestions based on the data that is collected and analyzed.

Research Design methodology: As mentioned above, the study attempts to understand the commonalities and uniqueness of nature and attributes of both project and program management in government, public and private sector. The study also tries to identify the tools, methods and best practices used by different organisations in these sectors. The study was carried out in Bangalore. Data was collected from different organisations representing the three sectors. Data was collected by conducting interviews, filling questionnaires and also from secondary sources like published reports and articles.

Data Collection:
1. Primary data gathering:
   Data was gathered from 48 organisations covering private, government and public sectors by adopting the direct interview method and by filling structured questionnaires with the project managers of different organizations.

2. Secondary data gathering:
   Data from different published sources like books, internet and reports from Government, planning commission and NASSCOM was collected as reference and presented according to the relevance of the research.

3. Amongst a few selected respondents representing each of the sectors, focus and depth interview technique was used for eliciting detailed information using the case study format.

4. Analysis and Validation:
   Data obtained was analyzed and inferences were drawn on the observations made. This was further validated using the Case study data collected at select organisations representing each of the sectors.

5. Conclusions and recommendations:
   Finally conclusions and recommendations of the research were made based on the Inferences drawn and Observations made from the Case study and field data.

*Sampling Plan:* The target population for the study is defined as

1. Elements - project managers responsible for implementing projects in the sectors identified.
2. Sampling units - organizations identified in the sectors.
3. Extent- Bangalore.
4. Time- 2010.
**Sampling Technique:** Since the research study is exploratory in nature, Convenience sampling technique has been used. Convenience sampling technique is used at Macro Level, for selecting industries of IT, Telecom and Infrastructure from Private sector; and for selecting organisations under public and Government sectors. At the micro level, for selecting organisations under these industries quota sampling technique was employed as it was found to be most appropriate to make it a representative sample of the population. The quotas for various categories and classes under each industry were made to ensure that there is equal representation to the sectors under study.

**Sample size:** The sample size has been arrived at such that the interview can be conducted effectively without diluting the standards. Too high sample size deters the field work, whereas, too low a sample size would affect the quality of the inferences being made. Hence a sample size of 48 organisations was considered appropriate for the study.

**Sampling Distribution:** A sampling size of 48 organisations (the list is given in annexure A) was considered for the research study. The distribution of sample is as follows using the convenience and quota sampling criteria.

- IT - 25%, Telecom- 25%, Government- 25%, Infrastructure – 25%

  Further, in IT sector, 4 major entities were identified and the quotas were distributed equally. They are: Banking - 6%, Financial Services - 6%, Manufacturing - 6%, Retail and Distribution - 6%. The basis for selecting these 4 major entities was in consideration of their contribution to overall GDP as per NASCOMM report.

  In Telecom sector 3 entities were identified. They are: Operators - 8%, Vendors - 8%, Third party service providers - 8%.

  In Government sector 2 entities were identified based on the government organization structure. Government Companies – 12% Public sectors - 12%.
Since Infrastructure sector also has played a major role in development of economy, major players are identified in this sector. Infrastructure companies – 28%

A detailed questionnaire (Annexure B) has been developed to elicit required information from the respondents. The questionnaire comprises of 56 questions with a combination of yes/no, Likert scale, multiple choice and open ended questions. The questions related the following aspects:

1. Background Information about the organization, their customers and types of projects undertaken.
2. Project management organization structure adopted.
3. Project Management process.
4. Tools and Techniques Used.
5. Reasons for not meeting the deliverables.
6. Best practices developed/adopted.

By focusing on the above issues, various factors contributing to the practice of project management in different environments can be understood. Inferences and conclusions based on detailed analysis are expected to contribute to the knowledge base in the field of project management that could be of immense use to both researchers and practitioners alike.

1.8 Limitations of the study

All research studies also have limitations and a finite scope. No research is without limitations, and our research is no exception. Our survey was mainly intended to meet the project managers and senior managers in the three different sectors to ascertain the project management process. The survey questionnaire was designed to capture the commonalities, differentiating factors, different attributes and software
tools used in the management of projects. Some of the limitations in this research survey are listed below:

1. The Research study was conducted in Bangalore. The responses collected reflect the business conditions prevalent in Bangalore.

2. The Research study explored organizations in 4 sectors primarily IT, Telecom, Infrastructure and Government sectors. The views are those expressed by project managers in these sectors. Views of other key project stake holders like Finance, HR and customers have not been attempted in the study.

3. The Research study was conducted during 2010 and reflects the views & experiences of the project managers who have executed the projects during 2009-10 or before which essentially is derived from the business conditions prevalent during the period.

1.9 Chapter Scheme

*Chapter - 1: Introduction*

This chapter attempts to explore the basics of Project Management along with the evolution and the history of project management. In this background, the need and objectives for the study have been explained. The research methodology followed during the research and the limitations of the study have also been dealt in this chapter.

*Chapter - 2: Review of Literature*

Review of the literature in both national and international arena in the context of project management is given in this chapter.

*Chapter - 3: Project Management in the Indian Context*
An insight into the various aspects of project management as it evolved during pre-independent, post-independent and new age India has been attempted in this chapter. Success in project management practices and the economic growth witnessed during the various Five year plans have been analysed. The prevailing Business Scenario at select sectors has been provided to understand the background of project management practices is also presented in this chapter.

Chapter – 4: Case studies on Project Management practices and analysis of data

This chapter presents and analyses five Case studies on Project Management practices at select companies ISRO, INFOSYS, VIOM, RAILTEL and GMR covering IT, Telecom and Infrastructure domains both in the Public and private sectors.

Chapter – 5: Presentation and Analysis of Field Survey data

Presentation and Analysis of the primary data obtained from field study on the selected aspects of project management like Project Organization, Project Tools and Techniques, Practices and Processes, analysis of success, failure and challenges faced by project practitioners have been provided in this chapter.

Chapter – 6: Research Findings, Recommendations, Conclusions and Scope for further research:

The Findings of the research study, recommendations based on the study along with. Conclusions and scope for further research are presented in this chapter.