Project Management Institute

PROJECT MANAGEMENT PRACTICES IN INDIA

2010

Report by Indicus Analytics and Ace Global

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INTRODUCTION

Introduction

A. Background

PMI Organization Centre Private Ltd. is a wholly owned subsidiary of the Project Management Institute, Inc. It is a global, autonomous, not-for-profit, tax-exempt membership association dedicated to advancing the most effective and appropriate application of the best practices of project management worldwide.

The client has engaged the services of Indicus Analytics and Ace Global Pvt. Ltd. for a research project to study trends in Project Management practices in India - the first ever such study to be undertaken by PMI® in the country.

B. Research Objective

The overall objective of this study is to develop a qualitative understanding and evaluate the current importance given to the application of project management principles in projects conducted by private and the public sector/government sector in India.

This study is designed and conducted to bring to focus the importance of project management in the ongoing expansion in India's infrastructure and overall capital formation base. The study identifies specific action points for government, large public organisations and other private organizations toward a culture of project management practices and a more universal adoption so that efficiencies are built-in in project design through the universal implementation of good project management practices. The study is aimed at the policymakers, media, as well as decision makers in large organizations.

C. Scope

a. Project Management Practices in India

This section focuses on the status of project management in India; identifies various lacunae and gaps; and specific points of institutional, procedural and regulatory interventions by the government. It also highlights how good practices in some projects have led to great successes, and how growth has been achieved through proper Project Management practices in certain settings, and how despite successes, these examples are scattered. The following key points have been included in the section:

- Broad context for the growing need of PM practices in India
- Project Management structures in Public & Private sector companies to implement projects
- Use of Project Management practices and standards
- Outlining the project management training market
- Perceptions on project management in India
- Growth drivers

b. Analysis of the Human Resource Gap in Project Management and Key Action Areas & Priorities

Analysis of the Human Resource Gap in Project Management

- Estimation of number of people involved in overseeing major projects in India and likely trend over next five years
- Projections in market value of project management training and services
- Supply side analysis: mapping of education/ training programmes and curricula covering project management

Key Action Areas and Priorities

- A listing of issues to be addressed by various stakeholders to attain an effective project management culture in India
- Action points for client's engagement with government, academic institutions and industry stakeholders

D. Methodology

The scope of the study has been covered through Secondary and Primary research which has been detailed below:

a. Secondary research coverage

- Besides in-house data bank, detailed desk research was carried out through print and electronic media, Annual Reports of relevant ministries and statistical bodies.
- Official publications from Government and Private sources available in the public domain
- **Key government bodies** (finance, works development, and user ministries/agencies) in Centre and states

- **Development partners and institutions:** World Bank and Asian Development Bank, which are funding major projects in the social and infrastructure sectors.
- **Private Sector players:** a selection of companies across several important industries, involved in development and execution of large and small projects
- **Turnkey Contractors and Suppliers to large projects**
- **Industry associations**
- **Training and Knowledge institutions**

b. Primary research coverage

Questionnaires were framed in consultation with the client, and in-depth interviews were conducted among the following categories:

- Senior Project Leaders/ Project Managers and other Senior level decision makers from public and private sector corporations
- Ministry of Statistics and Programme Implementation (MOSPI), Development Institutions and Financial Institutions
- Higher Education Institutions and Project Management Training organisations

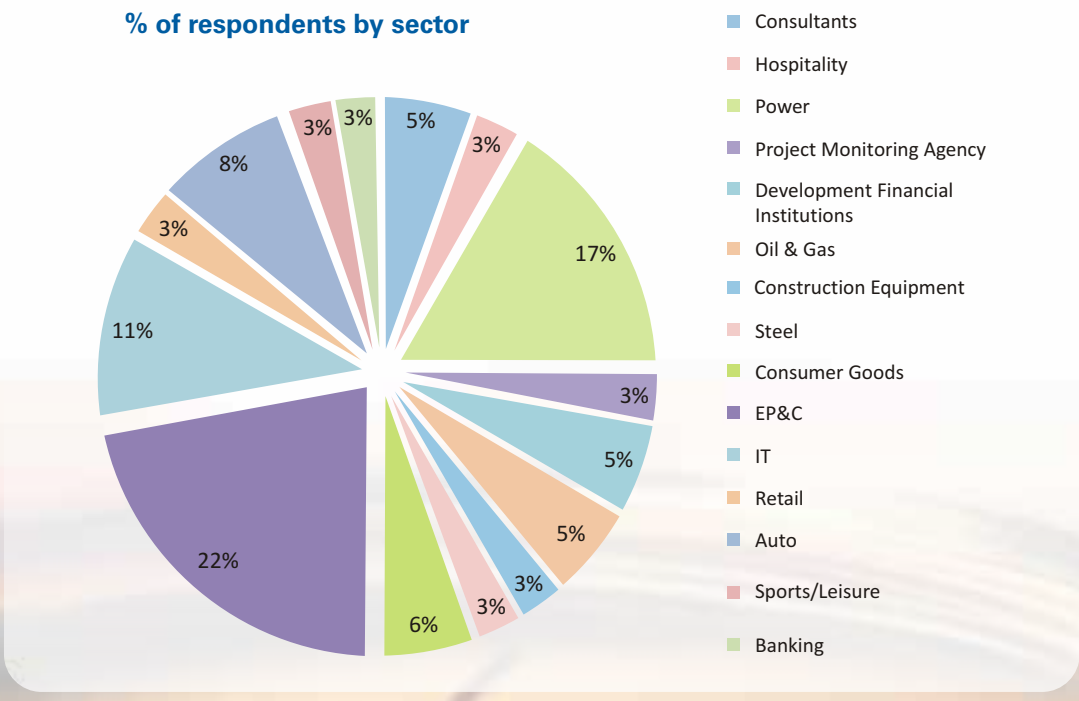
E. Respondents' Profile

Interviews (both face to face and telephonic) have been conducted with 45 respondents so far. Interviews were conducted with private sector companies, government organizations, financial institutions and training institutions to understand the importance of Project Management. The findings have been analysed, and the insights have been provided to help the reader understand the current trends in Project Management.

The profile of the sample interviewed so far is summarised below:

Respondents Demographics	Sample Size
Government and Public	9
Private	26
Industry Associations	1
Training Associations & Certification Bodies	9
Total	**45**

The respondents interviewed from the industry have been classified under the following sectors:

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EXECUTIVE SUMMARY

Executive Summary

Project Management Practices in India

The Indian economy is riding a high growth trajectory, with GDP growth ranging from 6-10% during the past few years. The effects of the global slowdown have also rubbed off on India and Infrastructure investment has been singled out as the most important element in bringing the country back to the 8-9% growth trajectory. Therefore, India's growth story over the next five years leans heavily on the effective management of its big spend infrastructure agenda, particularly the successful and timely completion of all major projects.

Unfortunately, as is well known, time and cost overruns have been a major problem affecting several projects; and we find that Government-sponsored projects have been more susceptible. The implementation status of these projects underscores the importance and critical gaps in the application of proper professional management, in accordance with established international models and guiding principles. Therefore, learning and using the language of project management is becoming a crucial ingredient for the continued growth of India in the coming years.

Professional Project Management Practices

The study finds that practices differed not only on the basis of size and complexity of the project involved, but also across sectors as well as forms of ownership (Public or Private). A higher level of maturity of project management practices was found in the capital intensive sectors (e.g. Power, Steel, and EP&C) or sectors like IT, which involve multidimensional or complex projects. The private sector reports a higher level of induction of project management than the public sector. However, increasingly, even public sector companies have started laying emphasis on training programs and strengthening their existing project management units and professionals.

Despite sufficient awareness of the benefits of project management, 'lack of client led demand in India' and 'lack of clarity of benefits' stand out as the major factors influencing adoption of project management practices, even in the private sector.

Project Management Structures

The study notes the existence of three types of project management structures:

- Project as a part of the functional organisation where project is housed in one or more of the functional units of the organisation.
- Separate Project Management Department/Unit, where the Project Manager is not only the coordinator but has full authority over all people and physical resources assigned to the project
- Outsourced structures such as Project Management Consultants (PMC).

Business Perceptions on Project Management

Is Project Management a Specialist Discipline?

Even though there is an increasing acceptance of the importance of the need for project management using formal methods, opinion is considerably divided as to whether Project Management is a specialized discipline entirely by itself, like other streams in management education. On one hand, there are strong advocates for a specialist branch, particularly from the academia and training providers; on the other hand, Project Management is largely taken as an intuitive process, where some form of project management is practiced in a large number of organizations both public and private, without necessarily any specific orientation or training.

What Are The Key Benefits Actualized/ Expected?

The industry perceives project management practices as a 'Time Management tool'. The major benefits achieved through Project management practices include:

- Timely completion of projects within the original budget
- Business impacts, indicated by revenue growth following the successful implementation of projects.

What Are The Challenges In Adopting Project Management?

- There is a **low level of understanding of the scope of the term Project Management**, which tends to generate a rather myopic view of what it entails. Many respondents identified project management as more of an execution and monitoring tool rather than a planning tool.
- Most of the companies do not feel the need of **relevant applicability** of project management practices **for simpler or uncomplicated projects**.
- **Institutional or Individual need** ?- Most respondents who have undergone certification

in project management felt that they would not invest in project management training on their own, and that it was essentially the company's requirement and decision to invest in project management skills and certification.

- **Inadequacy of skilled and semi skilled manpower** often limit the productivity and cause a huge divergence in terms of the results expected and what is actually delivered at the end.

What Causes Resistance toward Project Management?

- The most basic form of resistance, as discovered by the research, is the very idea of a **formal definition and classification of the discipline of project management**, on grounds of identity. Many respondents mentioned the existence of some form of project management, but were unable to provide or even accept a standardized definition of what it entailed.
- **Quantification of Cost-Benefits Trade-Offs**- Quantification of benefits through Project management at most organizational levels is only in terms of time & cost and qualitative improvement is hardly conceived as a benefit. Most of the companies associate the performance of their project management team first with aspects of project completion and once the results are consistent at the project level are they able to assess the benefits at other organisational levels.
- **Few Carrots and Fewer Sticks**- Most companies felt that neither incentives for better performance nor penalties for poor performance were sufficiently strong to engender serious acquisition of project management practices.

Demand Analysis of Project Management Professionals

The demand side estimation of the Project Management Professionals has been captured by a process of triangulation using different approaches:

1. Corporate Landscape: filtering companies by a set of criteria such as capital, revenue and employee strength profile of companies:
    - Over 4400 companies with revenues exceeding Rs 100 crore – significant scale of business activity
    - Over 8800 companies in top percentiles in industry – competitive in their class
    - Over 11000 companies employing more than 100 people – having organisational issues
2. Projects Landscape: mapping the universe of representative projects coming up in the public and private sector, and necessitating a requirement of project staffing for different types of projects.
3. Based on these, the overall stock of project management staff in India is estimated to be 96,399, growing to over 215,187 by 2012. Nearly 78% of this population is expected to be in the IT sector.

Overall Stock of Project Managers in India

	2007-08	2008-09	2009-10	2010-11	2011-12
Infrastructure & industrial sector projects	12,473	12,414	12,399	14,161	17,044
Pharma sector	4,482	5,202	5,952	6,736	7,550
Auto sector	3,530	3,883	4,271	4,698	5,168
Banking sector	914	948	973	997	1,023
IT sector	75,000	98,573	124,503	153,027	184,402
Total Stock	96,399	121,020	148,098	179,619	215,187

Source: Indicus Estimates

Annual Increase in Project Management Staffing

	2007-08	2008-09	2009-10	2010-11	2011-12
Infrastructure & industrial projects	**4587**	**4387**	**5257**	**6189**	**7019**
Pharma sector	692	**720**	**750**	**784**	**814**
Auto sector	**321**	**353**	**388**	**427**	**470**
IT sector	21,430	**23,573**	**25,930**	**28,523**	**31,376**
Total Demand	25647	29033	32325	35,923	39,679

Source: Indicus Estimates

Project Management Training and Certification

There are no available estimates of the size of the market for training and certification related to project management and this research attempts to develop an ab inito estimate of the same. Based on findings from the primary survey, and certain assumptions of future scenarios, the overall size of the project management related training market was estimated to be around Rs 800 Mn in 2009, and expected to grow to Rs 1692 Mn by 2015, at constant prices, covering around 71000 persons.

Estimates of Supply based Market Size projections 2015.

	CURRENT THROUGHPUT (ATTENDEES)[1]	MEDIAN VALUE OF SPENDS RS	MARKET SIZE RS MN	GROWTH RATE	THROUGH PUT 2015	MARKET SIZE 2015 RS MN CONSTANT PRICES
Post-Graduate Programmes	100-150	700,000	87.5	40%	670	470.6
Distance programmes*	-	10,000	-	-		-
Executive Development Programmes	1,500-2,000	20,000	35	10%	2,820	56.4
PM related training: IT	25-30,000	20,000	550	10%	44,315	885.5
PM training non-IT	13,029	15,000	112.5	20%	18665	280
Total	38,675		785		70,950	1692.5
Share of PMI® /IPMA certification						
PMP & IPMA Certification	8000[2]	20,000	160	20%	19,906	398
% share of PMP & IPMA certification in the total throughput	20.6%				28.05%	

Source: Indicus Estimates

Growth Drivers

- **Infrastructure boom** - With a massive growth anticipated in the infrastructure sector and development of more complex projects, there will be a greater demand for structured Project Management Processes which would in turn fuel the demand for certified Project Managers.

- **Client led Demand in the IT Sector**- With increasing share of the Indian IT sector in the global IT market, the sector would only clamour for matured project management practices including greater induction of certified Project Managers.

- **Procurement Practices and Guidelines-**

    - Increased trend of large infrastructure **projects being funded by donor agencies** is one of the key factors likely to upscale the project management practices in the country.

[1] *Figures are of 2009*
[2] *Source: Based on PMI® and IPMA annual certification figures*

- **Projects implemented under PPP mode-** Guidelines for Monitoring of PPP Projects have already been issued by the Planning Commission and with the new regulations affixing accountability for delays and overruns within the administrative ministry for each project; This is likely to create a new form of client-induced demand, this time from the largest among all non-IT sectors.

Key Action Areas and Priorities

The study identifies a number of action areas to be addressed by various stakeholders. The important ones to be addressed are:

Government

- Demonstrate relevance of Project Management Principles in planning and appraisal stages
- Raise profile of Project Management Institutions
- Develop and deliver appropriate courseware targeting government agencies:

Industry Bodies

- Obtain endorsement for project management through demonstration and documentation
- Promote project management certification down the supply chain beginning with EPC contracts

Academic Institutions

- Develop project management courseware - general as well as sector-specific, matching international standards
- Obtain recognition for project management as a professional stream.
- Build awareness among financial institutions and incentivise project management certification


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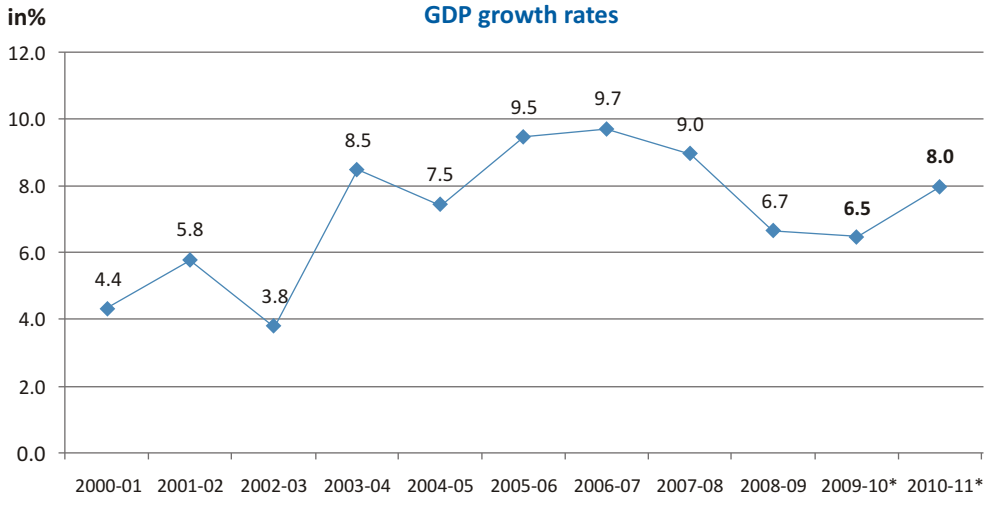
PROJECT MANAGEMENT PRACTICES IN INDIA

Project Management Practices in India

A. Project Management in Perspective

The Indian economy is riding a high growth trajectory, with GDP growth ranging from 6-10% during the past few years. Growth has been driven more by investment than consumption, and has seen an increasing flow of funds, both domestic and international, in practically all sectors of the economy: services, manufacturing, and infrastructure.



Source: RBI, Economic Advisory Council, World Bank

Increase in foreign direct investment (FDI) over the recent years ($27 billion in 2008-09, 11% growth over 2007-08) has fuelled the spurt in infrastructure development activity. India's foreign investment policies- which permit investment in almost all sectors- have attracted large inflows of FDI in manufacturing and where allowed, in infrastructure. The policy now permits 100% FDI under the automatic route for a broad range of sectors.

CAPITAL FORMATION 2000-01 to 2007-08

Year	Total GFCF in Rs. billion	Break up by Ownership			Break up by Type%		Total GCF in Rs. billion	Break up by Sector (%)		
		Public Sector	Private Corporates	Households	Construction	Plant Machinery		Agriculture Forestry & Fishing	Industry	Services
2000-01	4778	28.4	25.1	46.5	51.3	48.7	**4933**	9.5	39.1	51.4
2001-02	**5382**	27.4	24.1	48.5	50.2	49.8	**5369**	11.5	35.8	52.7
2002-03	**5850**	26.4	23.2	50.5	52.7	47.3	**6048**	10.2	41.1	48.7
2003-04	**6879**	25.8	25.1	49.1	52.6	47.4	**7136**	8.6	45.8	45.6
2004-05	**8960**	22.5	33.5	44	53.1	46.9	**9550**	7.5	52.8	39.7
2005-06	**11126**	22.5	38.4	39	54.4	45.6	**12075**	7.1	54.2	38.7
2006-07	**13438**	23.4	39.4	37.2	54.2	45.8	**14528**	6.9	56	37.1
2007-08	**16054**	24.5	39.4	36.1	53.4	46.6	**17758**	6.5	55.1	38.4

GFCF: Gross Fixed Capital Formation
GCF: Gross Capital Formation

Source: Project Monitor

Year-wise Projected Investment during the Eleventh Plan

Sectors	2007-08	2008-09	2009-10	2010-11	2011-12	Total XI Plan
Electricity (incl. NCE)	81,954	101,553	126,380	158,027	198,611	666,525
Roads and bridges	51,822	54,789	59,200	68,370	79,971	314,152
Telecomm-unications	31,375	38,134	48,593	61,646	78,690	258,439
Railways (incl. MRTS)	34,225	40,964	49,525	60,393	76,701	261,808
Irrigation (incl. WD)	27,497	35,916	47,189	62,266	80,433	253,301
Water supply and sanitation	19,298	22,781	27,323	33,266	41,063	143,730
Ports	12,409	14,822	17,374	19,980	23,410	87,995
Airports	5,208	5,520	5,904	6,646	7,690	30,968
Storage	3,777	4,098	4,446	4,824	5,234	22,378
Gas	2,708	3,003	3,332	3,700	4,111	16,855
TOTAL INVESTMENT						
(Rs. Crore)	**270,273**	**321,579**	**389,266**	**479,117**	**595,913**	**2,056,150**
(US $ bn)	**67.57**	**80.39**	**97.32**	**119.78**	**148.98**	**514.04**

Source: Planning Commission

The effects of the global slowdown have also rubbed off on India, with growth slowing down in 2009. However, India is among the first countries to rebound from the slowdown, led by resurgence in its domestic economy and the government's push to kick-start the economy through massive investments in infrastructure.

Infrastructure investment has been singled out as the most important element in bringing the country back to the 8-9% growth trajectory. As per the 11th five year plan (2007-12), $514 billion worth of investment is planned to flow into the infrastructure environment.

Previously, a large share of infrastructural investment in India came from Public Sector Enterprises, as well as organs of Central and State governments. However, steady and gradual economic reforms have opened new avenues for infrastructure investment in the Private Sector under the Public Private Partnership (PPP) model.

Therefore, India's growth story over the next five years leans heavily on the effective management of its big spend infrastructure agenda, particularly the successful and timely completion of all major projects identified in sectors like transportation, telecommunications, and others. Unfortunately, time and cost overruns have been a major problem affecting several projects, particularly Government-sponsored projects.

Organizations undertake projects in order to meet larger, economic and social objectives. Therefore projects can be considered successful only if they meet time, budget, and performance goals, and achieve the expectations of stakeholders. Yet, a number of studies show that a large proportion of projects exceed their budgets, run late or fail to meet their objectives.

Despite witnessing growth in almost all spheres, India continues to face substantial delays in mega projects, both at Central and state levels. Bureaucratic hurdles and poor planning are identified as the major causes of delays.

The following section provides a brief overview of the projects monitored under MOSPI.

Status of Central Public Sector Projects

Time and cost overruns have been a major problem affecting central sector projects, i.e. projects sponsored by the Central Government. Out of 925 projects monitored by the Ministry of Statistics and Programme Implementation (MOSPI), 445 projects are delayed with respect to the original schedule and 311 have overshot their budgets; only 16 projects are ahead of schedule and 211 are on schedule. An analysis of cost and time overruns of all the 925 projects with respect to the original targets is presented in the table below.

Status of Central Public Sector Projects

No. of Projects monitored by MOSPI as on 31st March 2009	925
Original Estimated Cost (Rs. Crores)	486628.7
Latest Approved Cost (Rs. Crores)	496313.6
Anticipated Cost (Rs. Crores)	552092.6
Overall Percentage Cost Overrun anticipated cost v/s the original estimated cost	13.45%
No. of Projects having cost overruns with respect to original approved cost	311
No. of Projects having time over runs with respect to original schedule	445 (1-192 months)
Percentage of cost overruns in 445 delayed projects	17.31%

Source: Project Implementation report, MOSPI,,,

a) Reasons for Overruns

As on 31st March 2009, there were 140 projects which reported both time and cost overruns to the extent of 48.41% from their original cost and time (overrun ranging from 1 to 180 months). The sector wise details and extent of time and cost overrun are given in the table below.

FACTORS	NUMBER OF PROJECTS
Fund constraints	31 (28 projects are in Railways, 1 in Coal and 2 projects in Power sectors)
Land acquisition problems	22 (12 in Railways, 6 in Coal, 3 in and 1 in Power sectors)
Slow progress in areas other than civil works	79 (63 in Railways 7 in Petroleum, 5 in Power, 3 in Coal and 1in Steel sectors)
Law and order	10 (5 in Railways , 4 in Power and 1 in Coal sector)
Delay in supply of equipment	5 (2 in Petroleum, 2 in Power and 1 in Railways sectors)
Environmental clearance	2 (1 each in Petroleum and Railways sectors).
Others (problems of technology selection, award of contract, delay in civil works, geo-mining, court cases, inadequate infrastructure, bad weather and Govt. clearances)	48

Source: Project implementation report

In addition, the following reasons have also been contributing to time and cost overruns:

Reasons for Time Overruns:

i. Lack of supporting infrastructure facilities,

ii. Delay in finalisation of detailed engineering plans, release of drawings and delay in availability of funds,

iii. Changes in scope/delay in finalization of the scope,

iv. Industrial relations and law & order problems,

v. Delay and uncertainty in feedstock supply

vi. Pre-commissioning teething troubles,

vii. Technology problems, and

viii. Geological surprises.

Reasons for Cost Overruns

i. Time overruns,
ii. Changes in rates of foreign exchange and statutory duties,
iii. High cost of environmental safeguards and rehabilitation measures,
iv. Higher cost of land acquisition,
v. Change in the scope of the project,
vi. Higher prices being quoted by the bidders in certain areas,
vii. Under-estimation of original cost, and
viii. General Price rise.

The above data is actually a conservative estimate; the MOSPI report indicates that 149 projects were approved without a target date for commissioning and, as at the time of reporting, the anticipated date of commissioning has not been firmed up for 185 projects.

Several studies have been conducted on the current mechanisms and procedures for preparation, approval, implementation and review of public sector projects. The most important of these is the "Report on Reforming Investment Approvals and Implementation Procedures- Volumes I and II", prepared by a Government appointed Committee (Govindarajan Committee) under the Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, whose recommendations have been accepted by the Govt of India in 2003.

The report covers both upstream and downstream issues that impede projects in India, and identifies the following important issues to be addressed through reforms in procedures:

Upstream Issues are issues that arise from the stage of conceptualisation of a project until the completion of all investment approvals, including any permissions, licenses, approvals, etc.

Downstream issues include all the implementation and operational issues starting from the stage of investment approval in case of a public project or financial closure in case of private project up to the commencement of commercial production. It would also include the various statutory approvals/clearances required for commissioning the project, and also the post-commissioning operational issues.

b) The report identifies the following causes for poor quality of project decisions and delays in implementation:

Process related

- *Significant time lag between the grant of 'in principle' approval* and submission of detailed feasibility report for appraisal.

- *Poor quality of project formulation* resulting in delays in decision making and implementation in many cases. Issues that should have been identified and addressed at the formulation stages, but were missed out, also cause delays in implementation, overruns, need for revision of cost estimates and a fresh set of approvals.
- *Multiplicity of agencies*, viz., Expenditure Finance Committee (EFC), Public Investment Board (PIB) etc., for project appraisal leading to delays in decision-making. Many agencies provide inputs at the stage of project appraisal often resulting in overlap and redundancy in their roles. Involvement of many agencies at the stage of project formulation and appraisal also makes it difficult to fix responsibility.
- *Delays in project appraisal and approval* beyond the prescribed time.
- *Absence of professional project management approaches* that have evolved recently. This includes cross-functional teams to determine best project configuration, early identification of key personnel to manage the project, skill based staffing, continuity of project teams and rigorous evaluation.
- *Inadequate use of IT* in decision-making.

Organisational Issues

- *Lack of appropriate performance management systems* in the Government and public sector resulting in adversely impacting timeliness and accountability
- *Inadequate target setting and evaluation*.

Capacity Constraints

- *Lack of specialized skills* in project formulation and appraisal
- *Absence of professional advice* on project formulation and appraisal
- *Limited codification* of knowledge and maintenance of database, compendium of standard appraisal techniques and documentation formats.

Implementation

- *Multiplicity of laws* governing same or similar set of issues.
- *Requirement of a large number of approvals/permissions.*
- *Separate clearances/approvals required* from different authorities on same or similar issues.
- *Too many points of contact* between investor and authorities.
- *Lack of transparency* in the administration of clearances and approvals.

- *Large number of returns* and amount of information to be provided to many departments/agencies.
- *Little communication* and information-sharing among related departments.

The report also makes a number of recommendations to address these issues. These include:

- *Establishing and suitably resourcing a Project Appraisal Unit (PAU) in the Planning Commission* as the primary appraising agency for all public projects entailing investment of Rs. 25 crore and above.
- *Establishing Facilitation Teams in Administrative Ministries* to identify and remove bottlenecks and ensuring better co-ordination among concerned Ministries/Departments.
- *Strengthening Project management skills* for facilitation teams, through training on modern project management and best practices, conducted by IIMs and other Management Institutes of repute.
- *Upgrading Project formulation and evaluation skills* in the Ministries and PSEs through orientation trainings with assistance from Multilateral Financial Institutions.
- *Re-engineering of the regulatory process* to reduce or club several clearances, simplify and expedite approvals, including scrapping of Acts that have outlived their utility.
- *Introducing an empowered 'Single Window System'* at the State level for project clearances.

While the above factors apply mostly to large projects undertaken by the public sector or under the PPP mode, even for private sector projects involving the setting up of new industrial undertakings, several external factors can cause delays and cost over runs. The various steps involved in setting up industrial units and the Project Clearance and Approval Requirements are listed below.

Industrial Approvals

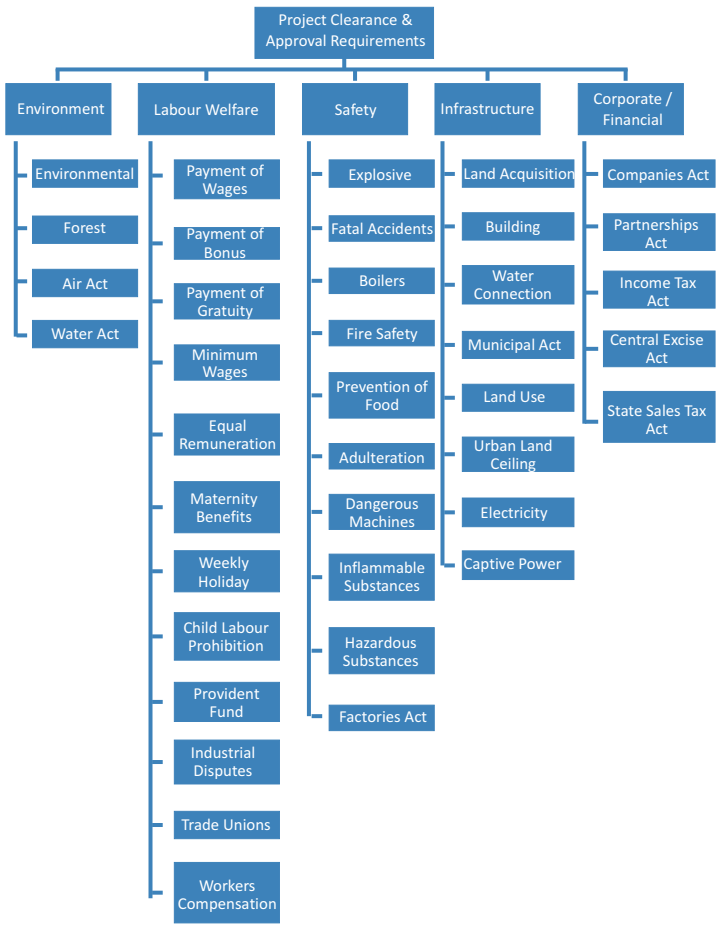
Any industrial activity in India requires multiple clearances from the stage of initial incorporation of the entity until the launch of commercial production. Depending on the state, nearly every industrial activity involves around 25 standard approvals as listed below. Additionally, there are several sector-specific clearances in sectors like civil aviation, telecommunications, power, mining etc. In effect, industrial approvals may involve contact with over 36 to 40 approving agencies, ranging from Central to State to local levels of government. Under normal conditions, implementing these approvals takes anywhere upwards of 15-18 months from the application stage, through construction and installation, until the start of commercial production.

Therefore, implementing any industrial project in India requires considerable hands-on involvement in obtaining project related clearances, and resultantly, some form of project management emanating purely from the external, mandatory requirements.

The effective management of investment projects underscores the importance and critical gaps in the application of proper professional management, in accordance with established international models and guiding principles. Therefore, learning and using the language of project management is becoming an essential ingredient for the continued growth of India in the coming years.

A listing of the project clearance and approval requirements, at the central and State level is as follows:

DOWNSTREAM APPROVAL REQUIREMENTS



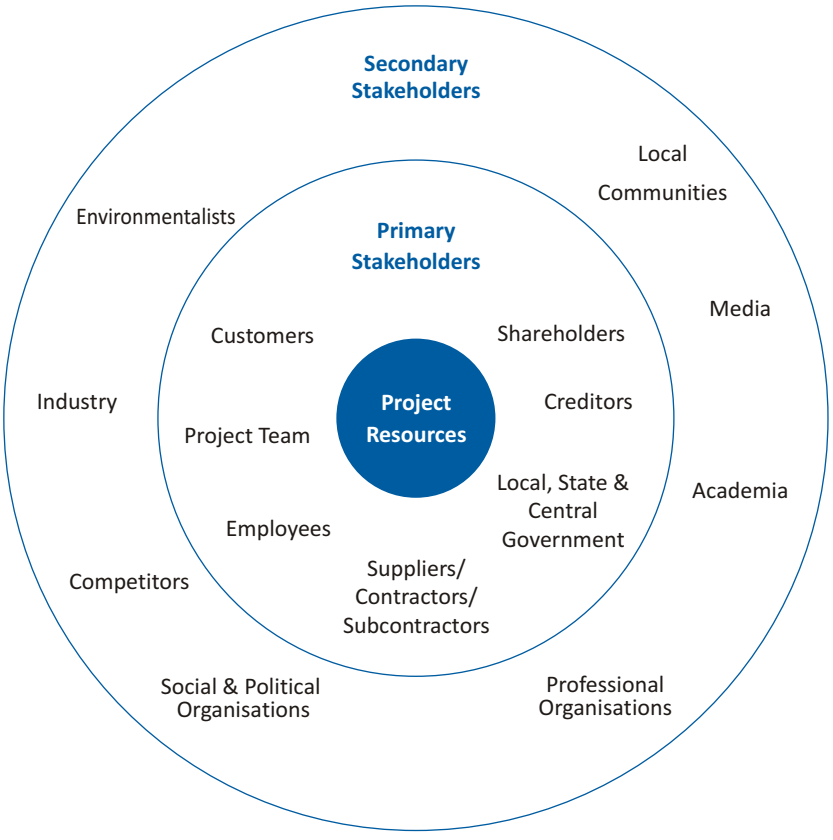
Level of Approval

Environmental:	From Central and State Government
Labour Welfare:	From State Government
Safety:	Explosives from Central Government, others from State Government
Infrastructure:	From State Government and Local Bodies
Corporate and Financial:	From Central Government State Sales Tax from State Government

B. Key Players and Stakeholders

Stakeholder management is essential to make a project successful, and it is important to know the views and interests of the stakeholders to a proposed project. Managing stakeholders can influence the planning processes of a project and help set the expectations and assumptions of the project.

A project usually has two kinds of stakeholders:-



i. Primary Stakeholders are the stakeholders who are directly affected, either positively or negatively by the project or who can in turn affect the outcome of a project.

ii. Secondary stakeholders are the intermediaries in the process of delivering aid to primary stakeholders.

A few key players that play a crucial role with respect to the adoption and spread of professional project management have been profiled below:

1. Government

a) The Ministry of Statistics and Programme Implementation (MOSPI)

This is the apex-level central monitoring organisation of the Government of India for all Central Sector Projects costing Rs.20 crore and above. On the basis of computerised data base and comments furnished by the project authorities/administrative Ministries and in-house analysis, its Infrastructure and Project Monitoring Division (IPMD) prepares Monthly Flash Reports in respect of the major and mega projects. A special report for the Prime Minister's Office on Projects costing Rs. 500 crore and above is prepared every quarter bringing out major problems in implementation. The Quarterly Status Report is brought out in respect of all projects costing Rs. 20 crore and above.

MOSPI has initiated several measures to improve the systems and procedures relating to project formulation, implementation and monitoring, including: prioritization of projects; introduction of project milestones, adoption of network-based monitoring, and extensive training of project managers.

General Improvements in Project Management: Being the central monitoring agency of the Government of India, IPMD of MOSPI has been able to document problems faced by project authorities in different sectors. Suggestions, from time to time, and various remedial measures to be adopted for better implementation of projects have also been given in various fora. The Division is engaged in examining the causes of time and cost overruns in projects and identifying bottlenecks during implementation. It also examines specific projects to fix responsibility for overruns. The Division has been creating awareness for bringing in qualitative change in the system of project management and implementation, by organizing workshops and seminars for the N.E. States and newly created States.

Past Management Initiatives and System Improvements: Particular attention has been paid to major factors, like delay in land acquisition, fund constraints, delay in award of contracts and civil works, supply of equipment, etc. Efforts have also been made to identify system deficiencies relating to project formulation, functioning of Empowered Committees, Contract Management System and Arbitration.

Some of the recent management initiatives being followed up by the MOSPI are:

i. ***Amendments to the Land Acquisition Act:*** Introduced to the Lok Sabha in December, 2007. Ministry of Rural Development also got the National Policy on Resettlement notified on 31st October, 2007. A bill in this regard was also introduced in the Lok Sabha in December, 2007. Both the Bills are under evaluation of the Standing Committee of the Ministry of Rural Development.

ii. ***Standardisation of the Contract Management System:*** Standardisation of contract documents, particularly in the light of constraints in award of contracts, reasons for failure of contracts, poor contract management, etc.,

have been addressed through the adoption of model Standard Contract Management System consisting of (i) Standard Contract Clauses and (ii) Standard General Conditions of contract, which have been approved as guidelines for adoption at the National level. Efforts are also being made to improve institutional arrangements for efficient management of arbitration.

iii. ***Institution of Standing Committees*** in each Ministry to review the time and cost overruns in projects and to fix responsibility thereto has been made more effective by introducing a system of furnishing an Action Taken Report (ATR), which has become mandatory for approval of Revised Cost Estimates (RCE) by PIB/CCEA.

iv. ***Reforming Extant Procedures for Project Formulation, Implementation and Monitoring:*** The Ministry carried out a detailed study on the various types of clearances (103 types), analysed their relevance in the present environment and made the findings available to a High Level Committee headed by Shri V. Govindrajan. The ministry assisted the Committee to bring out its report in two volumes on Extant Procedures for Project Formulation, Appraisal, Implementation and Monitoring. These recommendations were accepted by the Government.

b) Public Investment Board

Public Investment Board (PIB), under the Ministry Of Finance has been established to examine the investment plans put forward by the individual ministries of the Indian Government in lieu of the respective public sector undertakings. Under the existing guidelines, the Central Sector Projects costing Rs.100 crore and above, fall under the purview of PIB.

c) Planning Commission

Planning Commission, whose main function is formulation of India's Five Year Plans, has a number of divisions responsible for appraisal, monitoring and evaluation of projects and schemes. These are:

i. **Project Appraisal Management Division (PAMD)** was set up in 1972 to institutionalize the system of project appraisal in Government of India. The Division is mainly responsible for techno-economic appraisal of all Plan projects /schemes of Ministries/Departments of Government of India to facilitate investment decision by the Expenditure Finance Committee/Public Investment Board. It also develops formats and guidelines for the submission of proposals for projects / programmes. As a part of techno-economic appraisal, PAMD presently appraises Central Sector/Centrally Sponsored schemes/projects costing Rs.50 crore & above, and prepares Appraisal Notes in consultation with the concerned Division of the Planning Commission. The PAMD is also a member of the various Standing Committees constituted in Ministries /

Departments to examine the Revised Cost Estimates proposals for projects where time overrun and cost overrun have occurred, to assign responsibility for the time and cost overruns.

ii. **Programme Outcome and Response Monitoring Division (PO&RM Division)** measures the physical outcomes of major programmes & schemes. PO&RM Division has put in place a system to convert financial outlays of various developmental programmes into physical outcomes with targets in respect of various predefined outcome parameters.

iii. **Programme Evaluation Organisation (PEO)** was established in October, 1952, as an independent organization, under the general guidance and direction of the Planning Commission with a specific task of evaluating the community development programmes and other Intensive Area Development Schemes. The evaluation studies are designed to assess the performance, process of implementation, effectiveness of the delivery systems and impact of programmes and aim at identifying the factors contributing to success/or failure of various programmes and deriving lessons for improving the performance of existing schemes through mid-course corrections and better design of future programmes.

iv. A facility called **'Planning Commission Project Preparation Facility' (PCPPF)** has been constituted to help State Governments and the Union Territories to engage Professional Consultants for preparation of Detailed Project Reports specifically for projects proposed to be funded from external and institutional sources.

d) Department of Economic Affairs (DEA)

DEA is the nodal department of the Union Government to formulate and monitor country's economic policies and programmes having a bearing on internal and external aspects of economic management. Within the Department, there is a ***Project Management Unit (PMU)*** which performs the following functions:-

- Monitors project expenditures, award of major contracts and implementation of major activities on a quarterly basis through regular feedback from central ministries and state nodal officers;
- Coordinates work relating to preparation of budgetary estimates for all externally aided projects;
- Coordinates work relating to plan discussions with planning commission; and
- Coordinates with donor agencies for such measures as streamlining of procurement procedures.

e) Ministry of Human Resources Development

The Ministry of Human Resources Development (HRD) is an Indian government ministry, responsible for the development of human resources across the country. The Ministry is divided into two departments: the Department of School Education and Literacy, which deals with primary

education and literacy, and the Department of Higher Education, which deals with secondary and post-secondary education. The Department is divided into six bureaus, of which one is the Technical Education Bureau which covers courses and programmes in engineering, technology, management, architecture, town planning, pharmacy and applied arts & crafts, hotel management and catering technology.

Most the work of the Department of Higher Education is through about 90 autonomous bodies that it oversees. Some of the bodies related to the fora of project management courses are:

- All India Council for Technical Education (AICTE)
- The thirteen[2] Indian Institutes of Technology (IITs)
- The seven[3] Indian Institutes of Management (IIMs)

f) All India Council for Technical Education (AICTE)

Technical Education covers courses and programmes in engineering, technology, management, architecture, town planning, pharmacy and applied arts & crafts, hotel management and catering technology. Project Management comes under the umbrella of technical education and AICTE is the statutory body, established in November 1945 for proper planning & co-ordinated development of technical education system throughout the country.

As a national level Apex Advisory Body, it conducts survey on the facilities for technical education and promotes development in the country in a coordinated and integrated manner. To ensure the same, as stipulated in the National Policy of Education (1986), AICTE has been vested with statutory authority for planning, formulation and maintenance of norms and standards, quality assurance through accreditation, funding in priority areas, monitoring and evaluation, maintaining parity of certification and awards and ensuring coordinated and integrated development and management of technical education in the country.

2. Academia & Service Providers

There are dozens of institutions and other service providers dedicated to developing project management skills in India including leading technical and management education institutions and specialist business schools; domestic industry associations and international Project Management training and certification providers. Besides, there are Registered Education Providers (REPs) approved by PMI® that issues Professional Development Units (PDU) for its training courses. The range and duration of products and programmes offered are also diverse ranging from 1 week to 2 years.

However, still there is a lack of awareness of benefits of Project Management among the industry & especially in the government sector. The academia faces vast challenge of spreading awareness of Project Management and its benefits across the country.

- Technology is changing at a very fast pace that necessitates continuous upgradation in curriculum of Project Management of these institutions. It also poses a challenge for the faculty to upgrade their knowledge continuously. Large training institutions need to collaborate with the academia to further project management education.
- The Project Management training market is highly dispersed in India with various independent domestic training institutions, higher education institutions and universities advocating project management principles. However, most of them lack on the credibility factor and only a few *internationally* recognized training institutions are present in India providing focused and quality training on Project Management, including the Project Management Institute.

3. Industry

In today's global economic scenario the industry is continually seeking ways to manage and complete the projects affordably, in the most efficient manner and with optimal utilization of limited resources. Apart from the government, the private sector has a major stake in projects.

Projects are essential to the growth and survival of organizations today. Organizations have come to realize they cannot stay in business if they cannot manage their projects. However many companies are still limiting the application of project management to the tactical level. Hence, adoption of structured project management processes in companies is essential for managing projects efficiently and achieving the desired output.

Within the industry, there are sector wise variations with respect to the status of development of projects and project management practices being followed. The following section provides an overview of some of the key sectors, with the status of project management practices followed in companies across sectors**.**

a) Transportation (Roads, Ports & Aviation)

Roads

To improve the country's road infrastructure, the Indian government estimates over US$ 90 billion investment over 2007-12. Plans announced to increase the investments in road infrastructure would increase funds from around US$15 billion per year to over US$ 23billion in 2011-12. The Government of India, through the National Highway Development Program (NHDP) is planning more than 200 projects in NHDP Phase 3 and 5 representing around 13000 km of road. The average project size is expected to be of the order of US$ 150 million to US$ 200 million. Larger projects are likely to reach US$ 700-800 million. About 53 projects with aggregate length of 3000 km and an estimated cost of around US$8 billion are already under prequalification stage. In addition to this more than 10 states are actively planning the development of the highways. While the average size of these projects is smaller than the NHDP projects, most will still be substantial in the US$ 100-150 million range.

[2] Two more IITs are set to operate in the year 2009-10; Another IIT in Southern India is proposed to be completed by 2012 as part of the 11th Five Year Plan, which would take the total number of IITs to 16

[3] The 11th five year plan of India proposes 7 new IIMs by the end of 2012.

Some of the Physical targets set for 2007-12:

- Six-laning 6,500 km of Golden Quadrilateral and selected National Highways
- Four-laning 6,736 km on North-South and East-West Corridors
- Four-laning 20,000 km of National Highways
- Widening 20,000 km of National Highway to two lanes
- Developing 1,000 km of Expressways
- Constructing 8,737 km of roads, including 3,846 km of National Highways in the North East
- Constructing 1,29,707 km of new rural roads, and renewing and upgrading existing 1,77,726 km covering 60,638 rural habitations

Ports

An estimated investment of US$ 22 billion is targeted for port projects in the five year period from FY07-FY12. The national maritime development program includes 276 projects, with a required investment of about US$ 15 billion over the next 10 years, with private investment targeted at US$ 8 billion. In addition to improving road and rail connection, projects related to port development provide major opportunities for E&C companies.

Some of the Physical targets set for FY 07-12:

- Capacity addition of 485 million MT in Major Ports
- 345 million MT in Minor Ports

Airports

The Indian government has projected that an investment of US$ 8 billion in the five year period will be needed to cope with the rising air traffic and private sector participation is expected to play a key role. The government has proposed the establishment of an Airport Economic Regulatory Authority (AERA) to promote efficiency, competitive pricing and a customer-focused service. State Governments are also getting involved and looking to facilitate the development of new airports. The total investment on new airports has been proposed at about US$10 billion by 2012. Greenfield Airport Projects are planned in resort destinations and emerging metros such as Goa, Pune, Navi Mumbai, Greater Noida and Kannur. Further, bids for 35 non-metro airports are scheduled to be invited shortly. The EPC contractors are expected to be sought for Chennai and Kolkata airports in the immediate future.

Some of the Physical targets set for FY 07-12:

- Modernisation and redevelopment of 4 metro and 35 non-metro airports\
- Constructing 3 Greenfield airports in North East
- Constructing 7 other Greenfield airports
- Upgrading CNS/ATM facilities

Railways

The Indian govt has recognised the existing infrastructure gaps and capacity constraints in the rail system and as a consequence planned large scale investment over the 5 years from FY 07-12. Projected investments total US$ 65 billion of which 40% is to be contributed by the private sector. Other proposed initiatives include the development of manufacturing plants for rolling stocks with long term committed procurement for several years and the setting up of logistics parks. City metro systems are also in the pipeline. Indian railway is also looking for private partners to help modernise railway stations to world class level and for projects focussed on increasing connectivity with ports

Some of the Physical targets set for FY 07-12:

- Constructing Dedicated Freight Corridors between Mumbai-Delhi and Ludhiana-Kolkata
- 8,132 km of new railway lines; gauge conversion of 7,148 km
- Modernization and redevelopment of 22 railway stations
- Introduction of private entities in container trains for rapid addition of rolling stock and capacity

b) Telecommunications

The Indian telecommunications industry is one of the fastest growing in the world and is already the second largest mobile market in the world. India added 113.26 million new customers in 2008, the largest globally. The country's cellular base witnessed close to 50 per cent growth in 2008, with an average 9.5 million customers added every month. As on end September 2008, India had a mobile penetration of around 27%, which is still relatively low as compared to other countries. With nearly US$ 64 billion projected to flow during FY07-12, the Indian mobile sector is already an intensely competitive industry, featuring 10 mobile operators, of which four, namely Bharti Airtel Limited, Reliance Communications Limited, Vodafone Essar Limited and BSNL, together account for almost three-fourths of the entire mobile market share.

Managing Projects in Telecommunication Services draws from a wide range of disciplines, including organizational management, motivation, quality control, and software engineering. Some of the Physical targets set for FY 07-12:

- Achieving a telecom subscriber base of 600 million, with 200 million rural telephone connections
- Achieving a broadband coverage of 20 million and 40 million internet connections

c) Oil and Gas

The oil and gas sector in India presents a significant opportunity for investors and is expected to demonstrate robust growth in line with the growth of the Indian economy. An investment of US$167 billion is projected to flow in FY2007-FY2012. Given India's targeted GDP growth, India's

fuel needs are likely to expand at a substantial rate. India's per-capita consumption of energy and electricity is well below that of industrialized nations and the word average, meaning that there is scope for rapid expansions.

A few of the key players involved in the sector are Reliance, Petro Net, Essar, Cairn Energy, British Gas. Two major events this year, the commencement of production of natural gas from Reliance Industries Ltd's (RIL) Krishna Godavari (KG) fields and the scheduled commencement of production of crude oil from Cairn India Ltd's fields later this year have provided a major boost to the domestic oil and gas sector in India and have meant that upstream activities have received major attention over the past years.

At present, the oil and gas industry is exposed to alarming levels of uncertainty and risk resulting in a complex environment for project managers in the industry. There have been instances where poor project management has resulted in massive losses of resources and money for a large number of oil and gas companies. In a climate of volatile oil prices, it is more important than ever to halt these losses. Today's supercharged environment due to increasing risks in terms of costs of delay and missed opportunities, has elevated the importance of quality project management practices.

d) Power Sector

India's power demand is likely to cross 300 GW in the next 10 years earlier than most estimates. Meeting this demand will require a fivefold to tenfold increase in capacity addition. The profile of planned capacities will also need to be suitably modified to fulfil peak demand; keep emissions under check, reduce dependence on imported fuels and provide affordable power.

If India continues to grow at an average rate of 8% for the next 10 years, the country's demand for power is likely to soar from around 120 GW at present to 315 to 335 GW by 2017. Two key factors will drive this demand:

- India's manufacturing sector growing faster than in the past
- Residential consumption growing at 14% over the next 10 years

To fulfil its power requirement, India will require a generation capacity of 415 to 440 GW, after adjusting for plant availability and a modest 5 % spinning reserve. This includes a tripling of the installed capacity from the current level of about 140 GW, which in turn translates into an annual addition of 20 to 40 GW. This is fivefold to tenfold the 4 GW per year that was achieved in the last 10 years.

To keep pace with the soaring demand, India's power sector will need investments of about US$ 600 billion or Rs 24 lakh crores by 2017. Of this around us$300 billion will be necessary for generation, about us$110 billion for transmission and the balance us$190 billion for distribution.

It takes five to six years to build a thermal power plant in contrast to two to three years in china and less than four years in most countries. Delays in acquiring sites and obtaining necessary approvals, as well as equipment shortages and EPC bottle necks are constraining the pace of capacity addition.

Plan wise comparison of investment in Power sector

Sectors	Tenth Plan (Anticipated Investment)			Eleventh Plan (Projected Investment)		
	Rs. crore	US$ bn.	Shares (%)	Rs. crore	US$ bn.	Shares (%)
Electricity (incl. NCE)	291,850	72.96	33.49	666,525	166.63	32.42

Source: Planning commission

Year wise comparison of investment from 2007 to 2012

Sector	2007-08	2008-09	2009-10	2010-11	2011-12	Total XI Plan
Electricity (incl. NCE)	81,954	101,553	126,380	158,027	198,611	666,525

Source: Planning commission

The sector is dominated by government-owned behemoths at both the national and state levels; 88 percent of utility-based power is produced by government generators (state government generating plants account for close to 60 percent of total installed utility capacity in the country), and transmission is almost entirely within the public.

But, the power capacity additions haven't been impressive in this 11th five year plan; the first two and a half years of the ongoing 11th five year plan saw capacity addition of 17150 MW, which was a little more than half the capacity targeted for addition over the period. The month of September 2009 saw all thermal capacity addition of 250MW, down from 750 MW in July and 1050 MW in August. In fact it was the lowest monthly addition during the current fiscal, meeting only half of the targeted addition. As a result of this suboptimal performance, capacity addition declined from 2358 MW in Q1 of 2009-10 to 2075 MW in Q2. While underachievement was the largest in thermal power followed by hydro power, nuclear power drew a blank till September, barring 220 MW commissioned in 2007. Meanwhile renewable energy sources are assessed to have added around 5549 MW of capacity over the period, which took the total generation capacity to 152360 MW at the end of 2009.

Capacity Addition during 11th Plan (MW)

	2007-08		2008-09		2009-10 (April-September)		Total till September 2009	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Thermal	6620	12704	2484	9304	4394	6103	13498	28111.4
Hydro	2423	2751	969	1097	39	139	3431	3987
Nuclear	220	880	0	660	0	220	220	1760
Total	9263	16335	3453.7	11601.2	4433	6162	17149.7	33858.4

Source: MOSPI

Status of projects

There were 88 power projects on the MOSPI's monitor at the end of the 1st quarter of 2009-10. The overall status of the projects w.r.t. the original schedule is as follows

Status of Projects as on 30.06.2009

Category	Total no. of Projects	Within Time & Cost	Within time but with cost overrun	Within cost but with time overrun	With time and cost overrun
Mega	36	16	1	9	10
Major	48	31	4	7	6
Medium	4	1	2	0	1
Total	88	48	7	16	17

Source: MOSPI

Two of the projects namely, Tuirial HEP of NEEPCO in Mizoram and Loktak Downstream HEP of NHPC in Manipur have seen no project activity during the year due to mainly revision of the project scope and estimates. Subansiri Lower H.E.P. of the NHPC is also currently experiencing hurdles in its progress due to non-cooperation from the Govt. of Arunachal Pradesh and frequent disruptions of work by the local people.

e) Engineering, Procurement and Construction (EPC)

Although not a sector by itself, perhaps the most important business relevant for this study is India's Engineering, Procurement and Construction (EP&C) contracts market, which is less than ten years old. Globally, EPC contracting is also known as the Lump Sum Turn Key (LSTK) contracting market, in which projects are executed by specialist companies, on the basis of a comprehensive, one-stop contract, inclusive of equipment/materials, engineering, and construction. Over the past ten years, there has been a spurt in the number of EPC contracts awarded in India, particularly in government-sponsored infrastructure projects. The future of EPC is bright given the estimates of public spending on infrastructure, with a large share of investments being brought in by the private sector, including foreign investors.

India's leading EPC contractors are: home grown companies like BHEL, Larsen & Toubro, HCC, Tata Projects, Gammon India, Toyo Engineering and Punj Lloyd, besides multinational companies like ABB, Aker Kvaerner, Siemens and Uhde. According to industry estimates, the top ten companies account for almost 35% of the total EPC market in India. EPC contracts account for approximately 60% of L&T's revenue.

The most important advantages of the EPC/ LSTK contract model to the client or developer are:

- Single point accountability /responsibility for execution
- Minimal or no cost escalation all unspecified risks are borne by the EPC contractor

As a result, while EPC contracting makes sense for buyers, it calls for complex management skills on the part of contractors, particularly with regard to time, human resources and cost management aspects. In case of contracts involving international procurements, the brunt of exchange rate fluctuations is borne by EPC contractors. This necessitates meticulous planning by EPC companies, for project execution, constant monitoring and risk mitigation, which explains the greater awareness and appreciation of the importance and contribution of Project Management principles. Therefore it is not surprising that the largest number of project management professionals is employed at EPC companies.

f) IT sector

The domestic IT market (including hardware) reached US$ 24.3 billion in FY 2008-09 as against US$ 23.1 billion in FY 2007-08, a growth of 5.3 per cent. India Inc's demand for IT services and products has bolstered growth in the domestic sector with deal sizes going up remarkably and contracts worth US$ 50 million-US$ 100 million up for grabs.

Indian IT-BPO sector grew by 12 per cent in FY 2009 to reach US$ 71.7 billion in aggregate revenue (including hardware). Of this, the software and services segment accounted for US$ 59.6 billion. According to NASSCOM, software and services exports (including exports of IT services, BPO, engineering services and R&D and software products) reached US$ 47 billion in FY 2008-09, contributing nearly 78 per cent to the total software and services revenue of US$ 59.6 billion. IT-BPO exports (including hardware exports) grew by 16 per cent from US$ 40.9 billion in FY 2007-08 to US$ 47.3 billion in FY 2008-09.

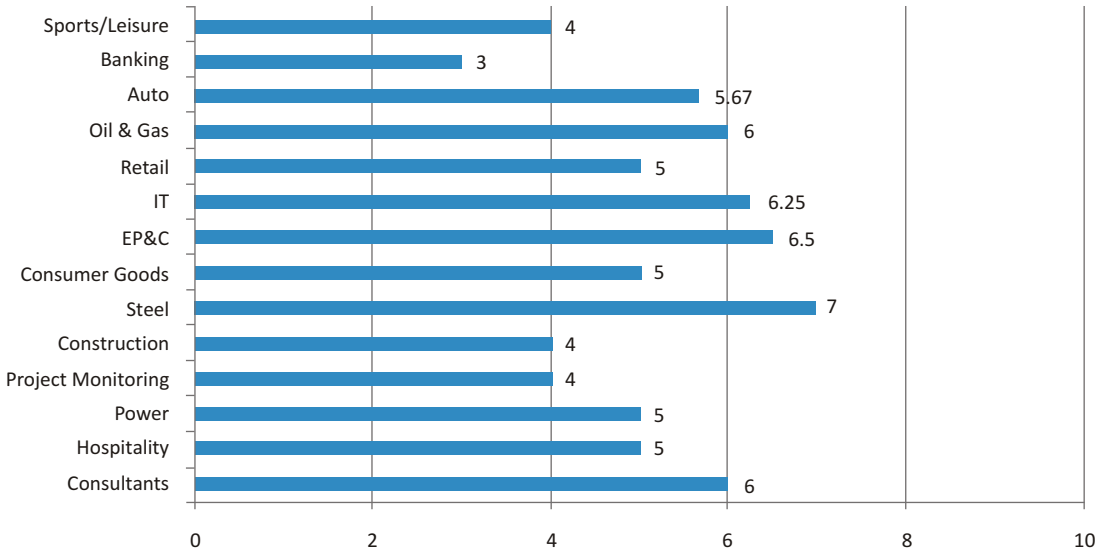
A general finding during the study is that Project Management Certification has a greater pull in the IT Sector, primarily because of the requirements from the international clientele and to come at par with the compliance norms. The fact that major export destinations are US and EU and also that all major global players have India operations, are some of the chief reasons for high induction of project management practices in this sector.

C. Professional Project Management Practices

Project management practices differ across companies as well as across sectors. The primary survey revealed that practices also typically differed not only on the basis of size and complexity of the project involved, but also across various forms of ownership (Public or Private). Since there is no documented material on Project Management practices, most of the following section has been built on the basis of discussions with a cross section of organisations.

The sector wise perceptions as to how far the respective sectors have evolved in terms of Project management practices have been quantified on a 10 point scale under the following classifications 0-3 below average, 3-5 average, 5-7 good, and 7-10 very good.

Sector wise perceptions as to how far the respective sectors have evolved in terms of Project Management Practices



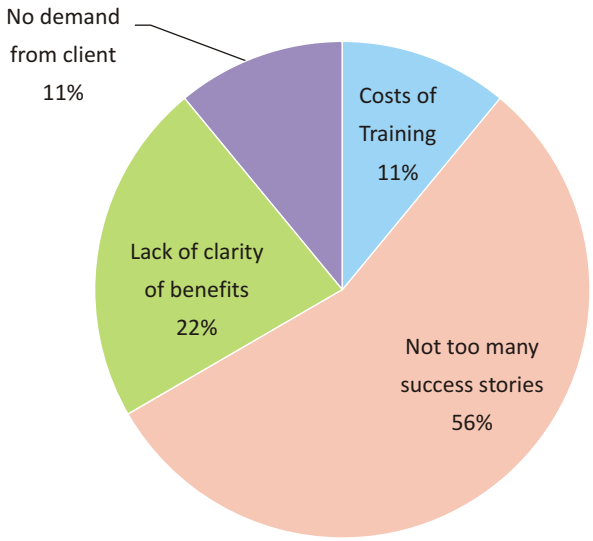
The above trend highlights a higher level of maturity of project management practices in the capital intensive sectors (e.g. Power, Steel, and EP&C) or sectors like IT, which involve multidimensional or complex projects. This inference is also validated by the finding that more than 90% of the respondents indicated increasing size and complexity of the projects, the two chief factors which necessitate acceptance of project management practices in every sector.

1. Government Agencies

There is sufficient, well documented substantiation of the inadequate capacities in most government agencies in respect of project management concepts, mechanisms, processes and systems. The Govindarajan Committee Report on Reforming Investment Approvals and Implementation Procedures identified staff training and knowledge building as an important bottleneck in the government agencies' ability to formulate, implement and monitor their programmes and projects. (This report along with its ensuing recommendations has been accepted by the Government.)

Of the public sector respondents, 56% claimed that project management practices are either not rigorously followed in their organizations or the practices are not up to the mark. However 55.6% of respondents from PSUs claimed that there is sufficient awareness of the benefits of Project Management Practices, but these benefits are not realised due to external constraints which are much more complex in public sector projects. This leads to low levels of success despite some project management which only weakens adoption further. The primary survey authenticates this fact with nearly 56% of the respondents pointing out 'lack of success stories' as the most important factor hindering voluntary adoption of Project management practices while 25% each pointing out 'costs of training' and 'lack of client led demand' as the other two reasons.

Factors hindering voluntary adoption of Project Management



a) Why are project management Practices in public sector not up to the mark?

- **Externalities**

A third of the public sector respondents pointed out that their project management structures have remained unchanged over the years. Usually in a given project, irrespective of the size, the title of project manager is assigned purely on the basis of seniority/line experience, and not necessarily on appropriate project management track record. Lack of accountability for delays provides little incentive to change the existing structure or practices. Project management efficiency in public sector faces the following unique challenges:

- *External factors causing delays:* All the public sector respondents acknowledged that on an average 40-50% of their projects are delayed, although the dominant perception of Project Management practices throughout the public sector companies has been that of a time management tool. 67% of them claimed **external factors as the chief causes in delay**, most of them being land acquisition norms, delays in disbursements, initial clearances etc.

  - **Slow start ups-** complex and prolonged government internal procedures usually results in slow start ups

  - **Land issues are common:** Land is absolutely central to infrastructure, especially in a country like ours with a billion-plus population and a pace of urbanization that is increasing quite rapidly. One of the imperatives of project management is tackling the land related issues**.** India's Land Acquisition Act, 1893 is more than 100 years old and quite outdated. The government recently tabled two Bills in Parliament to

"We really do not know why we are following this project management structure. We have been doing it for so many years and we have never felt the need to change it"

A Senior Executive handling projects in a leading public sector company

amend laws on land acquisition and the relocation and rehabilitation of displaced people. Besides land acquisition, the state support and environmental and forest department clearances and stakeholder analysis are also very essential.

- **Delays in disbursements:** due to capital intensive nature of most of the public sector projects, delays in sanctioning of funds and if sanctioned, delays in disbursement play a crucial role at the early stage.

- *Cost escalations are never a concern*: Cost escalations have not been seen as a major issue in most of the public sector projects. And since most of them span over long durations, cost escalations are very common and can't be taken into account accurately in the beginning, which is why cost overruns have never been a serious issue for public sector companies. Based on the Recommendations of the Govindarajan Committee, the government has begun affixing accountability for cost and time overruns in various ministries, wherein the identified nodal officers of the projects shall be answerable to the Standing Committee for cost overruns.

- **Disconnect between Planning and Implementation Departments**

In most Public sector organisations, there is a disconnect between the initial and final stages of the Project Management. Very few organisations (such as parts of the Indian Armed Forces) have a projectized organisation structure, where the project manager is the highest authority. In most organisations the strategic planning unit resides in the top management, and is involved in the initiation, planning and closing of projects, particularly new business projects.

The importance of documentation has been emphasized through primary survey findings where 75% of the respondents said that one of the reasons why they are not able to have a structured approach is the lack of proper documentation of their past success or failures or the key findings of the review meetings which are held on an average every month in almost all public sector companies. It is imperative that everything learned during the project, from conception through initial operations, should be captured and form part of the institutionalised knowledge.

- **Accountability**

Perhaps the most important reason for tardiness in the public sector is the absence of accountability for delays and cost over runs. Frequent transfers of key officials, inability to convene committee meetings due to the non availability of members and lack of a robust performance appraisal mechanism for delivery of public projects have been the reasons for the high percentage of government projects experiencing delays. However, the situation has seen some improvements.

Recently, based on the Committee's recommendations, Standing Committees have been created in all Ministries, with one member from the MOSPI to ensure appropriate

monitoring and review of each project. For each project, nodal officers have been identified, who are answerable to the Standing Committee for delays and are enjoined to submit Action Taken Reports at each meeting. This is bringing about some level of personal accountability within the Ministries, for the implementation of key projects.

b) Positive trends in the public sector

Despite the current state of affairs, the primary survey also revealed some positive trends of the public sector, as follows:

- **Training programs given more importance than before**

Due to improved competitive landscape in most of the sectors, there are instances of public sector companies moving towards project management practices. 33% of the respondents pointed out that they have brought a change in their project management structure, which is more focused towards having a balance of formally trained professionals and a fresh team of engineers. One of the major reasons for such a move has been the lack of skilled manpower available for the public sector due to the increased preference of skilled manpower cadre towards the private sector. This limits the public sector to take whatever is offered and utilize it in the best way possible which is by giving them trainings at the appropriate levels and polishing their project management skills from time to time.

- **Increased Use of Software Tools**

44% of the public sector respondents said that they have been using project management tools like MS project which do provide a strong basis to monitor their day to day progress but at the end they are of limited or no productivity because of the frequency of delays due to external constraints.

- **Improvement in Planning and Technical Skills**

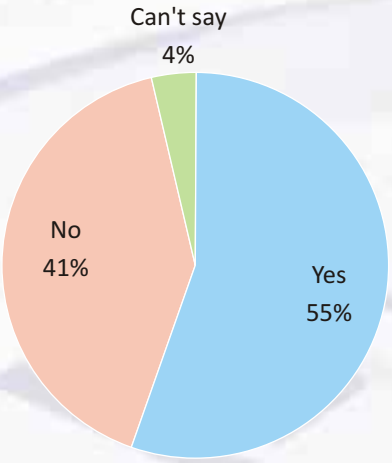
This point has been brought up by private sector respondents who pointed out that as against the earlier findings of public sector's technical and planning skills being weak and not being able to deliver the appropriate outcomes, there has been a marked improvement with some finding it to be even better than the Private Sector companies. It's only the management skills in public companies which fail them time to time.

2. Private Corporations

In general, there has been greater adoption of project management in the private sector, mainly due to the higher levels of autonomy of organisations to invest in such areas, and also the higher levels of individual accountability of managers. Also, private organisations have considerably more flexibility in dealing with internal bottlenecks, including reorganisation of human resources, which is practically impossible in government. Finally, the pressures of timely and cost-effective delivery are driven by the bottom-line focus of private organisations, unlike in government projects, which draw from the larger pool of budget resources and report on deficits and surpluses, and have recourse to monetisation.

In the Private sector, as opposed to the public sector findings, 73% of the respondents stated that their companies follow project management practices. Of these, 56% confirmed the application of project management practices in all their projects while 25% affirmed application of these practices only in cases of client-led demand.

Sufficient awareness of project management standards



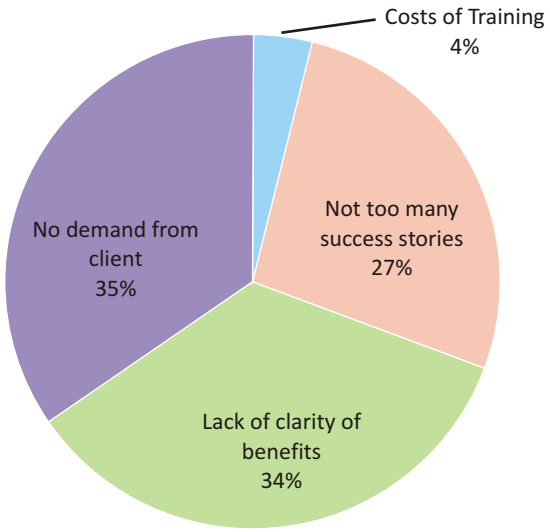
55% of the private sector respondents confirmed that there is sufficient awareness of benefits of Project management practices. Of the 73% practicing project management, 68% confirmed that there is sufficient awareness of the benefits of Project management practices. In other words, 32% of the respondents seem to be following project management practices without being aware of the benefits. Surprisingly this also includes the IT sector, where Project Management practices are perceived only as a technical qualification.

The industry perceptions indicated that 'lack of client led demand in India' is still a major factor hindering voluntary adoption of project management principles.

"This is the first time I'm getting to know that such certifications exist. Unless there is awareness of benefits among the government and corporates, they'll not buy the idea of certifications. Nobody at our institution even knows about it or have ever discussed about such certifications."

Project Monitoring Head at a DFI

Reasons which influence non acceptance of Project Management Standards



"The understanding of project management varies from person to person even in the IT sector. Why PM? What is PM? No one's aware... He is not even aware of the benefits that he might get... Even the experienced IT managers are unaware of the project management challenges. "

Programme Management and Advisory, PMP, in the IT Department

The induction of project management practices varied from company to company and from project to project. However some of the basic practices or approach which companies follow is broadly done at three levels:

a. Programme level

b. Project level

c. Construction / Implementation level

Construction/Project/Design Management is a narrow concept, while programme level management is much broader as it often involves a number of sub-projects or multidimensional projects within a common overall plan. In case of construction projects, there is a proper documented approach and structured Project management plans, while office based assignments do not necessarily have the same which usually slip away. The importance of documentation was once again emphasized by one of the oil giants who indicated that on an average 95% of all their projects are completed as per schedule, while 5% have slippages because of lack of documentation with respect to Project management experiences at other venues.

Penetration of software tools is comparatively higher amongst the private players with nearly 70% indicating the use of advanced Project Management tools like Primavera. Besides these, tools like SAT for Cost Control and Management and Project Master for Risk Management have also found usage in not many, but in some of the large private sector players.

"Gradually, there has been a client led demand. Customers now want timely completion of their projects. If we have proper project management practices at place, the projects have a better chance of getting completed within time."

General Manager, Oil and Gas Division, EP&C Company

India's IT companies have traditionally benchmarked themselves using the Capability Maturity Model (CMM) developed at the Carnegie Mellon University, which originated as a tool for assessing service providers contracted by the US government for software development projects. Over time, it has become the touchstone for process-related capabilities to undertake and deliver contracted software projects. The CMM provides maturity rankings (1 to 5, 5 being the highest level) for software development companies, and India has over 385 companies certified at various CMM levels, and the highest number of companies (14) having a CMM-5 certification, the highest in the world. CMM remains the most popular certification of process maturity in India's IT sector

Overall, the monitoring and the review mechanisms in the private sector are strong as well with 70% of respondents indicating weekly/ fortnightly review meetings and 30% indicating monthly review meetings are held for every project. 20% of the respondents pointed out that in critical projects apart from the regular internal reviews, monthly review meeting are also held either with the customers or with the higher management.

The Private sector places lot of importance on training programs. Particularly in the EP&C and IT sector, a large number of respondents pointed out that project management skills in their organisations are mostly developed through internal training programs conducted by HR department and also through participation in external training and certification programs. However, it was highlighted that the emphasis on in-house training has not been by choice, and seen as a compulsion, given the inadequate supply of certified experienced candidates. Many companies expressed a preference for head-hunting or recruiting suitably experienced project managers instead of developing a cadre within the organisation.

Correspondingly the benefits appreciated by the private sector respondents were in the form of in-time and on-budget parameters, with as many as 66% of the private sector respondents indicating completion of projects within the original time schedule and 15% indicating completion within the original budget and time targets.

D. Project Management Structures

Structure is important in ensuring that project management delivers consistent results in the long term. The way project management is structured, the styles of leadership being used by project managers, the roles and responsibilities of project team members, determines the effectiveness of projects.

Though many companies contacted in the research practice some form of project management, the structure of the project management organisation varies considerably. Project environments are characterized by complexity, change, uncertainty and unpredictability. As per the findings, 71% of the respondents indicated there is at least one-dedicated Project Manager in their organisations. On the other hand 43% of the respondents affirmed having at least one professional certified in Project Management in

their organisation. However, in some organisations, the designation of Project Manager does not exist, even though there may be some certified professionals. One of the respondents from the public sector pointed that there is no such designation as Project Manager in their company, but still have fairly large number of professionals certified in Project Management.

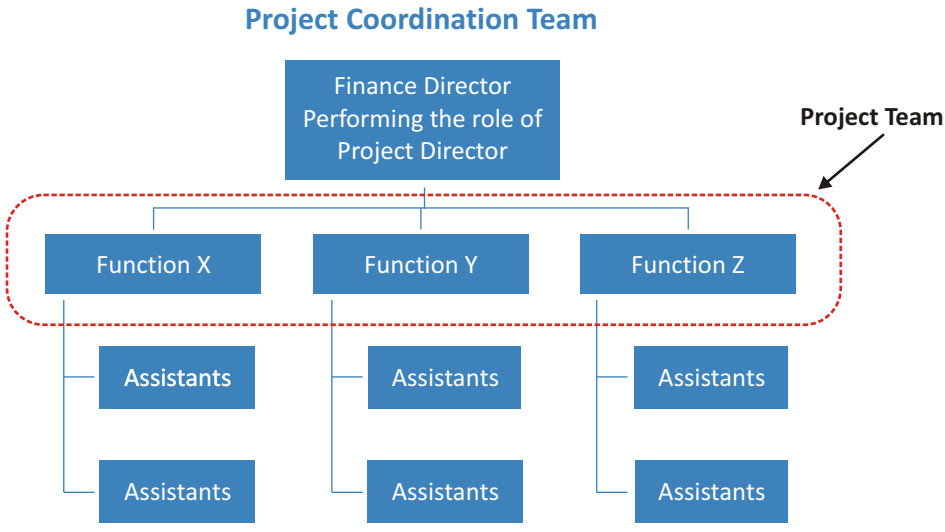
The Project Management structure varied across companies and also across projects in the same companies depending upon their size and complexity. The findings also reveal that projects in advanced technologies such as software development, pharmaceuticals, biomedicine, and space exploration etc. routinely encounter the unexpected. As a result, they need to be adjustable to changing goals and environmental forces and highly flexible in their Project Management structures as goals change.

A few illustrations of structures observed in the survey have been explained below.

1. Project as a Part of the Functional Organisation (Hybrid Project / Functional Organisation)

This type of Project Management Structure was observed in some of the companies interviewed (particularly in the Consumer Goods, Hospitality sectors). In this way of organising, the project is housed in one or more of the functional units of the organisation such as marketing, operations, finance, R&D etc. In such cases no full-time project manager is assigned and some other executive is required to perform the role of a project manager.

For instance, one of the respondents in the hospitality sector referred to the project of *Rehabilitation of the Hotel*, after a major fire accident that occurred in the hotel. The company assigned one top management executive, the Finance Director to the role of Project Director. His role was primarily of identification of tasks and their correct scheduling and execution. This project spanned over 18 months, with a budget of Rs. 70 crore. Rather than outsourcing the work to a Project Management Consultancy, the Director delegated different tasks of this rehabilitation project to the respective functional units. The structure of the project team was:



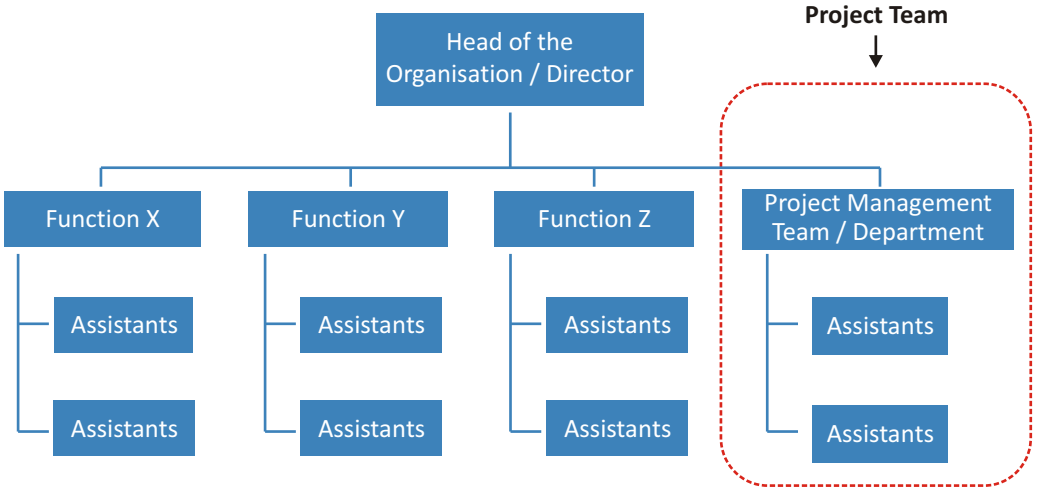
2. In-House Project Organisations/Departments

At the other end of the spectrum is the creation of independent project teams. Corporations which execute projects that entail high-level complexity, major resource commitments, and heavy stakes in the outcome, require a separate Project Management Department/Unit, which is singularly responsible for the coordination and the eventual achievement of the project goal. In such cases, the Project Manager is not only the coordinator but has full authority over all people and physical resources assigned to the project, and thus high level of control. The project manager is involved in the project from the start to the finish. According to the primary survey, one-third of the respondents pointed out that their organisations have a separate Project Management team.

Project Management in large organisations is highly compartmentalised and involves various phases of project - procurement, fabrication, installation and commissioning. This is understandable in the case of EPC companies, whose products/ services are actually projects and call for complete units to conceptualise, develop and implement projects for other organisations or other parts of the same organisation.

L&T, one of India's biggest EPC companies, houses a separate huge Project management Unit, with about 75 project managers- most of them certified, under five Senior Project Managers, who head a number of projects. Projects at L&T have vertical splits and the Project Manager is right at the top with the Deputy Project Manager (DPM) reporting under him. The DPM at L&T undergoes rigorous practical experience of handling projects and training on project management and only then becomes a project manager.

It was mostly found that companies with such pure project organisations had a separate Project Management Team/ Department like other functional departments.



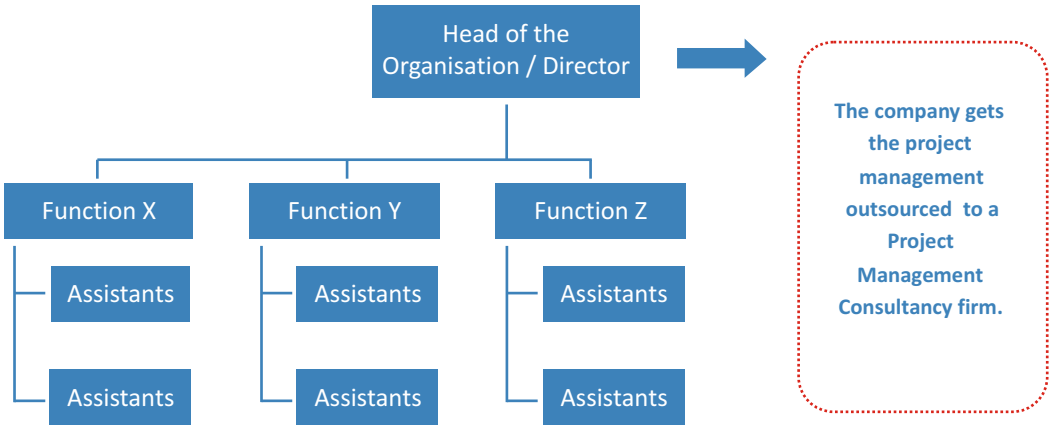
3. Project Management Consultants (PMCs)

Projects- particularly capital projects for expansion or creation of new facilities- are not undertaken regularly in many organisations, and it is not feasible to have a Projects bench that is idle for indeterminate periods in anticipation of new projects. Also, the core business of organisations, for instance, food processing or tyre manufacturing, does not necessarily equip or specialise them in the skills to executing capital projects on their own. Also, lean staffing in many companies makes it impractical to handle the additional work load of projects while attending to the core business itself. It is increasingly becoming a practice to outsource project management to an external agency, a Project Management Consultant (PMC). The management of the project improves immensely, becomes more structured, and reduces the risk of time and cost overruns.

One of the respondents from the construction equipment sector highlighted its experiences of working with PMC appointed by a client directly and experienced a dramatic improvement in efficiencies when the PMC came into the picture. The supplier was in a position to benefit from the constant availability of the PMC, the expeditious communications channels set up, resulting in quick decision making at each stage of the project. Another case is that of a company in the consumer goods industry, which outsourced its product launch project to a 16-member team of Project Managers, Designers, Application Experts, and Technical Assistants. Even the Project manager in the company is hired on a project-to-project basis, depending on the specific needs of each product.

"In the present scenario, it is better to get the project outsourced to the PMCs. Our role is just to monitor the technical and quality parameters and conduct review meetings with the contractor on a fortnightly or a monthly basis."

– Sr. Executive in a leading Automobile company



PMC SERVICES – A GLOBAL BEST PRACTICE TO ENSURE TIMELY COMPLETION OF PROJECTS

Anzera Properties has announced a tie-up with Regulus IMC for project management consultancy services, the first-of-its-kind by a Kerala-based developer, for managing Anzera's two ongoing projects Brookside and Lavender.

Ziad A. Rahman, CEO, Anzera Properties, said "This major tie-up is set to redefine the real estate industry, especially in the residential sector, by bringing best practices to Kerala for the first time. For too long, developers in Kerala and India as a whole have been stuck with delays in handing over projects to customers, causing anxiety and financial difficulties for them. It is a global best-practice to assign project management experts to ensure timely completion of large scale infrastructure projects. But it is a new, not much explored, proposition for builders of our scale. After much evaluation, we decided this has to happen in the best interest of our customers."

It is not perhaps practical to rank the various structures, as each has its own niches. The most appropriate structure depends on the project' goals, type of work and environment. Mostly, companies whose main work revolves around projects follow a pure project organisation structure, whereas in companies with few projects, a less formal stop-gap arrangement within the existing functional structure would be seen as adequate and satisfactory.

E. Best Practice Cases

This section details some of the interesting cases related to Project Management. The key issues emerging from the case studies are:

- The preliminary activities to be taken up before a large project is started should be properly understood
- The significance of the role of a project manager in project execution should be well appreciated
- The importance of the right work culture in successful project management is essential
- The importance of managing the various stakeholders in a project must be recognised
- The difficulties involved in the execution of large projects in developing countries, and how these can be overcome should be well appreciated

BANDRA WORLI SEA LINK: CHALLENGES THAT LED TO INNOVATION

"This is the most challenging project we had undertaken. Adjusting to the changes in bridge alignments and change in designs was a substantial challenge. It will be a landmark in the city of Mumbai after Gateway of India."

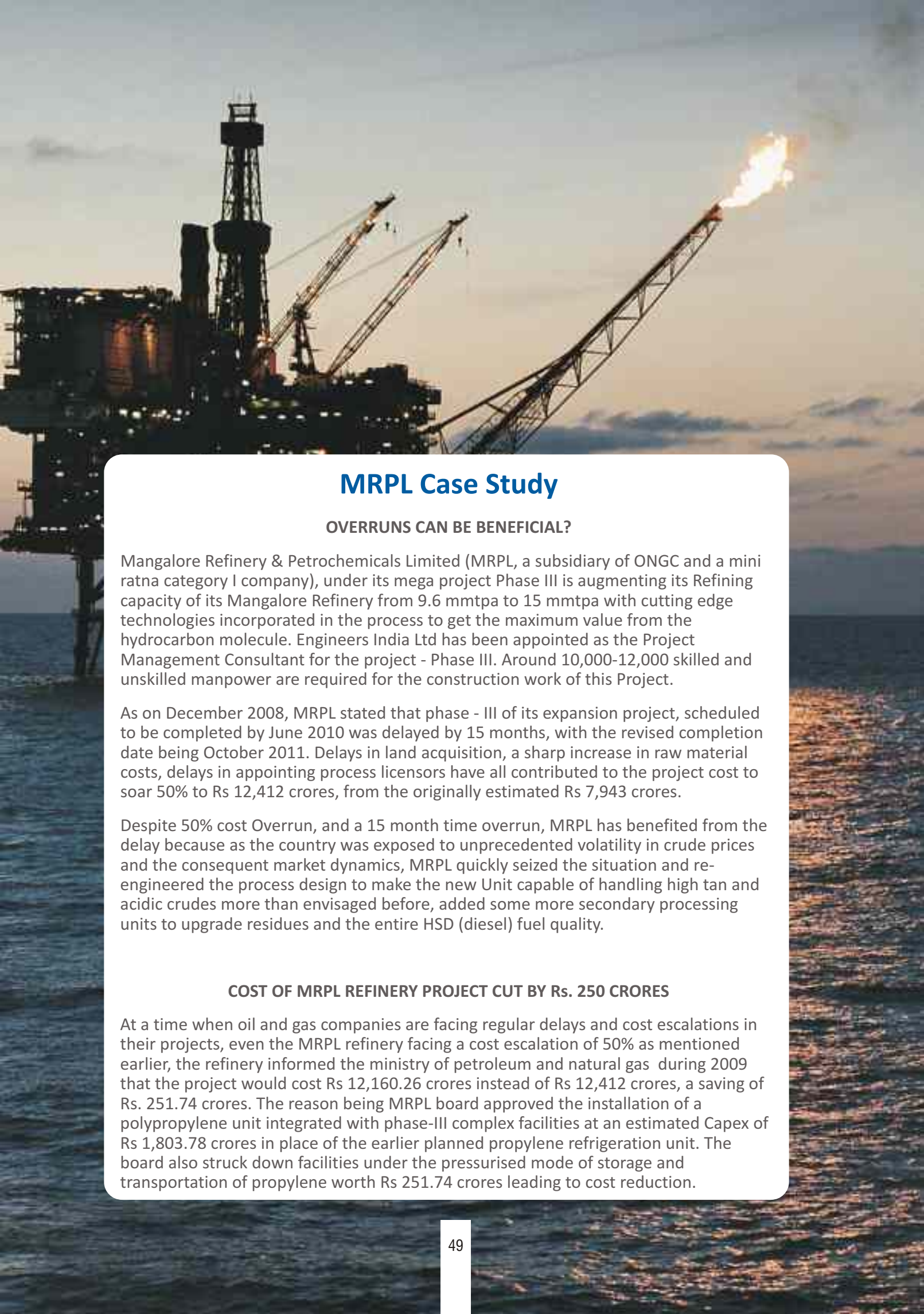
Ajit Gulabchand, Chairman and Managing Director of HCC

With technology from across the world and engineers from seven countries, the Bandra-Worli Sea Link, India's first cable-stayed road bridge across the sea was like a long awaited dream come true for the Mumbai commuters. The 4.7 km stretch has four lanes for the moment and is expected to cut travel time to 10 minutes from at least 45 minutes now. The project, managed by Maharashtra State Road Transport Corporation (MSRDC) was constructed by Hindustan Construction Company (HCC) and its foreign partner the China Harbour Engineering Corp. MSRDC had also appointed M/s Dar Consultants (UK) Ltd. & M/s Dar Consultants (India) Pvt. Ltd. to design, proof check and supervise the various components of the project.

In more than one way, the excitement among the city's residents comes on the back of an arduous decade long wait before the sea link was finally done. Started in 2001, this project was supposed to be a Rs 300-crore project scheduled to be completed in 2004. However, construction of the sea link was embroiled in numerous issues leading to its delay by five years and shot up the cost to over Rs 1,600 crores. The delay and cost overruns was on account of a host of reasons some of them being explained below:

- While the Maharashtra State Road Development Corporation (MSRDC) awarded the contract in 2000 to HCC, work on the project started full swing only in January 2005 after the go-ahead from the Supreme Court came towards the end of 2004.
- Deriding the environmental clearances and legal approvals were the major obstacles in the sea link project
- Due to PILs raised by the local fisherman, the design and alignment of the bridge had to be changed, which led to delays and price escalation. For HCC, due to changes in the design and delay, the Bandra-Worli sea link had an impact on the company's balance sheet as it lost more than Rs 400 crores on the bridge.

In spite of such delays and overruns, this project has been one of the most highly recommended projects of all the transport studies done for the metropolitan region during the last forty years. Such a project of national importance has been a relief to the city in terms of reduction in travel time, savings in vehicle operating cost and improvement in environment. The Mumbai's new icon, the Bandra Worli Sea Link was selected by an independent jury of bridge engineering experts from the Indian Institution of Bridge Engineers (IIBE) to win the coveted "Most outstanding bridge – National award" in March 2009.



MRPL Case Study

OVERRUNS CAN BE BENEFICIAL?

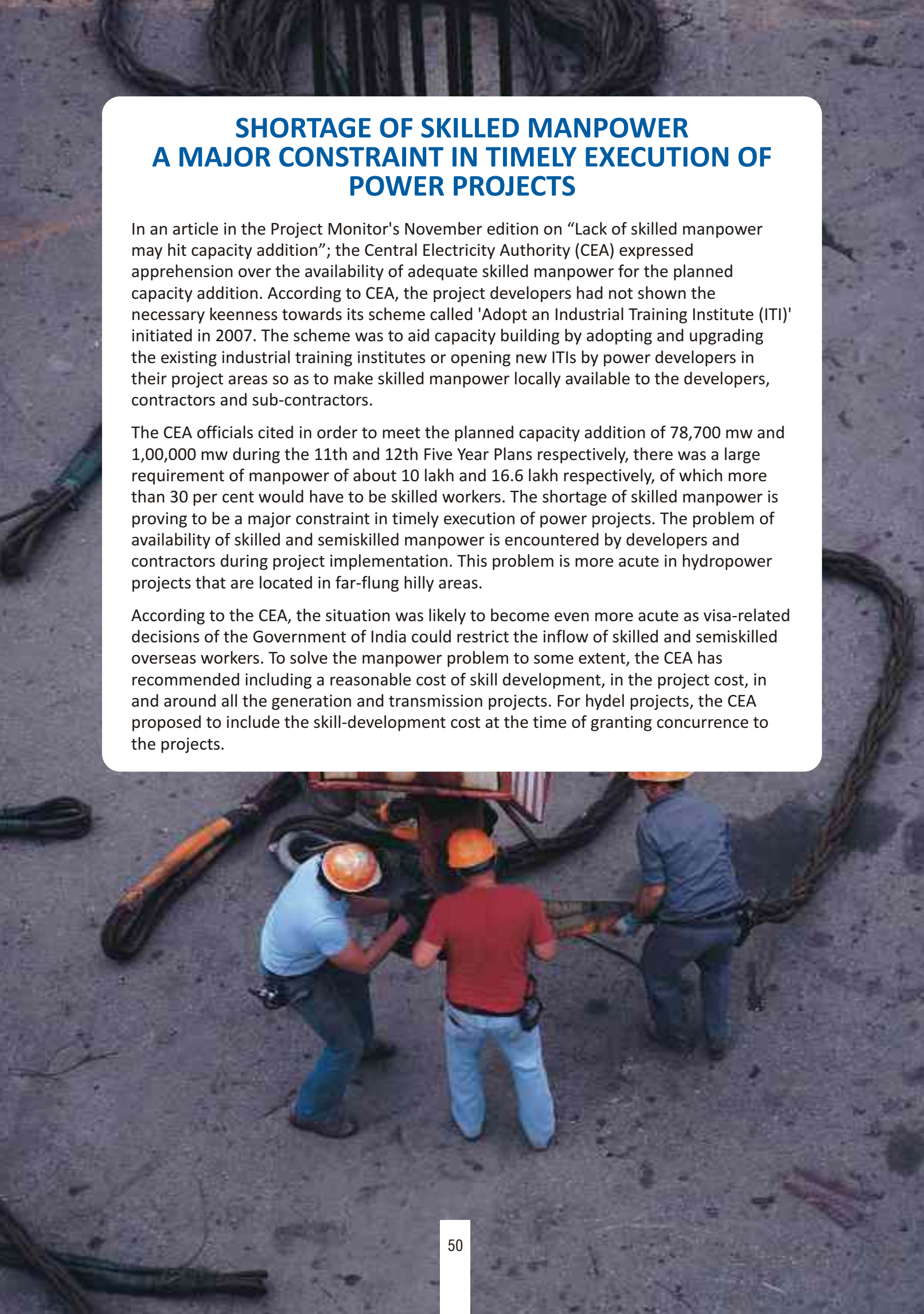
Mangalore Refinery & Petrochemicals Limited (MRPL, a subsidiary of ONGC and a mini ratna category I company), under its mega project Phase III is augmenting its Refining capacity of its Mangalore Refinery from 9.6 mmtpa to 15 mmtpa with cutting edge technologies incorporated in the process to get the maximum value from the hydrocarbon molecule. Engineers India Ltd has been appointed as the Project Management Consultant for the project - Phase III. Around 10,000-12,000 skilled and unskilled manpower are required for the construction work of this Project.

As on December 2008, MRPL stated that phase - III of its expansion project, scheduled to be completed by June 2010 was delayed by 15 months, with the revised completion date being October 2011. Delays in land acquisition, a sharp increase in raw material costs, delays in appointing process licensors have all contributed to the project cost to soar 50% to Rs 12,412 crores, from the originally estimated Rs 7,943 crores.

Despite 50% cost Overrun, and a 15 month time overrun, MRPL has benefited from the delay because as the country was exposed to unprecedented volatility in crude prices and the consequent market dynamics, MRPL quickly seized the situation and re-engineered the process design to make the new Unit capable of handling high tan and acidic crudes more than envisaged before, added some more secondary processing units to upgrade residues and the entire HSD (diesel) fuel quality.

COST OF MRPL REFINERY PROJECT CUT BY Rs. 250 CRORES

At a time when oil and gas companies are facing regular delays and cost escalations in their projects, even the MRPL refinery facing a cost escalation of 50% as mentioned earlier, the refinery informed the ministry of petroleum and natural gas during 2009 that the project would cost Rs 12,160.26 crores instead of Rs 12,412 crores, a saving of Rs. 251.74 crores. The reason being MRPL board approved the installation of a polypropylene unit integrated with phase-III complex facilities at an estimated Capex of Rs 1,803.78 crores in place of the earlier planned propylene refrigeration unit. The board also struck down facilities under the pressurised mode of storage and transportation of propylene worth Rs 251.74 crores leading to cost reduction.



SHORTAGE OF SKILLED MANPOWER A MAJOR CONSTRAINT IN TIMELY EXECUTION OF POWER PROJECTS

In an article in the Project Monitor's November edition on “Lack of skilled manpower may hit capacity addition”; the Central Electricity Authority (CEA) expressed apprehension over the availability of adequate skilled manpower for the planned capacity addition. According to CEA, the project developers had not shown the necessary keenness towards its scheme called 'Adopt an Industrial Training Institute (ITI)' initiated in 2007. The scheme was to aid capacity building by adopting and upgrading the existing industrial training institutes or opening new ITIs by power developers in their project areas so as to make skilled manpower locally available to the developers, contractors and sub-contractors.

The CEA officials cited in order to meet the planned capacity addition of 78,700 mw and 1,00,000 mw during the 11th and 12th Five Year Plans respectively, there was a large requirement of manpower of about 10 lakh and 16.6 lakh respectively, of which more than 30 per cent would have to be skilled workers. The shortage of skilled manpower is proving to be a major constraint in timely execution of power projects. The problem of availability of skilled and semiskilled manpower is encountered by developers and contractors during project implementation. This problem is more acute in hydropower projects that are located in far-flung hilly areas.

According to the CEA, the situation was likely to become even more acute as visa-related decisions of the Government of India could restrict the inflow of skilled and semiskilled overseas workers. To solve the manpower problem to some extent, the CEA has recommended including a reasonable cost of skill development, in the project cost, in and around all the generation and transmission projects. For hydel projects, the CEA proposed to include the skill-development cost at the time of granting concurrence to the projects.

THE KGD6 PROJECT
RELIANCE INDUSTRIES LIMITED

During the past four years, in the period of significantly higher capital costs, shortage of financial capital globally and constrained resources for large scale projects, Reliance Industries Limited (RIL) has commissioned two of its largest global scale projects in the energy sector in a flawless manner, one being the KGD6 project. Reliance commenced production of gas from the Dhirubhai 1 and 3 discoveries of the KG-D6 block in the Krishna Godavari Basin, located off the East Coast of India, in the Bay of Bengal.

The KGD6 project, among the five largest deepwater gas projects globally, has created several milestones in Reliance's corporate history.

Reliance has developed the project in the **shortest possible time** despite very significant challenges in terms of costs, availability of rigs, technical and offshore services. The production started in a record time of six and a half years from discovery, as against world average of 9-10 years for similar deepwater facilities. This achievement is especially commendable as the Bay of Bengal is known for its extremely hostile weather conditions, inundated with storms, cyclones, waves up to twenty meters in height and subsea currents of over 4 knots, except a fair weather window of four months every year. Start of production of gas from the KG-D6 block was a complex task, requiring engineering ingenuity to develop critical infrastructure and use of latest cutting edge technology, never experienced in the region before. RIL also had to overcome supply chain challenges and manpower shortages to adhere to tight schedules.

This project would **transform India's energy landscape** and is expected to double the current level of indigenous gas production resulting in a quantum leap towards achieving India's energy security. KG-D6 gas would also substantially reduce wealth transfer from India to other nations due to energy imports and bring down subsidy levels in the fertilizer, transportation and other sectors. Apart from the economic benefits to the nation, the impact of this gas will be significant in helping India in its climate change efforts and achieving a greener footprint.

Such flawless execution of the project and achievement of a ramp up in less than 180 days from start-up exhibits one of the best practices in project management. This project involved a team of about 300 engineers, which comprised of 50 Project Mangers of which 8 were certified as Project Management Professionals (PMPs). Most of the engineers working in the project had over 20 years of experience in the oil and gas sector. The organisation has a dedicated Project Management team at Mumbai which follows world class techniques and standards. RIL's partners in the execution of this project were Aker Kvaerner Group, Allseas, Afcons, Bechtel, Cameron, GE, Halliburton, Hellix, L&T, McDermott, Schlumberger, Siemens, and Transocean amongst others.

THE DELHI METRO PROJECT

"The successful implementation of the Delhi Metro project would not have been possible without timely availability of funds and the necessary political support. An equally important role has been played by the DMRC's corporate culture, which emphasizes that targets are most sacrosanct and our dignity is in performing our duty well."

- E. Sreedharan, Managing Director, Delhi Metro Rail Corporation Ltd.

In order to implement the Delhi Metro project, the GoI and the GNCTD set up a 50:50 joint venture company called the Delhi Metro Rail Corporation Ltd. (DMRC). The Delhi Metro project gave Delhi a world-class mass rapid transit system. More importantly, it stood out from most other public sector projects in India in that it was completed on schedule and within the budgeted cost. In India, major infrastructure projects are often stalled because of a lack of funds, political interference, lack of professionalism and accountability, property disputes, corruption, etc. Therefore, even before the commencement of the project, the DMRC attempted to put in place effective systems to ensure the smooth progress of the project. Funding was not an issue in the case of the Delhi Metro project because it was settled even before the project commenced. In order to steer clear of political interference, the DMRC sought autonomy on all major matters and the GoI promised to give it this autonomy.

The DMRC faced many technical and systemic challenges during the construction of the metro. However, thanks to thorough planning, an effective project design, and a 'we-mean business' culture, it was able to overcome all these hurdles. The organizational culture was based on punctuality, honesty, and a strict adherence to deadlines. The DMRC successfully managed the various stakeholders in the project like the general public, government bodies, etc., and also ensured that the project was environmentally safe.

The project team was headed by Mr. E. Sreedharan who was appointed as Project Manager and Managing Director of the DMRC in November 1997. The key factor in maintaining the quality of relationships was the articulation of goals . Of similar importance is the ability to communicate effectively to different contributors.

Notwithstanding the quality of management, in a few high profile projects of national importance and pride, it is not uncommon for the government to make exceptions and provide expeditious solutions to bottlenecks and thus ensure successful completion of these projects. The Delhi Metro Project is one of such cases, taken as a showcase of public sector excellence in infrastructure, and a show of pride by the Govt of Delhi as well as the Govt of India. The extent of management authority and lack of political and bureaucratic interference in the Metro is not to be found in any other project of similar magnitude anywhere in India.

On the other hand, there are also embarrassing failures when government agencies are at loggerheads over issues of turf and visibility, which according to some inside stories are the bane of the Commonwealth Games, also a flagship project for Delhi, with the same stakeholders and to be completed within the same period as the current phase of the Metro.

IFFCO: VIJAYPUR FERTILISER PLANT

One of the respondents from MOSPI highlighted the case of a fertilizer plant situated in Vijaypur, implemented by IFFCO. Fertilizer plants represent a real challenge for a variety of reasons. Some of the challenges faced by the Vijaypur Fertiliser Plant were:

- *Inefficient water supply system at the site*: The local water supply authorities and the community residing nearby denied the access of water supply to the plant. This would have created an extensive time overrun, unless the Project Manager would have made a prompt decision of creating its own water supply system at the operations.
- *Transportation of heavy equipments due to lack of good infrastructure facilities*: Fertiliser plants require very big chimneys to be transported as fertilisers are produced through the distillation process. However, it was practically impossible to transport such heavy equipments and chimneys because the roads were poorly developed. To address this challenge, a workshop for Special Welding was created at the site at a huge investment of approximately Rs. 15 crores. The chimney was lifted in parts and then assembled at the site itself.

Such problems were effectively managed by the Project Manager and his team at the Vijaypur Fertiliser Plant site who had the autonomy of taking prompt decisions. Such effective project management, and prompt decision making in times of crisis, led to the completion of the project one month in advance and also saved Rs. 10 crores.

"The capacity for effective project management can be strengthened if right kind of project managers plan and execute the projects. Also, training is very essential for grooming the managers in and out and making projects successful. "

Joint Adviser (Projects), MOSPI

BUSINESS PERCEPTIONS OF PROJECT MANAGEMENT

Business Perceptions of Project management

The research team probed the respondents for their perceptions on a few specific questions, based on which our analysis has led to the following assessments:

A. Is Project Management a Specialist Discipline?

Even though there is an increasing acceptance of the importance of the need for project management using formal methods, opinion is considerably divided as to whether Project Management is a specialised discipline entirely by itself, like other streams in management education, such as Finance, Human Resources, and Marketing.

Project management has emerged as a strong discipline practiced by highly trained, certified professionals as organizations have come to realize they cannot stay in business if they cannot manage their projects. Due to the nascence of the field, people do not perceive it as a specialized discipline and many companies are still limiting the application of project management to the tactical level.

On the one hand, there are strong advocates for a specialist branch, particularly from the academia and training providers. A new niche is emerging in the higher education space, with a handful of providers offering post graduate specialisations in Project Management (presently the Bharati Vidyapeeth University in Pune, The Adani Institute of Infrastructure Management, NICMAR, and a few universities offering distance programmes).

The biggest argument for an independent discipline is offered by taking a leaf from the MBA experience itself. Prior to the 1960s, when the first batches of management graduates joined the workforce, nearly all senior management jobs were performed by general graduates. There were good managers and not so good managers then, as are now too. However, it is practically unthinkable today to specify a general degree as an adequate pre requisite for a management position in corporate India. The argument is that a formal management education curriculum embodies the existing repository of management knowledge and draws from best practices and presents them into a standardised format, instead of the intuitive, subjective, or apprentice-mode learning process that existed in the past.

Similarly, some form of project management is practised in a large number of organisations both public and private, largely as an intuitive process, without necessarily any specific orientation or

training. With time, with the emergence of a cadre of people having specialist training in project management, it is expected that project management and planning environments would increasingly induct personnel having a threshold level of professional training in project management principles. This is the prime motivation behind institutions like Adani Institute of Infrastructure Management, which foresee a need for a cadre of highly qualified management professionals tailored to the needs of the infrastructure sector.

Within industry, there is a strong dichotomy of views on the case for project management as a full standalone specialisation in itself. In Information Technology, there is a far greater level of acceptance of its specialist nature, which has followed from the widespread and popular practices in the U.S., which has been and continues to be the biggest influence of skill needs and standards in India's IT sector. With more than 60% of India's IT work force involved in software development, this influence has been significant.

India's IT companies have traditionally benchmarked themselves using the Capability Maturity Model (CMM) However, the CMM focuses mainly on process-based management, applying to the monitoring or controlling of projects, as against other more rigid templates for control of projects by scope, quality and time.

Notwithstanding the high popularity of CMM, there is also a higher level of awareness and penetration of other project management frameworks such as PMI® and IPMA in the IT sector than in other sectors, particularly in industrial and infrastructure construction projects.

In non-IT sectors, the lion's share of the market is domestic, unlike in the export-intensive IT sector, which obtains over 50% of its revenues from exports, predominantly to the US. Customer-driven demand has been practically absent in the home market, particularly from the government, which is the biggest spender on infrastructure projects.

Respondents in these sectors also pointed out the limited coverage of project-management related content provided in engineering institutions, including the IITs. Operations Research course modules provide the only exposure to project scheduling techniques, and in most institutions, these are available only to Mechanical, Industrial Engineering and Civil Engineering degree programmes. PERT, CPM and related subjects cover less than seven lecture sessions over a four month semester programme, and cover mostly linear programming related approaches to problem solving relating to resource optimisation.

"Even before the MBA curriculum was introduced in India in the 1960s, there were good managers and there were excellent managers in corporate India, many with low academic qualifications. But, today, would any company hire less than MBAs in their management cadre? Why? Because as the industry has grown, conversancy with management jargon is becoming a necessity, and with adequate supply, the bar has been raised as to the minimum needed qualifications for a management position. So too may be the fate of project managers one day."

Dr. Bakul Dholakia, Vice Chairman and Director, Adani Institute of Infrastructure Management; and former Director, IIM Ahmedabad.

"In the retail sector, projects are not a big deal, only the timely availability of financial resources is a major aspect. Since the projects are not complex, there is no need for a certified project manager as project management is an art and not a science."

Head Projects in a private company in the retail sector

Is Project Management a Talent or Skill; i.e. art or science?

Opinion is divided as to whether project management is an innate individual capability akin to art form and not transferable, or a systematically applied science which can be replicated to similar or equivalent levels of perfection or skill. As in other walks of life, it is possible to find some excellent project managers, who have had no formal skills or training, but have managed complex projects with panache and have become leading lights in the profession. However, such examples are the rare outliers in the general mass of human capital.

However, even in the mainstream, practitioners of project management, including those who have undergone formal training, have divergent views on the issue. The most common view is that it is both art and science, as much as any other management discipline. It is an art because project manager must exercise judgement and demonstrate leadership skills in situations that are unique to each project. Skills which tend to be more individual irrespective of training include: communicating, negotiating, decision-making and problem solving. The art of project management requires the project manager to gain agreement between technical and business resources, the project team and the customer and multiple stakeholders.

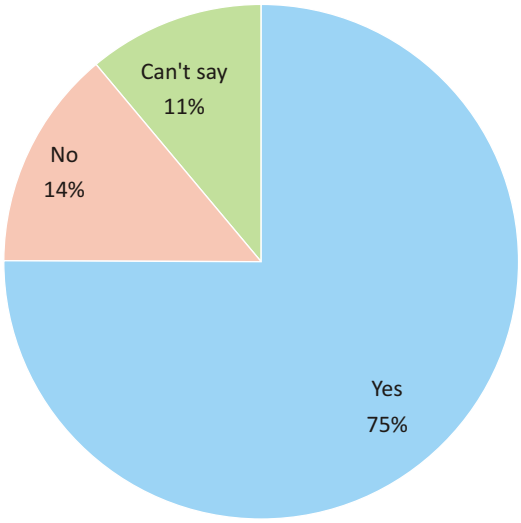
However, to effectively master the art of project management, it helps to have a degree of proficiency with the science of project management, which provides a systematic, methodical and documented approach to the subject, and is therefore, essentially replicable. The science of project management gives the manager an array of tools, templates and standards to assist with planning, controlling, analysing and monitoring a project. The methodical practice makes all project managers better, irrespective of their other innate talents. Respondents cited project managers spend about 75 to 80% of their time on the art of project management and 20 to 25% of their time on science.

Are Technical Skills in Project Management A Pre-Requisite

The dominant perception among industry managers is that prior formal training in project management is not an essential or pre requisite. This also supports our primary analysis which showed 86% of the respondents strongly support that technical skills for project management are not a prerequisite for the job.

However, industry leaders (75% of the respondents) strongly advocated that a specialised, structured curriculum for project management would be highly useful after executives have gained significant hands-on experience in project environments. The most important aspect in terms of a structured project management curriculum is verticalisation: the need for an industry-specific curriculum, in order to be readily usable, as opposed to a generalised project management curriculum would only bring limited additionality. However, there is a challenge as well: high levels of verticalisation find few takers among students, as they pose a serious limitation in terms of placement opportunities, limiting these to a few companies specific to the sector of specialisation.

Project Management as a full fledged curriculum



15% of respondents did not consider Project Management to be a large enough domain to warrant a full post graduate specialisation. Unlike the generalised MBA market, a generalised project management market would have limited industry demand, while a highly verticalised offering would have limited popularity among students. This would imply that the most likely candidates in project management schools would be working professionals, already in industries that have large-scale project management skill needs. This also explains the sector orientation of institutions like Adani Institute of Infrastructure Management, which has tailored its curriculum into a one-year programme, which covers the entire spectrum of infrastructure and allied sectors. The course offers 16 modules on general project management as against 23 modules on infrastructure management and elective courses on sectors like Transport, Energy, SEZ & Real Estate.

b. What Are The Key Benefits Actualized/ Expected?

The incentives for project management practices in an organization are to be found in the results, not only with respect to delivering the end product as far as the project is concerned, but also meeting the expectations of its stakeholders and resulting in the eventual impacts and benefits for which any project has been conceived.

The primary survey revealed that industry perceives project management practices essentially as a 'Time Management tool'. The responses were ranked on a scale of 1 to 4 where 4 was attributed to the most important and 1 to the least important. The scores were later summed up to derive the most dominant perception across all industries. The diagram (below) shows that apart from being a time management tool, the second most dominant perception is that of Market/Customer driven qualification, highlighting the importance of 'client led demand in India'.

"Not a prerequisite. Because a fresh engineer with a Project Management certification or any kind of formal training is of no use. Has to have some sort of Project experience to understand the challenges and then undergo some kind of training. Project Management certification is not really an add-on unless deployed in a big project or when handling a no. of projects."

- Certified Project Manager in an IT company

A full fledged course won't be much of a help instead they could go for a week's training programme every year or even online course which is not too exhaustive.

- Certified Project manager from an IT company.

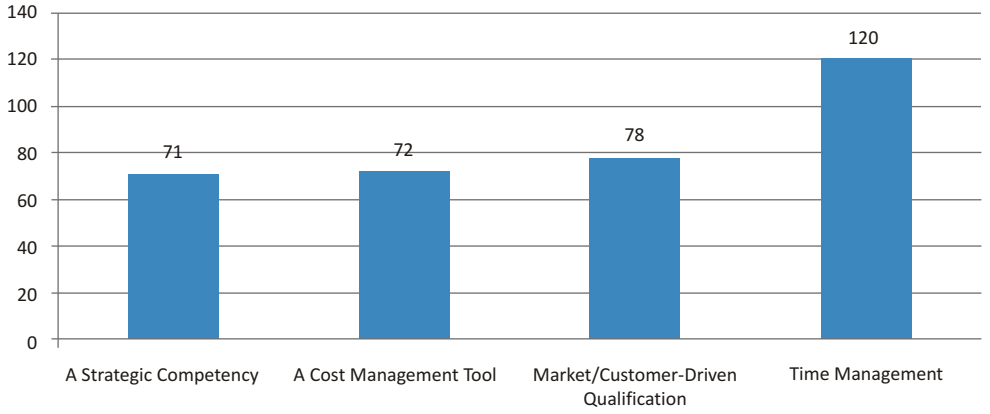
"Yes some sort of technical knowledge should be there. It helps. It's a kind of knowledge which can help different sets of people even with different skill sets."

- Certified Project Manager in an IT company

"Every year we send our Project Managers with more than 2-3 years of experience go for Project Management certification. Though, I feel certification is not really important, but the course they go through, their understanding of skills and technological set-up is more essential which helps us to follow a structured and standardized project management process.

- General Manager, Oil and Gas Division in an EP&C company

Dominant perception of Project Management



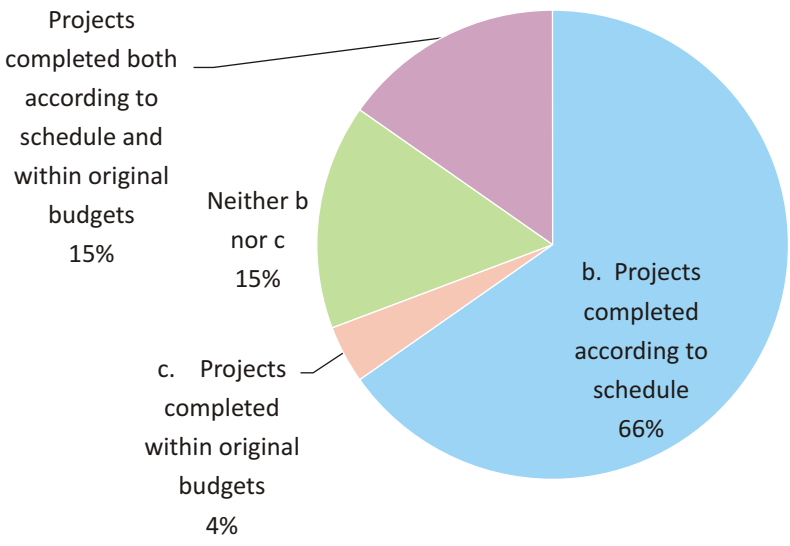
In terms of the benefits achieved through Project management practices (refer to the table below), process improvements, indicated most by timely completion of projects within the original budget was the most popular benefit cited amongst the industry respondents, particularly in the private sector, followed by business impacts, indicated most by revenue growth. Other descriptions of benefits through project management practices have been enumerated below.

Indicators of Benefits achieved through project management practices

Indicators of Process Improvements	Indicators of Business Impacts
Projects completed on time	Cost savings
Improved risk assessment and Mitigation	Revenue growth
Increase in quality and quantity	Customer retention
Projects delivered within budgets	Customer Satisfaction
Projects meet objectives	Better efficiency and effectiveness in delivering services
Projects are used by intended customers	Increased share of customer
	Increase in market share
	Improved competitiveness
	Launch of new products and services
	Staff retention and morale
	Improved overall corporate image

The private sector is more aware of the benefits of Project management practices and has far greater induction of project management practices.

The level of success in private sector projects



As stated earlier, 73% of the private sector respondents confirmed to having some form of project management followed in their organisations, and often with positive results. The principal results are the 'levels of success achieved in the Projects'. 66% of the respondents pointed out that almost all their projects are completed according to schedule and only 15% said that their projects are completed well within original time schedule & budgets. Analysis showed that of the 73% respondents actually following project management practices, 79% identified the level of success in their projects as the only major benefit achieved through project management practices. Other than timely completion of projects, very few (21%- EP&C and IT companies) pointed out that client satisfaction has also been one of the major benefits achieved, and good project management is often rewarded by more business and repeat business.

The dominant perception of benefits is that project management helps conserve time and financial resources, and thus is seen as a tool for controlling expenditures and costs within pre agreed budgets. Given the poor record of public sector projects, this may seem a qualification in itself in the private sector. However, it could be argued that this is a minimalist approach to the subject, as it does not incentivise managers to achieve significant savings as such, and remain in the comfort zone of 'no over runs'.

However, at the upper end of the spectrum is a small set of companies, for which project management is becoming a strategic competency in itself. As companies undertake bigger, more complex and multidimensional projects, Project management is beginning to emerge as an important strategic competency within these companies. Not only are project managers becoming more conversant and more skilled to handle complex issues, they are getting upgraded to handle projects in a new and more complex environment, and exposed to appropriate levels of training and development in project management techniques. Resultantly, these companies are able to undertake even more complex projects, on the strengths of a well-trained, experienced pool of project management professionals, developed through a rigorous training and skills development regimen, whether administered internally or externally.

"There is a huge difference between employing a PMP and a non-PMP in the company. The work or the management of the project that is under the control of a PMP is more structured and completes within time, cost and the earmarked quality. By undergoing that certification, he understands the inter-relationship between things and doesn't jump onto conclusions. Apart from a PMP, most of our project managers are trained and certified in cost management by the AACE International."

- Senior Management at an EP&C Company

"The private sector sees Project Management as a marketing strategy and not a business strategy. Instead, companies should rather see it as business strategy as this would straight away deliver the greatest value to their bottom line."

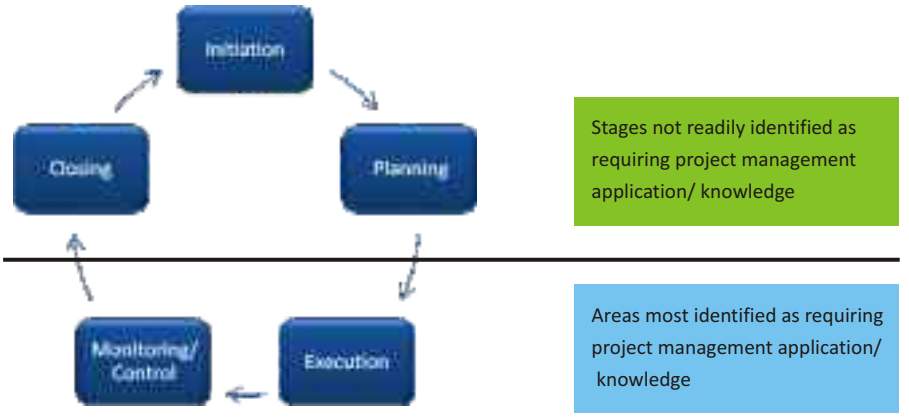
President of the PMI® Mumbai Chapter

C. What Are The Challenges In Adopting Project Management?

1. Limited Understanding Of Its Scope

One of the most important findings of this research project has been that there is a low level of understanding of the scope of the term Project Management, which tends to generate a rather myopic view of what it entails. Many respondents identified project management as more of an execution and monitoring tool rather than a planning tool. This limited their appreciation of its benefits in the earlier stages of the project cycle, particularly in the initiation and process planning stages, which are equally important for the success of a project undertaking. As a result, the adoption of project management is considered relevant only in the execution stages of projects. Given that a large number of projects, particularly capital intensive projects, are outsourced to EPC companies, the adoption of project management principles in a number of companies, particularly government companies, remains low.

One of the reasons for this disconnect between the initial and final stages of the Project Management is the organisational structure of most companies. Very few organisations (such as parts of the Indian Armed Forces) companies have a projectised organisation structure, where the project manager is the highest authority. In most organisations that implement projects, the strategic planning unit resides in the top management, and is involved in the initiation, planning and closing of projects, particularly new business projects.



Project Management Process Groups

On the other hand, when the plans are approved and resources provided, the responsibility of project implementation is passed on to line managers in charge of the project. Thus, the responsibility and ownership of project management changes in most organisations, particularly in the crucial stages of execution where all the plans and decision making skills are put to test. However, the situation is completely different in EPC contracts, which tend to be managed as projectized units, with well-defined authority and responsibility for execution of the contract.

2. Relevance And Applicability

Industry leaders felt that increasing size and complexity of the Projects are the two chief factors which necessitate acceptance of project management practices in every sector which is why most of the companies do not feel the need of relevant applicability of project management practices for simpler or uncomplicated projects. Although there have been instances of internal office based assignment slipping away due to internal reasons, still such projects largely fail to acquire the necessary dimensions required to be put under the scanner of project management practices.

However Project management on small projects does provide models for future projects. Respondents claimed that since small projects tend to be similar in structure or outcome, planning and monitoring is crucial in such projects which can be sufficed by pure experience of the project managers involved. Moreover if a template or model is developed, it can be used for future projects as well. It not only saves the Project management team some time, but also enables them to work on continuous improvements.

3. Individual Or Institutional Need

A core issue in the penetration and popularity of project management in the corporate sector is whether it is a skill to be acquired by individuals or by institutions. While the knowledge of project management principles is to be vested in individuals, whether through formal education or through on-the-job training, the benefits of such knowledge are to be reaped in organisational results. The primary research indicates a divergence between the individual aspirations and organisational objectives, and most respondents who have undergone certification in project management felt that they would not invest in project management training and certification on their own, and that it was essentially the company's requirement and decision to invest in project management skills and certification. The primary survey authenticates our findings with almost 99% of the

"Our project management strategy is simple, which is creating realistic plans but being aggressive at the same time, procuring the required resources and getting assured commitment from the topmost level that they would be available anytime for the project to go forward. With this ideology we have been able to complete most projects on or before time. We believe that the role of IT is to support the business. The timely completion of any project proves the effectiveness of the IT infrastructure and support in place."

CIO, RIL

"I went for the PMP certification by PMI® voluntarily. When I asked my organization to sponsor my fees, instead of promptly refunding the fees, the HR manager in turn questioned me what benefits will it give to our company?

- Certified Project Manager at a Private sector bank in India

training institutes pointing out that in the present scenario, there is essentially an institutional demand rather than an individual demand for Project Management certification.

This is in sharp contrast with the perceptions of other professional qualifications, particularly the mainstream engineering and management education streams, where the investment is made by students, and bears fruit in terms of jobs and career opportunities. Perhaps, this is because project management is not yet established as a career opportunity by itself, and there is no industry level practice or standard specification for the discipline, which distinguishes it from other overlapping disciplines. Similarly, for students, it does not yet present itself as a strong career choice, in the absence of a clearly mapped out career path or market ecosystem which distinguishes and demands an additional qualification. New institutions offering specialised programmes attempting to create this differentiation.

4. Inadequate Skills And Resources In The Supply Chain

Inadequacy of skilled and semi killed manpower often limit the productivity and cause a huge divergence in terms of the results expected and what is actually delivered at the end, hence making it all the more challenging to assess the real benefits out of a standard project management approach. NSSO survey estimates that there are nearly 13 million workers coming in to the construction industry every year out of which only 3 million receive training. India's vocational training curriculum is largely outdated and not based on clear standards.

Moreover, companies who engage with EP&C companies, often feel a limited need to go for Project management certification or formal training, as their project management practices are largely limited only to enhance their supplier's skills and do not play a major hand (except in the planning stage) in delivering the end product of the EP&C companies. There are very few EP&C companies as compared to the overall market who follow standard project management practices.

Hydel Power – case study of skills supply

In India's hydel sector, 'Small' is big, given the profile of India's hydro power sites. Over 500 licences have been issued by the government in states having considerable hydel potential. But, most of these are for small projects with capacities of less than 25 MW, compared to large conventional power projects with capacities of 200 MW and above.

Hydropower projects are also fraught with several external and natural risks such as floods, earthquakes, landslides and social unrest, which call for considerable prior experience. Most of the technical expertise in this sector resides in the large government

company NHPC. With opportunities booming in the private sector, some NHPC managers have embarked on entrepreneurship or turnkey project implementation services addressing these specialist requirements. However, there has been no real talent migration from government companies to the private sector projects, and several- particularly smaller- projects continue to suffer delays and lack of suitable technical and professional manpower, partly on account of reasons that can be traced back to the ingrained management/organisational cultures in public and private sector. Some of these are mentioned below.

- Inability to adjust to private sector realities
- Lack of employment security
- Lack of authority (compared to government companies)

This saga of small hydel projects echoes across the power sector, in which large state-owned companies continue to remain the main reservoir of experience and talent, and the stable, secure employment prospects in a sector fraught with external challenges, prevents large scale migration into the private sector.

D. What Causes Resistance Toward Project Management?

On one hand, there are challenges in adopting project management principles within entities that are open to it. However, on the other hand, there is also a bastion of resistance to the ideology of project management, not without its due share of argument and reasoning.

1. Formal Definition And Classification

The most basic form of resistance, as discovered by the research, is the very idea of a formal definition and classification of the discipline of project management, on grounds of identity. This reaction is at one level analogous to the establishment's first reaction of denial when confronted with a demand for secession, as found in many cases of redrawing of boundaries and carving out of new territories from larger ones. Many respondents mentioned the existence of some form of project management, but were unable to provide or even accept a standardised definition of what it entailed and whether the definition would imply some form of judgement on currently prevalent and popular norms.

"Individuals are not lured towards getting themselves certified in PM because of the high price point of attaining certifications and perhaps it is a corporate driven demand wherein the companies sponsor their employees. Thus, it is the demand side that has to gear up and understand the importance of project management."

- Project Manager, in a leading Oil and Gas Company

At the end our master plans and world class project management practices are at the mercy of the unskilled suppliers

ED of Project division in one of the leading public sector companies

2. Quantification of Cost-Benefits Trade-Offs

Quantification of benefits through Project management at most organisational levels is only in terms of time & cost. Although it is an internal process, but qualitative improvement is hardly conceived as a benefit. Over the years, carrying out the company's strategy has been limited to effectively executing a project within the specified triple constraint (time, budget, performance goals). Strategic focus is generally not recognized, and usually there is no strategic alignment in monitoring and controlling activities. Most of the companies associate the performance of their project management team first with aspects of project completion and once the results are consistent at the project level are they able to assess the benefits at other organisational levels.

The primary survey validates the point with 73% of private sector respondents claiming to have project management practices in their organisation, 79% of them considered the level of success achieved in the project as the only major benefit achieved through project management practices, with an exception of a few IT and EP&C companies identifying revenue growth and client satisfaction as additional quantifiable outcomes of project management practices.

This also explains why companies that have Project management practices and are still not able to execute the projects within the specified triple constraint fail to assess any benefits out of it and therefore have little incentive to continue their existing practices. Cases like these often limit the level of success achieved in the project (indirectly producing another unsuccessful story), which serves as reason for others not to adopt project management practices voluntarily.

"In established companies, project management is not new and has existed since years. Thus awareness of its benefits definitely exists, however the problem is that of Supply side i.e. getting GOOD project managers.

- Senior Management official at an EP&C company

3. Limited Influence Over External Factors

67% of the public sector respondents claimed external reasons as the chief causes in delay, most of them being land acquisition norms, delays in disbursements, initial clearances etc., which are the main factors behind luck of success stories in the industry particularly in cases of large private players and most of the public sector companies.

4. Few Carrots and Fewer Sticks:

Is there a reward and punishment system to incentivise individuals and companies to adopt and institutionalise project management principles more forcefully? Only 13% of the respondents claimed to have certain incentivising mechanism in their companies and 75% of them claimed that most of the incentives are at the organisational level and hardly passed on to the individual level. Most companies felt that neither incentives for better performance nor penalties for poor performance were sufficiently strong to engender

good project management practices. Ironically, this is most felt in the biggest, public infrastructure projects implemented by government agencies.

Moreover apart from retribution from the Comptroller and Auditor General Reports on delays in major projects, there is very little in the incentive structure that penalizes poor practices and performance or incentivises good ones. The Commonwealth Games project which is a classic example of a project which presented an ideal opportunity for attracting tourists and investors, has been delayed beyond proportions. 13 out of the 19 sporting venues, the work shortfall is between 25% and 50%. Of the proposed 30 hotels to be added before the event only 4 or 5 will make it for the event. This means all these projects would either miss the deadline or compromise on quality in the haste to finish on time.

Senior executives at two large PSUs in the power sector provided useful insights into this aspect.

For the a responsible for the development of national and regional power transmission grids, delayed milestones are not penalised adequately, and most if not all price escalations and additional time costs are fully priced-in, and are to the account of concerned Ministry. Cases where the public sector companies have not accepted penalty clauses in the contacts awarded to them are not unheard of. As a result, there is practically no risk- financial or otherwise - for the implementing agency, which is also state-owned. Similarly, executives at a leading PSU supplier of power generation equipment (which has a large number of professionals certified in Project Management), indicated the extensive use of project management principles in projects for private sector customers, particularly for international clients, but the same was not the case for projects undertaken for government. Unlike private sector projects which are rigorously monitored, government projects often suffered delays and execution problems, mostly due to inadequacies in government's own monitoring and review mechanisms, which provided considerable slack in projects.

However, this practice is coming in for a serious review, and MOSPI has indicated that individual accountability shall be affixed for all significant projects undertaken or managed by government agencies. The nature and extent of penalties have not yet been decided.

Notwithstanding all these attempts to improve efficiency of public projects, a rigorous quantification of benefits and a greater appreciation of the value of efficiency, combined with appropriate affixing of responsibilities will dramatically improve the performance of public projects. The laxity in government monitoring often reduces efficiencies in private sector.

5. Issues of Contract Enforcement

Contract enforcement remains the weakest link in India, given the huge backlog in the legal system, which is exacerbated by the (often misused) right to appeal and re-appeal on judgements of lower courts, before higher courts. In more than 50% of India's commercial disputes, a government agency is one of the parties, often the defendant. Projects in litigation end up taking much more time in dispute resolution than the originally agreed schedule, and remain in limbo until final judgement.

Despite the legal framework for alternative dispute resolution mechanisms, arbitration and conciliation are still not popular for dispute redressal. Most government agencies do not accept arbitration as an acceptable means of dispute resolution, at least within India, and also do not risk amending the model/standard legal texts; all drafted by the Law Ministry.

Under such conditions, litigation is a non-option, and is more useful as a delay tactic rather than a means to expedite the resolution of conflict. Therefore, from a project perspective, cost recovery and compensation on account of project delays caused by other reasons or third parties remains a low-prospects probability unlike in some other countries, notably the US. This only weakens the argument for project management, which remains akin to the proverbial chain with some weak links; it remains vulnerable to the weakest project management practitioners in the chain of interdependencies among contracting entities.

PROJECT MANAGEMENT TRAINING: THE SUPPLY SIDE

Project Management Training: The Supply Side

A. Canvas of Training and Certification Products

The canvas of training products and services available in India pertaining to project management skills development is rather large. There is a large diversity in the offerings as well as the profiles of service providers.

Service providers include:

- India's leading technical and management education institutions (the prestigious IITs and IIMs),
- Specialist business schools offering post graduate curriculum with enhanced coverage of project management (Adani Institute of Infrastructure Management, Bharati Vidyapeeth)
- National level business federations (CII, FICCI)
- Industry-specific institutions (NICMAR, NTPC Power Management Institute),
- Captive training institutions (NTPC, L&T)
- International Project Management Training and Certification Providers (PMI® , IPMA, Prince2)
- Other training and consulting service firms, affiliated or un-affiliated (over 120 all over India)

Similarly, the range of products/ programmes offered is diverse:

- Campus-based full time Post Graduate Programmes : 1-2 years
- Distance programmes (Post graduate) offered by universities: 6 months- 2 years
- Online programmes offered by international training and certification bodies
- Short-term executive development programmes (certificate programmes): 1week

By far, the most widely used programmes have been the short-term executive development programmes, aimed at working professionals. However, there is an emerging niche of full-fledged post graduate programmes offering project management as an integrated and specialist discipline, which is still at a nascent stage and is slowly gaining popularity. Hence its impact and utility is still too early to gauge.

Comparison of Select Products/Programmes relating to Project Management

DESCRIPTION	MODE	DURATION	FEES	KEY PLAYERS
Full time Post Graduate Programmes	Campus	1-2 years	Rs.500,000 – Rs 1,200,000	Bharati Vidyapeeth, NICMAR, Adani Institute of Infrastructure Management,
Distance Programmes	Study centres	6 months-2 years	Rs 7000 to Rs. 85,000	NICMAR, IGNOU, Alagappa University
Executive Development Programmes	Campus/ on line	1 week	Rs. 12000-Rs 85000	IIMs, IITs, CII, other industry bodies
Other training services (mostly in IT sector)	Campus/ online	1 week	Up to Rs 35,000	Over 120 training providers,
International Certification Bodies	Online/ affiliates	Up to 1 year	Rs 17-25,000 for exam fees	IPMA, PMI® , Prince2

B. Training Services and Institutions

The following section provides a broad overview of the types of programmes on project management offered in the country, with the profiles under each detailed in the Annexure.

1. Universities and Higher Education Institutions

According to the AICTE data for 2008-09, there were approximately 7000 recognised institutions providing technical and management education programmes in India, covering disciplines like Engineering, MCA, MBA/ PGDM, Pharma, etc. Of these, over 4800 deal in engineering and management programmes, which have the closest linkages with project management as a discipline or science.

Institutions and Intakes, 2007-2008

	DEGREE	STUDENT INTAKE	DIPLOMA INTAKE	STUDENT
Engineering	1,668	653,000	1,414	354,000
Architecture	116	4,543	5	120
MCA	1,017	71,000		
Pharma	854	52,000	583	35,000
Applied Arts	9	650	8	1010
Management	1,149	122,000		
Hotel management	81	5,272	92	489
Total	4,894	908,465	2,102	390,619
Grand Total	**6,996**			**1,303,000**

Source: Dept of Higher Education, Annual Report 2007-08.

As per AICTE figures, in 2006-07, nearly 582000 engineering graduates (including degrees in computer applications) passed out from recognised Indian institutions. Trends since 2003-04 indicate that Computer Science/IT graduates account for 30-35% of the turnout. Other major streams are: Electrical/electronics (33%); mechanical Engineering (10%), and Civil Engineering (4%), with other streams together making up the long tail, accounting for the remaining 18%.

At the top of the heap are the national institutions of excellence in technology and management, around 60 in all, which are supported or sponsored by the Govt. of India, and under the administrative purview of the Ministry of Human Resources Development. These include the Indian Institutes of Technology, Indian Institutes of Management and the National Institutes of Technology, among others, which are considered the crème de la crème of the market. The IITs and IIMs alone currently have an annual intake of 9150 and 1070 students respectively.

Government Institutions of Excellence

GOVERNMENT INSTITUTIONS	NUMBER
Indian Institutes of Technology	**13**
Indian Institutes of Management	7
Indian Institute of Science, Bangalore	1
Indian Institutes of SER	3
National Institutes of Technology	20
Indian Institutes of Information Technology	4
NITTTR	4
Others (SPA, NITIE, ISMU, NIFFT)	6
Total	**58**

Source: Dept of Higher Education, Annual Report 2007-08

Engineering Graduate Turnout Trends

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Number of institutions	755	821	1,057	1,195	1,263	1,358	1,478	1,522	1,865
Number of engineers	179,647	209,115	293,814	356,758	380,803	450,954	508,595	582,000	635,000
Number of MCA Institutions	224	-	-	-	-	-	976	-	1,017
No. Of MCAs	17,395	-	-	-	-	-	55,548	-	71,000
No. Of MBAs	57,977	-	-	-	-	-	-	-	122,000

Source: Dept of Higher Education, Annual Report 2007-08

In leading colleges, nearly all engineering programmes, particularly in production/ mechanical engineering and civil engineering streams, offer a module in operations research, covering scheduling and tracking processes using PERT/ CPM, and resource optimisation techniques, which are rudiments in the domain of project management. Increasingly, premier institutes like IIT and IIM are offering Project Management as an elective course. Besides topics covered under the traditional Operations Research courseware, these would also include financial tools and techniques for project evaluation such as net present value, internal rate of return method and cost benefit analysis. Some courses include finance and organization aspects.

2. Specialist Post Graduate Programmes on Project Management

Meanwhile, some new players are seizing the imitative and carving out a separate niche by developing full-fledged programmes under the overarching theme of **Project Management**. The initiatives of three such players are interesting to study in this respect, which have been detailed in the Annexure. The price points of these institutions are provided in the table below:

Full time Specialist Post Graduate Programmes

INSTITUTES	MODE	DURATION	FEES
NICMAR	Campus	2 years	Rs.750,000
Adani Institute of Infrastructure Management	Campus	1 year	Rs.1,200,000
Bharati Vidyapeeth	Campus	2 years	Rs. 490,000

3. Correspondence PG Diploma Courses

Although there is a huge number of distance education programmes available from several universities, there are only a handful of distance -programmes at the post graduate level, on project management. The few that the research was able to identify are profiled in the Annexure.

Distance (Post Graduate Level) Programmes in Project Management

INSTITUTION	COURSE/PROGRAMME	DURATION AND FEE
IGNOU	PG Certificate in Project Management	6 months; Rs 7200
University of Hyderabad	PGDM- Project Management	One year; Rs 14000
Alagappa University, Tamil Nadu	Advanced Diploma in Project Management	Two years; Rs 7800
NICMAR SODE	PGDM- Project Management	Two years; Rs 85,000
National Institute of Business Management, Chennai	PGDM- Project Management	One year.
H.P. University	PGDM- Project Management	One year

Source: Indicus Estimates

4. Executive Development Programmes

The most prevalent form of training and development in project management is Executive Development Programmes, conducted by industry associations, business schools, and other specialist training institutions.

Executive Development Programmes

INSTITUTES	MODE	DURATION	FEES
IIT-Delhi	online	40-45hrs spread over 6-7 weeks.	Non-residential: Rs.42000 for Indian students and USD$2400 for international students.
IIT-Kharagpur	classroom	4 days	Rs.12,000
IIM-Calcutta	classroom	5 days	Rs.37,500
IIM-Kozhikode	classroom	6 days	Residential - Rs. 18,000/- & Non-Residential - Rs. 15,000/-
IIM-Bangalore	classroom	5 days	Residential: Rs. 60,000/- Non-Residential: Rs. 55,000/-
IIM - Ahmedabad	classroom	6 days	Rs. 70,000/- SAARC countries; US $ 2,400 -non-SAARC countries
IIM- Lucknow	classroom	5 days	Rs.20,250
Others	classroom	1-5 days	Rs. 12,000 to Rs 35,000

Apart from the IITs and IIMs there are courses offered by CII and CIDC in Project Management.

Apart from the IITs and IIMs there are courses offered by CII and CIDC in Project Management, which are profiled in the Annexure. In addition, FICCI, India's premier business federation, has signed an MoU with PMI® , to offer executive development programmes in project management, and shall join the list of service providers in this sector.

5. Captive Training Institutions

Of late, some industrial organisations have begun setting up their own training institutions to meet their captive demands in respect of orientation programmes and management development programmes. Notable among these are the Power Plant Training Institute set up by NTPC, which is India's largest power generation company; and L& T Ltd, which is setting up its own institute for project management (capacity of 200 people per training). To a large extent, the Adani Institute of Infrastructure Management could also be considered a captive training institution.

6. International Certification Institutions

The two global international certification bodies- the Project Management Institute (PMI®) and the International Project Management Association (IPMA) are both present and active in India. Besides these two well-known names, UK based PRINCE 2 and the US-based AAPM also find mention in the circles of project management, particularly in the IT and banking sector.

PMI® /IPMA certification

INSTITUTES	MODE	VALIDITY	FEES
IPMA (Level A,B,C)	**Online or classroom (through affiliates)**	5 years*	IPMA Level D (Rs.20,000 - 30,000) IPMA Level C (Rs. 60,000- 85,000) IPMA Level B (Rs. 90,000 Rs. 125,000) IPMA Level A (not available).
PMI® (PMP)	Online or classroom (through affiliates)	3 years	Rs. 20,000 (exam fee)
Training charges by service providers	Online and class-room	1-5 days	Rs. 5,000 - 35,000

Source for IPMA: www.pma-india.org

(Note: This **validity is applicable for IPMA Level 'A' Certification)*

a. IPMA

IPMA, through its Indian affiliate Project Management Associates (PMA), offers its global four-level certification programme (4LC) in India. Eligibility requirements include an engineering degree and 500 - 1000 days of work experience in project management during the past five calendar years. Presently, there are over 2200 IPMA Level D (entry level) certified professionals in India, and according to industry sources, around 1000 certifications were issued in 2007-08, prior to the global recession.

b. PMI®

PMI® now offers specific certification for practitioners with different levels of experience. These include: Project Management Professional (PMP®); Certified Associate in Project Management (CAPM®); Program Management Professional (PgMP®); PMI Risk Management Professional (PMI-RMP)® and the PMI Scheduling Professional (PMI-SP)®.

PMI® certification is globally recognised and is highly regarded in India's corporate sector. As of December 2009, there are close to 20000 PMI® certified professionals in India, and the annual increase has been in the region of 700-750 certifications per year. PMI® has a larger share of certifications in the IT sector, presumably given its immense popularity in the US, which is the biggest revenue source for India's IT sector and the stringent prequalification and process control requirements imposed by US companies outsourcing their IT back operations into Indian companies.

PMI® has made swift moves to secure strategic partnerships to enhance its footprint in India, through a MoU with FICCI and National Institute of Construction Management and Reaserch (NICMAR)

7. Other Training Institutions

Unlike for technical education institutions, there is no official estimate of the number of private independent training institutions in India, as there is no regulatory mechanism governing the establishment and conduct of these institutions. However, based on industry sources, there are over 100 private training institutions serving corporate India in the overall ambit of management training and human resource development. Web search of institutions providing services of project management certification turned up a prospect list of over 120 institutions all over India. By and large, these institutions fall under two groups:

a. Affiliated to international training/certification bodies: which are registered or licensed providers of proprietary content of international training/certification bodies; and

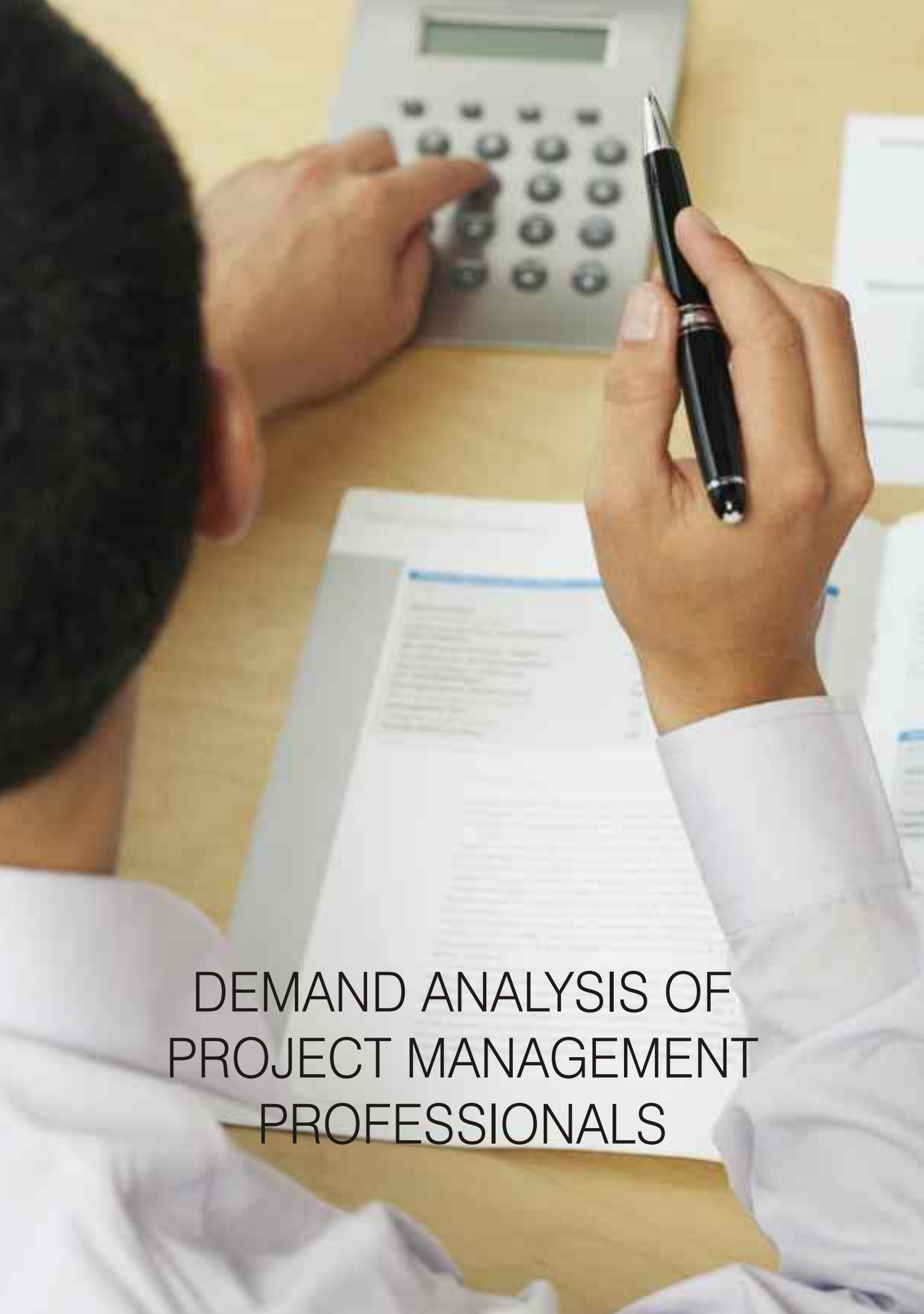
b. Standalone, independent institutions: which provide their own or, in some instances, un-licensed content and delivery methods

The majority of these institutions are active in the IT sector, due to the specific characteristics and higher demand for PMP training and certification in this sector. A few of these have been profiled in brief in Annexure.

C. Accreditation and Mutual Recognition

Accreditation of technical educational programmes is governed under the provisions of the AICTE, and applies to all the diploma, degree and post graduate programmes under the purview of AICTE. Although it is not mandatory, accreditation is seen as the quality assurance hallmark of a programme/ institution, and denotes its conformance to globally accepted standards and good practices. The huge shortage of institutional capacity to meet India's human resource needs, particularly the inability of the state to provide adequate educational infrastructure, has resulted in a benign approach to accreditation.

As a result, despite the large number of AICTE recognised institutions, the accreditation levels are significantly low. Only 36% of engineering programmes and 10% of management programmes of AICTE recognised institutions have been accredited by the National Bureau of Accreditation. Accreditation will become very important in the context of services liberalisation and the inclusion of services in a number of India's preferential trade arrangements. The NBA is now a provisional member of the Washington Accord, which would enable mutual recognition of accredited engineering and management degrees across 70 signatory countries.



DEMAND ANALYSIS OF PROJECT MANAGEMENT PROFESSIONALS

Demand Analysis of Project Management Professionals

The demand side estimation of the Project Management Professionals has been captured by a process of triangulation using different approaches:

1. Corporate Landscape: filtering companies by a set of criteria such as capital, revenue and employee strength profile of companies

2. Projects Landscape: mapping representative universe of projects coming up in the public and private sector, and attributing a requirement of project staffing for different types of projects.

A. Approaches to Demand Side Estimation

CORPORATE LANDSCAPE

The demand for any form of skills, including project management, is dependent to a considerable extent on the size, complexity and maturity of companies. Therefore an analysis of the corporate sector profile offers useful insights into the potential and the actual location of the demand for training and skills development in general, and for project management in particular.

According to the Registrar of Companies statistics, in 2008, the universe of registered Indian companies consisted of 788,691 companies, of which only 1620 were Government companies, Of the remaining (private sector), over 81,810 were Public Limited Companies, over 2600 were foreign companies (unincorporated in India but present through branch or liaison offices), and the remaining nearly 690,000 were private limited companies and not-for-profit companies.

Companies at work, as on 31 March, 2008

	TYPE OF COMPANY	NUMBER OF COMPANIES
I.	Companies limited by shares	
	(a) Government companies	
	Public Limited	1077
	Private Limited	551
	Sub Total (a)	**1628**
	(b) Non- Government companies	
	Public Limited	80733
	Private Limited	686784
	Sub Total (b)	**767517**
	Total (a+b)	**769145**
II.	Companies with unlimited liability	675
III.	Companies limited by Guarantee and Associations not for profit	16262
IV.	Foreign Companies (as defined under Section 591 of the Companies Act)	2609
	Grand Total	**788691**

Source: Ministry of Corporate Affairs, 2008

Over a four year period from 2003-04 to 2007-08, growth in the number has been 19.9% overall, 5.7% for public limited companies and 21.8% for private limited companies. This indicates an annualised growth rate of over 4.7%.

New companies added every year

	2005	2006	2007
New Companies Formed	54,020	51,708	65,359
Companies formed with an authorized capital more than Rs 5 crore	5,207	4,984	6,300

Source: Ministry of Corporate Affairs & Indicus estimates

However, given that the minimum threshold of investment in a company is rather small (Rs 100,000 paid up capital), the number of companies does not give a relevant indication of the volume and complexity of operations, revenues and spending patterns. Therefore, applying filters such as volume of authorised/paid up capital, and revenues can yield a more meaningful estimate of the addressable universe, for purposes of this research.

Paid up Capital trends in Government and non government companies

AS ON 31 MARCH 2007	ALL GOVT COMPANIES	NON GOVERNMENT		ALL NON GOVT COMPANIES	ALL COMPANIES
		PUBLIC	PRIVATE		
Number	1232	60608	474174	534782	536014
Paid-up Capital	199269	292746	214544	507290	706560
Average capital per company Rs Crore	161	4.83	0.45	0.95	1.32

Source: Registrar of Companies, based on paid up capital data availability

Based on these averages, it would be reasonable to conclude that the 81,810 public limited companies represent a relevant market for corporate training services, including for Project Management.

The trend in capital deployment across industries indicates that manufacturing accounts for the biggest share, almost one-third of the equity capital by private sector, followed by construction, utilities, trade and hospitality, and transportation/ communications. The Sectoral composition of corporate activities, based on the paid-up capital is provided in the Annexure.

Distribution by Revenue

Besides capital investment, revenues provide a useful insight into the level of activity in corporate India. However, even though annual reports are required to be filed with the Registrar of Companies, only the net income is currently captured in the Registrar's database, based on the data reported in the MCA Form 21. Therefore, a detailed official classification of companies based on revenues is presently not available. We have used the data available from popular and authoritative subscribed corporate databases (to be updated), which provide verified listings and classifications of leading companies active in a number of sectors.

Based on data for 2007-08, collected from over 20,000 of the leading companies of India, it is estimated that around 4365 companies had revenues exceeding Rs 100 crore. This estimate compares well with the annual rankings released by leading business journals such as Business India and Business Standard, according to which even the last among the top 1000 companies ranked in 2007-08 had a revenue of Rs 137 crore (Surana Industries Ltd).

Database	23,165
Foreign companies	2,734
Leading IT companies	3,523
Non- IT companies	19,644
Industry best in class	8,828
SMEs	10,607

Source: Indicus Estimates

No. of Companies (by turnover)

BREAK UP BY TURNOVER (IN CRORE)	%	NO. OF COMPANIES	LOCATIONS
0-10	53.6	12412	14080
10-100	27.5	6407	8557
100-250	8.3	1905	3255
250-500	3.9	915	1893
500-1000	3.2	740	1754
1000-2500	1.8	416	1496
2500-5000	0.8	191	967
Above 5000	0.8	181	1335

Source: Indicus Estimates

Distribution by employment levels Corporate Pyramid (2007)

Corporate Pyramid Companies, Break up by employees	Number	%
Public companies		
Number of companies	79,404	
Total employees	9,265,977	100%
Top Management	132,909	1.4%
Senior Management	230,748	2.5%
Middle/Junior Management	371,076	4%
Other staff	1,421,269	15.4%
Workmen	7,107,135	76.7 %
Private Limited Companies		
Number of Companies	651,413	
Total Employees	15,000,000	

Source: Based on combination of ROC and Annual Survey of Industries data

The CMIE data base of over 23000 leading companies accounts for approximately 10.1 million employees in the public and private corporate sectors. This represents a significant share of India's organized sector employing of 33 million people (Manpower India Study, Statistical Outline of India). The senior management cadre in these companies totals nearly 187,000 executives. The distribution of companies by employment levels has been tabulated from the database and has been summarised below.

According to this data, there are approximately 11,041 companies having at least 100 employees, and operate in a total of over 19800 locations all over India. This gives us an idea of the complexity of operations in the top companies of India.

Over 8800 companies in the database are ranked as industry best in class in their respective products or categories, and can be considered to be following best practices and processes resulting in their competitiveness and leadership. There are close to 2400 companies which have an international parentage (wholly owned subsidiaries of foreign companies), which may be presumed to have a greater level of exposure and propensity to use international practices in training and human resource development, benchmarked to practices set by their global headquarters.

Break up by employees	In %	No. of Companies	Locations
10-50	11.5	2,658	2,809
50-100	40.9	9,466	10,692
100-250	17.7	4,093	5,254
250-500	10.2	2,376	3,225
500-1000	11.3	2,630	4,871
1000-2500	4.6	1,073	2,849
2500-5000	1.6	367	1,161
Above 5000	2.2	502	2,493

Source: Indicus Estimates

Based on these trends, we can envision the canvas of leading, progressive and competitive companies in India as follows:

- Over 4400 companies with revenues exceeding Rs 100 crore significant scale of business activity
- Over 8800 companies in top percentiles in industry – competitive in their class
- Over 11000 companies employing more than 100 people - having organisational issues

Thus, revenue, employment and investment filters enable a more accurate estimation of the relevant market in corporate India for purposes of this study.

Industry dispersion of leading companies:

No. of Companies with >100 Crore turnover and > 100 employees (sector-wise)

SECTOR	NO. OF COMPANIES WITH ANNUAL TURNOVER >100 CRORE	NO. OF COMPANIES WITH >100 EMPLOYEES
Power	175	408
Telecom	95	148
Construction	421	525
Engineering	242	512
Transport	116	274
IT	336	1726
Total	**1385**	**3593**

Source: CMIE data and Indicus estimates

This universe of India's largest companies would seem to be the most relevant playground for the inculcation of project management as a good practice in the corporate sector, whether used internally or external projects. This indicates the future outlier potential for the spread of project management in India.

CAPITAL PROJECTS LANDSCAPE

In this section, we present an overview of the project landscape in terms of current investments in industrial sectors in India, as tracked by Projects Today, one of India's most authoritative sources of project information. In 2008, an estimated 12533 projects, involving a new capital investment of Rs 862,634 crore were initiated, of which the majority were in electricity, utilities and services, followed by manufacturing industries.

Fresh Investment (2008)

Sectors	First Half		Second Half		Total	
	Projects	Rs. Crore	Projects	Rs. Crore	Projects	Rs. Crore
Manufacturing	**1,089**	**184,810**	**496**	**66,849**	**1,585**	**251,659**
Mining	**64**	10,269	79	8,406	143	18,675
Electricity	**218**	182,735	170	89,580	388	272,315
Services & Utilities	**5,528**	189,369	4,375	111,904	9,903	301,273
Irrigation	**213**	11,729	301	6,984	514	18,713
All Sectors	**7,112**	**578,912**	**5,421**	**283,722**	**12,533**	**862,634**

Source: Projects Today Database

To understand the typology of this investment, we have further analysed projects under the following categories:

- Large infrastructure Projects executed by Public, Private or Joint sector
- IEMs(Industrial Entrepreneurship Memorandums)
- Projects funded by International lending agencies (World Bank and ADB)

1. Large infrastructure projects

As against an investment level of Rs. 871,445 crore or US$ 217.86 billion anticipated to be achieved in the Tenth Plan period, infrastructure investment in the Eleventh Plan has been proposed to be increased substantially (2.36 times) and an allocation of Rs. 20,56,150 crore or US$ 514.04 billion (at constant 2006-07 prices) has been projected, with a significant share coming from the private sector.

Public sector would continue to play a dominant role in investment for infrastructure. The total public sector investment envisaged is Rs. 765,622 crore by the Centre and Rs 670,937 crore by the States. Investment by the private sector, which includes Public-Private Partnership (PPP) projects, is expected to make up the balance of Rs. 6,19,591 crore, which is 30 per cent of the required total investment during the Eleventh Plan, a much higher share than 20 per cent anticipated to be realized during the Tenth Plan.

Based on the data released by Ministry of Statistics and Programme Implementation (MOSPI) every quarter, during the past four years, new projects initiated by the Central government have ranged from 140 to 200. Consistently, above 50% of these have been Major and Mega Projects, entailing investments of over Rs 1000 crore each.

	No. of central sector projects started	Composition of Major and Mega Projects
in FY 06	200	51.33%
in FY 07	197	56.80%
in FY08	143	58.42%
in FY09	140	62%

Source: Project Implementation Reports

The number of new projects to be implemented every year has been calculated based on investments that are proposed to flow in each year. Projections of investment in infrastructure have been made in two ways. First, top down ('order-of-magnitude') estimates of investment have been derived from the Government's GDP growth targets and estimates of the likely evolution of the share of Gross Capital Formation (GCF) in infrastructure as a proportion of Gross Domestic Product (GDP) consistent with those targets. Second, a bottom-up exercise has been undertaken based on a detailed analysis of past trends in combination with strategic and financing plans in the pipeline for various infrastructure sectors.

Projection of Number of Central Sector Major and Mega Projects under XI Plan

	Proposed Investment Rs crore	Number of Central Sector Projects	Major@ and Mega# projects*	Number of Major and Mega Projects	Number of Medium$ Projects
2007-08	270,273	143	58%	83	60
2008-09	321,579	140	62%	88	52
2009-10	389,266	169**	62%	105	64
2010-11	479,117	208	62%	129	79
2011-12	595,913	258	62%	160	98

Source: Planning Commission & Indicus Estimates

Note* Composition for 2009 onwards kept at same level as 2008-09
Note ** numbers projected based on same ratio as 2008-09.
@ Projects costing Rs 100-1000 crore
# Projects costing Rs 1000 crore and above
$ Projects costing Rs 20-100 crore

a. PPP Component

Of the Rs 2,056,148 Crore ($514 billion) expenditure planned during 2007-12, the share of projects to be implemented under the Public Private Partnership (PPP) investment mode, is expected to be close to 30% i.e. Rs. 619,591 Crore ($150 billion).

At present, nearly 440 PPP projects, involving an investment of Rs 252,653 Crore are under various stages of implementation. Of these, over 300 are in the earlier stages, up to construction, and over 185 projects, with investment of Rs 113,532 Crore tied-in, are under construction, hence at their peak stages of project management.

Present Status of the PPP projects implemented across India

PROJECT STAGE	NO. OF PROJECTS	VALUE(IN CRORE)
At EOI Stage	13	12904
under Bidding stage	112	58185
Construction stage	185	113532
Operation stage	120	34016
Reversion to public	9	34016
Cancelled	4	
Total	**443**	252653

Source: PPP database

Number of Projects to be implemented under the PPP route

Total Investment (2007-12)			$ 150 billion	
	2007-08	2008-09	2009-10	2010-112011-12
Investment Year Wise	5.74	30.17	31.43	3745.64
Investment done on new Projects	3.61	20.61	22.00	25.9031.95
No. of Projects started	22	53	46	7593

Source: PPP database & Indicus estimates

2. Projects funded by Donor Agencies

Based on all the projects being implemented through donor agencies, only the World Bank and the ADB approved projects have been taken into consideration. The chief reason being that only these two agencies have a considerable presence when we talk of physical projects and have a minimal number of technical assistance projects being executed. All the figures given in the Table below represent physical projects only.

Projects Approved by World Bank and ADB (2006-2011)

WORLD BANK APPROVED PROJECTS

Year	No	Value (in $ million)
2006	17	2,360
2007	23	3,289
2008	7	2,565
2009	17	5,627
Projects in pipeline	41	7,284

LOANS APPROVED BY ADB FOR 2008-10

Year	No. $ billions)	Amount (in
2008	10	2.9
2009	10	3.1
2010	10	3.2
13 Loans worth $3.12 billion are in the pipeline for 2011		

YEAR	NO. OF PROJECTS APPROVED BY WORLD BANK	NO. OF PROJECTS APPROVED BY ADB
2006	17	-
2007	23	-
2008	7	10
2009	17	10
2010	20	10
2011	21	13

Source: World Bank Projects and ADB Projects database

These projects are most likely to specify the need for certified project management professionals; however, their overall number and spread is rather small to significantly alter the overall market trends. However, most of these projects being large, they are likely to engage more than 500 trained and suitably qualified project professionals at any given point of time.

3. Industrial Entrepreneurship Memorandums

Besides the larger, public investment infrastructure projects, the second large component of industrial project activity can be analysed from the Industrial Entrepreneurship Memorandums (IEMs) which are to be submitted prior to commencement of construction for industrial activities, and refilled upon completion of the construction and receipt of final approvals under the Factories Act. IEMs represent the scale of all non-infrastructure projects carried out by private and foreign players, including start up of new industrial activities as well as geographical expansion and creation of new facilities by existing industries.

According to IEM data, there has been a significant year-to-year variation in the number and value of IEMs, which is also explained by the cycle of capacity creation followed in manufacturing. The trends indicate between 250-700 IEMs, with investments ranging from Rs. 12000 to 35000 crore, annually, with average investments ranging from Rs 20-60 Crore per IEM. Based on trends from 1991 to 2009, FDI represents close to 35% of the IEMs implemented every year, with an average investment of Rs. 35- 40 Crore. However, there are big outliers that can cause considerable lumping in the IEM patterns, for instance, a single big ticket investment in an automotive plant of over Rs. 5500 Crore, which can dwarf all the other investments during the year, and distort the averages.

Given the current and forecast GDP trends, the growth in IEMs has been annualised with a 7.5% year-on-year increase in line with GDP growth forecasts.

YEAR	NO. OF IEMS[7] IMPLEMENTED	AMOUNT (RS CRORE)
2004	297	3577
2005	400	35782
2006	263	14975
2007	726	19390
2008	541	12465
2009	616	-
2010	662	-
2011	712	-

Note projected linear to GDP growth forecast 7.5% Source: IEM database until 2009, and projections for2010-2011.*

The induction of formal project management practices and certification is more likely to be found in IEMs involving foreign investment, and accordingly, a potential demand for formal PMP certification related needs can be assumed to exist in at least one-third of the IEMs under implementation, or around 240 -250 companies implementing IEMs every year, assuming that each company does not implement more than one IEM at a time.

Total no. of Infrastructure & Industrial Projects Identified

SPECIFIC PROJECTS IDENTIFIED	2008-09	2009-10	2010-11	2011-12
Infrastructure	140	169	208	258
PPP component	*53*	*46*	*75*	*93*
IEMs	541	616	662	712
Project funded by Donor Agencies	17	27	31	34
Total	**698**	**812**	**901**	**1,004**

Source: Indicus Estimates

4. Capital Issue Trends

Activities that involve significant expansions often involve raising of additional finance, whether either as equity or debt. Therefore, despite the inherently temperamental state of capital markets, the trends in capital issues would still mirror the implementation trends of major projects, particularly in infrastructure. In 2007-08, over Rs 87000 crore of additional capital was raised by the corporate sector, through 124 new capital issues. Of these, 61 issues were over Rs 100 crore each, and raised almost Rs. 84000 crore, and there were 25 issues which raised from Rs 50 -100 crore each. This again indicates the enormous lumping that exists in the pattern of corporate activity in India. Across sectors, power generation, construction and building materials, and IT, besides banking and finance were the main sectors accounting for capital increase.

Resources Raised by Corporate Sector

YEAR	EQUITY ISSUES*	DEBT ISSUES		TOTAL RESOURCE MOBILISATION (Rs. in Crore)
		PUBLIC AND RIGHT ISSUES	PRIVATE PLACEMENTS**	
2003-04	18,948	4,324	63,901	87,173
2004-05	24,388	3,867	83,405	111,660
2005-06	27,372	10	96,473	123,855
2006-07	32,901	605	145,571	179,078
2007-08	85,426	1,603		

**includes CCPS and Offer for Sale*
***Includes negligible amount of equity*
Source: RBI, SEBI

Size-wise classification of capital rose through Public & Rights Issue

(Rs. In Crore)

Year	Total		<5cr		5cr -<10cr		10cr -<50cr		50cr -<100cr		>100cr	
	No.	Amt	No.	Amt	No.	Amt	No.	Amt	No.	Amt	No.	Amt
2003-04	57	23272	6	16	5	36	16	330	5	351	25	22539
2004-05	60	28256	2	3	5	44	17	461	11	723	25	27025
2005-06	139	27382	6	20	4	32	47	1325	33	2189	49	23815
2006-07	124	33508	3	10	6	45	40	1129	31	2386	44	29938
2007-08	124	87029	4	16	1	6	33	920	25	1669	61	84418

Source: Ministry of Corporate Affairs

Industry-wise classification of Capital raised capital Issue

(Rs. In Crore)

	Industry	2005-06		2006-07		2007-08		Average
		No.	Amt	No.	Amt	No.	Amt	Amt /yr
1	Banking/FIs	12	124399	5	2190	6	30955	52515
2	Cement & Construction	11	1020	13	2747	27	18905	7557
3	Chemical	2	128	5	147	8	661	936
4	Electronics	2	54	9	480	4	684	406
5	Engineering	6	1124	2	465	5	378	655
6	Entertainment	7	710	8	1219	2	403	777
7	Finance	7	824	9	2765	7	1773	1787
8	Food Processing	9	427	9	634	2	100	387
9	Healthcare	10	651	2	208	3	542	467
10	Information Technology	15	902	12	2077	10	691	1223
11	Paper & Pulp	4	182	1	15	1	35	77
12	Plastic	0	0	3	106	5	211	106
13	Power	6	2164	1	30	4	13709	5301
14	Printing	1	43	2	121	0	0	55
15	Telecommunication	0	0	3	2994	2	1000	1331
16	Textiles	13	771	15	1064	7	442	759
17	Others	34	5944	25	16246	31	16541	12910
	Total	**139**	**27382**	**124**	**33508**	**124**	**87029**	**49306**

Source: Ministry of Corporate Affairs

These different perspectives on capital projects landscape indicate that the bulk of capital investments is concentrated in less than 700 projects across India, of which less than 200 large projects in the infrastructure and construction space account for bulk of the capital investments. These large projects present the most complex environments for project management, given their magnitude, multiplicity of stakeholders involved, and long periods of implementation. At the forefront of this landscape are less than 200 large companies which have raised the financing required to implement these projects, and are seized with the task of successful, on-schedule and cost-effective implementation.

5. IT Sector Projects

India's Information Technology sector has unique features which make it an important segment in itself to assess the potential for training and certification in project management. Even though it is not as capital intensive as manufacturing and infrastructure sectors, the IT sector probably undertakes more 'projects' than any other sector, going by a more inclusive connotation of the term.

There is a much deeper penetration of training and certification in this sector due to its inherent global/ international orientation and dependence on markets in developed countries, and resultant demands for 'knowledge-intensity', process quality, delivery standards, and risk mitigation. Benchmarking successfully to global practices and standards has been the key driver of acceptance of India's IT companies in international markets. As a result, there has been a high induction of training and skill development across the sector, in terms of proficiency in development platforms, software testing quality, project implementation, and successful delivery.

Companies in the IT Sector by Turnover & Employees

Break up by Turnovers (in Rs. Crores)	Head Office	Offices
0-10	2341	2475
10-100	846	1322
100-250	169	383
250-500	54	238
500-1000	51	160
1000-2500	37	163
2500-5000	11	68
5000+	14	145
Total	**3523**	**4954**

Break up by employees	HO	Offices
10-50	565	611
51-100	1547	1797
100-250	706	979
251-500	283	500
501-1000	225	463
1001-2500	114	473
2501-5000	367	1161
5001 & above	31	273
Total	**3838**	**6257**

Source: CMIE data and Indicus estimates

The Companies in the other Sectors classified by Turnover & Employees is provided in the Annexure.

6. Pharma Sector Projects

From being dominated by MNCs and being a net importer of drugs in the early 1970s, India's pharma industry is now a robust and competitive global supplier of bulk drugs, particularly generic drugs not governed by any patent restraints. India's wage cost, for production as well as for R & D has turned into a killer advantage for the development of generic and new versions of off-patent products. The Indian pharmaceutical industry was estimated to be around US$ 13.2 billion in 2006-07. Of this, domestic consumption of pharmaceuticals accounted for nearly 57 per cent while the rest 43 per cent was constituted by exports. The domestic market has grown at a composite CAGR of 9.5% over the last five years. In the long run, the market is expected to maintain a healthy growth rate of 12-13%. Overall pharmaceutical exports are estimated to increase at a CAGR of 30-32 per cent and reach US$ 18.3 billion in 2010-11.

Project management in Pharma companies consists of a complex multi project, multi product environment (not very different from the IT sector) wherein development of new products and obtaining regulatory approvals in focus markets and launching the products early into the market holds the key to success and profitability.

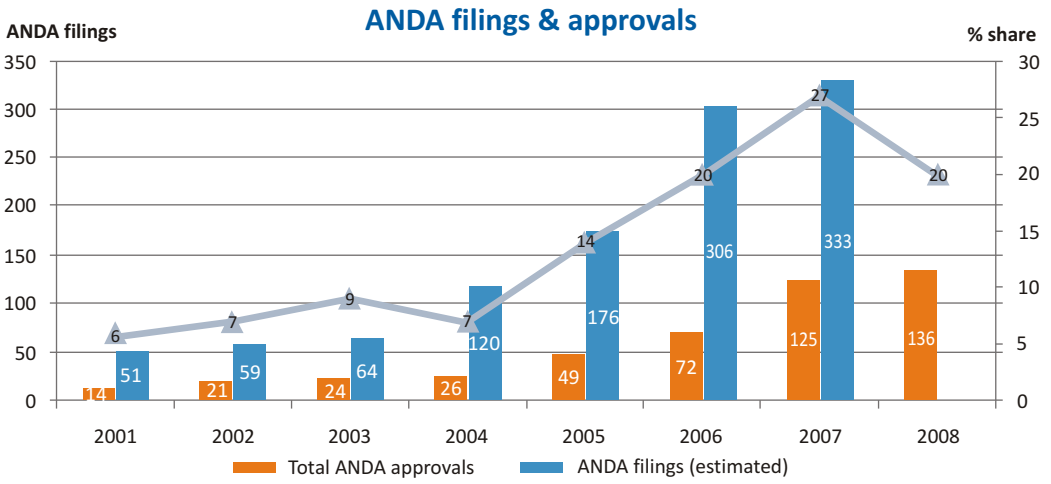
The major potential for project management in a typical Pharma company lie in three areas: 1. New product development, and 2. Filing regulatory and market approvals in target countries; and 3. Obtaining FDA or other equivalent certification of facilities for safety and other pharmacological standards. Specific projects for preparation and timely submission of Abbreviated New Drug Applications (ANDAs) for products and obtaining USFDA approvals for plants represent significant scope for some sort of formal project management training.

Indian companies have been at the forefront in terms of ANDA filings with approximately 25% share in ANDAs. Indian companies have filed more than an estimated 306 ANDAs in 2006 accounting for over 43% of global ANDA filings, compared to only about 30.7% in 2003. Over the last two to three years, several second/third tier Indian companies have aggressively scaled up their ANDA/ DMF filings in the US market.

India has around 119 USFDA plants in addition to around 844 UK MHRA approved plants Many of these plants also have approvals from countries such as Canada, Australia, Germany and South Africa. These approved sites aptly demonstrate the ability of Indian companies to deliver quality products worldwide and act as a platform for CRAMs players.

The two categories of specific projects identified represent significant scope for project management training. Based on our primary findings, minimum two project managers (regulatory compliance officer & R&D/Production officer) per ANDA filing and 1 Regulatory compliance officer

for getting plants approved by USFDA should undergo some sort of formal training in Project Management. Putting numbers into perspective, the manpower strength in the Pharma sector stood at 448,000 in 2008 of which the white collar base would be close to 40% (180000). Of these, nearly 50% (approx. 90000) were involved in some or the other form of product development, obtaining regulatory approvals, or filings of ANDA. Out of these 90000, an estimated 5% (4500) could be assumed as a cadre of project managers, who need to be given some sort of formal training in project management.



	Total ANDA approvals	Estimated ANDA filings*	Plants approved by USFDA	No. of Projects identified
2004	26	120	23	143
2005	49	176	21	197
2006	72	306	20	326
2007	125	333	20*	353
2008	136	350	20*	370
2009		365	20*	385
2010		382	20*	402
2011		397	20*	417

Source: OPPI- E&Y report 2009, Reliance Money sector report and Indicus estimates

Companies in the Pharma Sector by Turnover & Employees

Break up by Turnovers (in Crores)	HO	Offices
0-10	391	444
10-100	353	454
100-250	81	163
250-500	45	65
500-1000	22	50
1000-2500	17	36
2500-5000	6	21
5000+	1	1
Total	916	1234

Break up by employees	HO	Offices
0-50	89	97
51-100	250	288
100-250	213	239
251-500	147	212
501-1000	140	237
1001-2500	51	105
2501-5000	13	18
5001 & above	13	37
Total	916	1233

Source: CMIE data and Indicus estimates

"IT department should be given priority for project management certifications as other departments can still do with six sigma & lean six sigma certifications"

- Certified Project Manager in a leading private sector bank

7. Banking Financial Services and Insurance (BFSI)

Of all the sectors covered, banking and financial sector stands out as the least evolved in terms of project management practices. To give an argument, the nature of operations critical for the success of the organisation either fails to acquire necessary dimensions typical to a project or in case they do, they are largely outsourced. Observations based on our primary survey findings, suggest that in a bank, there are generally three kinds of activities that are closely associated with the terminology of project:

- Projects involving introduction of IT and any other automation or communications based technology to the business
- Projects where some change in process is involved
- New expansion (opening of a branch etc.)

The first two categorically fall under the IT department of a bank, which in our study was found to be the most active in terms of project implementation in a banking organisation. However, a high level of outsourcing of these projects exists, as these are specialised technical areas not in the normal competency of a bank. To cite an example, a bank which has a total strength of 6000 has on an average 1% (50-60) of its employees working on a typical IT project of which only 6-7 are PMs (0.1%). Not to forget that the same project might be involving 300 people, of which over 84% to 87% (240-250) represents the outsourced strength. Therefore, the demand for project management in the sector is likely to be already accounted for substantially in the demand assessment in the IT sector.

When it comes to expansion of facilities and opening new branches, substantial local outsourcing takes place, to local real estate advisory firms and specialist interior decorators, contractors etc, under the supervision of a few senior officials of the bank.

"We have never heard of project management certifications. Six sigma certifications are all that we have heard of and they are quite common in our sector"

Experienced Manager in a leading private sector bank

Other important departments, particularly operations, risk management and legal compliance, do not necessitate any project management exposure, as there are well laid out guidelines at the bank level and also by the Reserve Bank of India.

Considering all the above angles, it can be safely assumed that the universe of project management training in a bank can be confined to people working on an IT project which can be assumed at 1% (based on primary survey) of the entire banking strength and for certifications or formal training in project management, the relevant population stands at 0.1%. Accordingly in 2009-10, the potential for some basic form of project management training is estimated at 9725, represents the target population for some and 975 for certifications or formal project management training.

	Total manpower in banking sector handling team	Estimated strength of in-house project	Estimated no. of project managers
2006-07	891443	8914	891
2007-08	914241	9142	914
2008-09	948325	9483	948
2009-10*	972507	9725	973
2010-11*	997306	9973	997
2011-12*	1022738	10227	1023

Source: RBI and Indicus estimates

8. Auto sector

With increasing industrial production and growing spending power of the Indian middle class households, the country is expected to make it to the top five markets in the cars and commercial vehicles segment by 2020. India ranks number two globally in the two-wheeler segment next only to China. It ranks 11th in car production and 13th th in commercial vehicle production globally.

	Sales in 2006-07	Share in total sales	CAGR 2003-07
Two Wheelers	8476686	76.2%	14.5%
Passenger Cars	1578176	14.2%	16.7%
Three Wheelers	547805	4.9%	20.5%
Commercial Vehicles	517648	4.7%	26.7%

Source: IBEF

Based on primary survey finding, there are two types of projects undertaken in the auto sector:

- Capacity expansion: opening up of a new production facility
- Launch of a new model

For capacity expansion purpose, respondents indicated to having their project outsourced to EP&C contractors and PMCs along with not more than two to four senior project managers involved on behalf of the auto company. Since timely completion of such projects are crucial to a volume driven industry, the auto companies follow a rigorous procedure during the tendering phase, the result of which in most cases leads to timely completion of capacity expansion projects.

The second category has a more complex project environment, and mostly involves developing new products and models to anticipate as well as respond to emerging consumer trends.

Based on secondary research approximately 80 new models were launched in 2009, of which 50 were of cars, 20 of scooters/two wheelers and the remaining were that of commercial vehicles. According to the primary survey, 20-100 PMs are involved from the conception stage to the final launch of a model. Even if we take an average of 60 project managers being involved in launch of a model, the numbers produced (4800) represent a sizeable market of PMs in auto sector who need to given some sort of project management training.

If we put numbers into perspective; the manpower strength in the entire auto & auto accessories sector was 388160 in 2009 of which the white collar base would be close to 30% (116500 with increasing levels of automation in the shop floor). Of these, nearly 20% (approx. 23290) were involved in some or the other form of product development, vendor development or new product implementation. Out of these 23290, an estimated 5% (1165) could be assumed as a cadre of project managers, who need to be given some sort of formal training in project management. Along with this if we were to consider the auto component industry and target only the organized players (500 companies of the total 1100), then at least 1000 Project managers working in the 500 companies should also be considered as the target segment for formal project management training.

Therefore an estimate for the need for project management training in the auto sector is in the region of 2265-4800 persons (average 3530), poised to grow at over 10-12% annually in line with the long term outlook for the sector.

B. Demand Side Estimation

1. Recruitment in Project Management

Employment trends across industries are reported regularly by leading human resource companies Ma Foi, Manpower International, Team Lease and Monster. According to most reports, over the past few years, on an average, new jobs addition in the market have been in the range of 1.6 to 2.0 million, of which white collar employment has been of the order of 1.0 million. The trend for 2009 has been negative, with net additions dropping to less than 0.7 million, and layoffs or negative employment trends in a number of sectors.

Sector-wise trends in employment during past three years

SECTOR	2007	2008	2009 REV EST.
IT	220,000	114,000	13,500
ITeS	200,000	146,000	37,500
Banking Finance	165,000	(16,500)	5,000
Construction/ real estate	-	(4,500)	10,500
Retail	48,000	21,000	2,000
Automotive	125,000	385,000	(19,000)
Others			
Total	**800,000**	**910,000**	**667,490**

Sources: assorted from data from Monster, Manpower India, Ma Foi

Recruitments of Project Managers

Project management is not tracked at the industry level in the aggregate, as it is not yet seen as a discipline in itself. As a result, recruitments and job trends relating to project management can only be tracked from the specific job offers advertised or contracted out to recruitment agencies. Based on estimates (informal) shared by two leading manpower agencies (Monster.com and Naukri.com) indicated a total of 1244 and 1337 jobs placed by them in 2008-09 respectively in the category of 'Project Management'. (All lateral hire offerings, calling for some prior relevant experience). Of these, close to 1300 jobs, or almost 50% of the total, were in the IT sector. Based on the market shares of other leading recruitment agencies (Vedior- Ma Foi, Manpower, Kelly, Emmay HR, etc.), **we would estimate the overall lateral hire market to be in the region of 12-15,000.** Going by the ratio of project managers recruited in IT and non-IT sector, 2008 recruitment of project managers in non-IT sectors is estimated at 7500.

Entry Level Recruitments

As per Department of Higher Education estimates, in 2007-08, nearly 724000 engineering graduates (including degrees in computer applications) passed out from recognized Indian institutions. Trends since 2003-04 indicate that Computer Science/IT graduates account for

30-35% of the turnout. Other major streams are: Electrical/electronics (33%); mechanical Engineering (10%), and Civil Engineering (4%), with other streams together making up the long tail, accounting for the remaining 18%.

Institutions and Intakes in Recognised institutions, 2007-2008

	DEGREE	STUDENT INTAKE	DIPLOMA	STUDENT INTAKE
Engineering	**1,668**	**653,000**	**1,414**	**354,000**
Architecture	**116**	4,543	5	120
MCA	**197**	71,000		
Pharma	**859**	52,000	583	35,000
Applied Arts	**9**	650	8	1,010
Management	**1,149**	122,000		
Hotel management	**81**	5,272	92	489
Total	**4,894**	908,000	2,102	395,000
Grand Total	**6,996**			1,303,000

Source: Dept of Higher Education, Annual Report 2007-08

However, the actual absorption of pass-outs in the industry is considerably lower. According to NASSCOM and other industry associations, overall employability of India's graduates is less than 25%. Even in the technical education segment, employability is understood to be less than 50%.

Based on these indications, the annual absorption of technical and professional manpower is in the region of 450,000 annually, including around 135,000 in the IT sector. Among the others, Mechanical, Civil Engineers and MBAs are the most probable recruits as project managers in the Non IT sector, typically in construction, real estate and manufacturing. Of the 91,120 engineers coming out in 2007-08 from mechanical and civil streams, actual placement takes place for less than 50,000 pass-outs. A varying percentage of this absorption, depending on the sector, is in project related functions.

2. Demand Of Project Managers Assessed Through Projects

Going by the prevalent definition of 'projects', the most direct estimation of the demand can be found in capital projects, which have been profiled in the previous sections. Demand would emerge in large infrastructure projects, IEMs under implementation, donor agency approved Projects and IT projects.

a. Infrastructure Projects

Based on interactions with large companies implementing major infrastructure projects, a benchmark linking intake of project management personnel to large projects has been provided by a senior project executive at L&T, one of India's most competitive engineering companies.

According to this benchmark, major and mega projects costing above Rs 1000 crore, usually entail a team of 60-70 project management staff, of which 25-30 are new recruitments. Similarly, in medium-sized projects, about 3-5 project personnel would be involved, mostly from specific recruitment.

Another estimate provided by the head of Feedback Ventures, India's biggest infrastructure project management company and subcontractor to large projects. Feedback Ventures, with 800 full time staff, handles projects worth Rs. 20,000 Crore, which means almost 40 persons per Rs 1000 crore worth of project. These project management persons represent the external team (project specific recruitments or subcontracts), additional to the large internal team on the client's payroll.

Based on the benchmark, we have assumed that for every Major & Mega Project, 30 project managers would be freshly recruited while on the other hand 5 Project Managers would be recruited for Medium Projects. Accordingly, the projected demand for project managers in 2007-08 works out to 2790, and is likely to increase to 5280 by 2011-12, based on the capital value of projects announced for the XIth Five Year Plan.

Further, for the purpose of market size estimation of training services, an estimate of aggregate deployment of project mangers (3 years rolling) has been considered. Three years has been assumed as conservative estimate considering that infrastructure projects are large in size which usually span over 3-5 years and there are many Project managers who leave in between projects.

Projected trend of Mega, Major and Medium Sized Central Projects

	Proposed Investment Rs Crore	Number of Central Sector Projects	Major and Mega projects*	Number of Major and Mega Projects	Number of Medium Projects
2007-08	270,273	143	58%	83	60
2008-09	321,579	140	62%	88	52
2009-10	389,266	169**	62%	105	64
2010-11	479,117	208	62%	129	79
2011-12	595,913	258	62%	160	98

Source: PPP data, Indicus estimates

Year	No. of central sector projects started	Composition of Major and Mega Projects	No. of Major & Mega Projects	No. of Medium Projects	Project Managers Required for Major & Mega Projects	Project Managers Required for Medium Projects	Additional Managers Required	deployment (3 year rollling total)
2005-06	200	51.33%	103	97	3090	485	3575	-
2006-07	197	56.80%	112	85	3360	425	3785	-
2007-08	143	58.42%	83	60	2490	300	2790	10150
2008-09	140	62%	88	52	2640	260	2900	9475
2009-10	169	62%	105	64	3150	320	3470	9160
2010-11	208	62%	129	79	3870	395	4265	10635
2011-12	258	62%	160	98	4800	480	5280	13015

Source: Project implementation reports & Indicus estimates

b.Projects funded by Donor Agencies

	PROJECT MANAGERS REQUIRED WORLD BANK APPROVED PROJECTS		PROJECT MANAGERS REQUIRED ADB APPROVED PROJECTS	
YEAR	**NO.**	**REQUIREMENT OF PROJECT MANAGERS**	**NO.**	**REQUIREMENT OF PROJECT MANAGERS**
2006	17	255		
2007	23	345		-
2008	7	105	10	300
2009	17	255	10	300
2010	20	300	10	300
2011	21	315	13	390

Source: World Bank Database & Indicus Estimates

C. Demand of Project Managers in IEMs

Typically IEMs capital expenditures range from Rs 20-60 crore. It is expected that for each project, at least one project manager would be designated per IEM, whether internal or outsourced. However, in any industrial projects, usually two or three persons are assigned full time to a project, with complementing skills, such as electrical, civil, mechanical, and general administration/ finance management. Accordingly, the potential need for project management related functions can be assumed to be at least two per IEM. This would translate into an estimate of around 1000 project personnel in IEMs in 2008, projected to grow to 1530 by 2012.

Assuming an implementation cycle of 18-24 months, this would actually require an actual deployment of close to 2000 people at any given time across the projects under early and advanced implementation stages.

Year	No. Of IEMs	Amount (Rs Crore)	Project Managers Required	Aggregate deployment (2 year rolling)
2004	297	3577	594	
2005	400	35782	800	1394
2006	263	14975	526	1326
2007	726	19390	1452	1978
2008	541	12465	1082	2534
2009	616	13537	1232	2684
2010	662		1324	2926
2011	712		1424	3118
2012	765		1530	3324

Source: IEM database & Indicus estimates

d. Investment wise demand of Project managers

Based on the investment size of projects mentioned above the demand of project managers has been tabulated as follows:

Year	Demand of Project Managers in projects costing Rs 100 crore and above	Demand of Project Managers in projects costing Rs 20-100 crore
2006-07	3615	951
2007-08	2835	1752
2008-09	3045	1342
2009-10	3705	1552
2010-11	4470	1719
2011-12	5505	1904

Source: Indicus estimates

Annual Stock of project managers in industrial/ infrastructure projects

	2007-08	2008-09	2009-10	2010-11	2011-12
Infrastructure Projects	**10150**	**9475**	**9160**	**10635**	**13015**
Through IEMs	**1978**	**2534**	**2684**	**2926**	**3118**
Projects funded by Donor Agencies	**345**	**405**	**555**	**600**	**705**
Total New Demand	**12473**	**12414**	**12399**	**14161**	**16838**

Source: Indicus Estimates

3. Demand For Project Managers In IT Sector

In the IT sector, the demand has been established based on past trends in terms of annual additions per year for the project management position in various IT companies.

In 2008, there were 1, 14,319 recruits in the IT sector whereas in 2007, the figure was 2, 20,000. Taking into account the recent slowdown, we can arrive at a conservative estimate of an annual addition of 1, 00,000 in the IT sector.

	2008	2009	2010	2011
Total employment in IT sector (2008)	1,867,060			
Total no. of Project Managers	75,000			
New additions	**23,573**	**25,930**	**28,523**	**31,376**
Total no. of people employed as project managers	98573	124503	153027	184402

Source: Indicus estimates

4. Demand for project managers in Pharma sector

Given the aggressive increase in ANDA filings every year, there would be fresh recruitment of at least one project manager per ANDA filing and one project manager for getting the plant approved by USFDA, based on which the demand of project managers in the Pharma sector would be 402 in 2011 in the Pharma sector.

As mentioned earlier, the two categories of specific projects identified represent significant scope for project management training. Based on our primary findings, minimum two project managers (regulatory compliance officer & R&D/Production officer) per ANDA filing and 1 Regulatory compliance officer for getting plants approved by USFDA should undergo some sort of formal training in Project Management. Likewise the potential demand for Project Management training in 2008 was estimated to be 720 and is likely to increase to 814 in 2011.

	Total ANDA approvals	Estimated ANDA filings	Plants approved by USFDA	No. of Projects identified	Demand of Project Managers	Demand for Project Management training
2004	26	120	23	143	143	263
2005	49	176	21	197	197	374
2006	72	306	20	326	326	632
2007	125	333	20	353	353	686
2008	136	350	20	370	370	720
2009		365	20	385	385	750
2010		382	20	402	402	784
2011		397	20	417	417	814

Source: Indicus estimates

	2008	2009	2010	2011
Total employment in Pharma sector (2008)	448,238			
Total no. of Project Managers	4482			
New additions	**720**	**750**	**784**	**814**
Total no. of people working as project managers	5202	5952	6736	7550

Source: Indicus estimates

5. Demand for project managers in Auto sector

Need for project management training in the auto sector is in the region of 2265-4800 persons (average 3530), and is poised to grow at over 10-12% annually in line with the long term outlook for the sector.

	2008	2009	2010	2011
Total employment in Auto sector (2008)	387,000			
Total no. of Project Managers	3530			
New additions	**353**	**388.3**	**427**	**470**
Total no. of people employed as project managers	3883	4271.3	4698	5168

Source: Indicus estimates

6. Aggregate Demand

Annual Increase in Project Management Staffing

	2007-08	2008-09	2009-10	2010-11	2011-12
Infrastructure & industrial projects	4587	4387	5257	6189	7019
Pharma sector	692	720	750	784	814
Auto sector	321	353	388	427	470
IT sector 21,430	23,573	25,930	28,523	31,376	31,376
Total Demand	25647	29033	32325	35,923	39,679

Source: Indicus Estimates

Overall Stock for Project Managers in India

	2007-08	2008-09	2009-10	2010-11	2011-12
Infrastructure & industrial sector projects	12,473	12,414	12,399	14,161	17,044
Pharma sector	4,482	5,202	5,952	6,736	7,550
Auto sector	3,530	3,883	4,271	4,698	5,168
Banking sector	914	948	973	997	1,023
IT sector	75,000	98,573	124,503	153,027	184,402
Total Stock	96,399	121,020	148,098	179,619	215,187

Source: Indicus Estimates

Thus, based on these assumptions, the overall stock of project management staff in India was estimated to be 96,400 as of 2007-08, growing to over 215,187 by 2012. Nearly 78% of this population is expected to be in the IT sector. The non-IT sector, with a current stock of 13,000 is expected to grow slower, to about 17,000 professionals, during the same period.

Penetration of Project Management Certification

Worldwide there are over 20 million professionals engaged in projects and 400,000[11] professionals certified which represent a 2% penetration rate globally. In terms of regions, North America accounts for more then half[12] of the worldwide certification. China, with a stock of 29,442 certified professionals, and annual infrastructure investment that is over thrice the level as India, is also comparable, although it has a much smaller IT-orientation than India in its certification patterns.

There are 19,859 certified Project Managers in India (as of December 2009), with a current annual addition of over **8000 new certifications**. Based on the estimates of stock of professionals as estimated above, the penetration rate is a shade less than 17%. At the current pace of addition of **8000 certifications** per year, which is around 40%, the ratio is likely to increase in the normal course, given the 11.53% annualised growth in the demand for project management personnel (derived from the demand estimates).

Therefore, there is a strong case for ramping up the availability of certifications, given the increase in the overall level of project management activities, the need for sophistication, the acquisition of specialist skills as a means to differentiate offerings or attain process excellence, and last but not least, the propagation of the benefits of project management by training institutions with due endorsement by industry.

Certification Intensity Trends

	2007-08	2008-09	2009-10	2010-11	2011-12
Total Stock	**96,399**	**121,020**	**148,098**	**179,619**	**215,187**
Certified Project Managers	**-**	**19,859**	**27,859**	**35,859**	**43,859**
Certification intensity %	**-**	**16.41%**	**18.81%**	**19.96%**	**20.38%**

Source: Indicus Estimates

11 Source : IPMA

12 Source : PMI® certifications as of Dec 2009

The table illustrate that of the total stock of 121,020 project managers in 2008-09, 19,859 hold certifications in project management. India's certification intensity of 16.41% is highers than the global penetration rate of 2% mainly due to higher orientation of certified professionals in IT sector.

C. Market Size Estimation: Services

There are no available estimates of the size of the market for training and certification related to project management and this research attempts to develop an *ab inito* estimate of the same.

To begin with, we have considered the overall market for vocational training, executive training, and narrow down to the markets for certification based training, and then assess the market for project management related certification and training.

To arrive at the supply side estimates of the market size, we have used the following assumptions, based on available information obtained from the public domain as well as from primary research:

Current supply/ turn out levels:

- Output from specialist post graduate programmes: 100-150, based on data from the three providers
- Attendees at Executive Development Programmes of leading institutes: 35-40 per batch, 15 institutions, 2-3 events per year each (1575-1800)
- **Average Project Management Certifications: 8000 per year,** total base being around 19859 people.
- IT sector staff undergoing training in PMP to meet client specifications: 40-50% of all recruits in leading companies, and overall average 20% across the industry, around 100,000 people joining each year (2008-09 was a lean year, projections were over 220,000 new recruitments)
- Non-IT sector staff considered to have undergone training in PM: 4-5 professionals across all infrastructure projects under implementation, and private sector industrial activities as monitored by Industrial Entrepreneurs Memorandum filed with Ministry of Commerce and Industry; and number of capital and debt issues raised for industrial and commercial activity by corporate India (around 1600 projects, 4-5 persons involved in implementation and coordination per project)

Based on these, we estimate that annually around 37,500-38,000 people undergo some form of training and courseware relating to project management out of which PMI® /IPMA certifications have a current throughput of 8000 with PMI® enjoying a dominant share.

Sector trends:

IT Sector: given the high dependence on exports and the still recessionary outlook in both US and EU, NASSCOMM projects less than 7% top-line growth in the IT sector for 2009-10. Project management activities are driven by new spends, which are unlikely to revive immediately after the end of recession. Accordingly, we have assumed only a 10% annual growth in the IT sector off take in terms of project management related training spends. In this sector, certification based training is linearly aligned with sector growth, given the characteristics of the outsourcing industry.

Non-IT sectors: the biggest driver of growth in the non-IT market is expected to be the growth in infrastructure projects, which would include government and private sector projects, including those implemented under PPP modes. From amongst these , the greatest increase in demand is expected for full fledged post graduate management programmes; based on the ramp up capacity of the existing players, we have assumed a 40% annualised increase in supply over the next five years. On the other hand, unlike in the IT sector, there is presently no client- or market-driven demand for certification as such, and the demand is purely *suo moto*, from companies that perceive internal benefits from the use of project management and use certification as a differentiator in marketing their capabilities. Therefore, we have assumed growth in certification related training at the same levels as the growth trends in certification itself.

Project Management Certification: Currently, there are around 19,589 certified project management professionals in India. However, the demand for certification is poised to grow faster than the overall market for two reasons. First, given the client-induced demands for certification in the IT sector, certification will become even more important as a differentiator under the current slow market growth phase. Second, there is increasing awareness in non-IT

Estimates of Supply based Market Size projections 2015.

	CURRENT THROUGHPUT (ATTENDEES)[1]	MEDIAN VALUE OF SPENDS RS	MARKET SIZE RS MN	GROWTH RATE	THROUGH PUT 2015	MARKET SIZE 2015 RS MN CONSTANT PRICES
Post-Graduate Programmes	100-150	700,000	87.5	40%	670	470.6
Distance programmes*	-	10,000	-	-		-
Executive Development Programmes	1,500-2,000	20,000	35	10%	2,820	56.4
PM related training: IT	25-30,000	20,000	550	10%	44,315	885.5
PM training non-IT	13,029	15,000	112.5	20%	18665	280
Total	38,675		785		70,950	1692.5
Share of PMI/IPMA certification						
PMP & IPMA Certification	8000[2]	20,000	160	20%	19,906	398
% share of PMP & IPMA certification in the total throughput	20.6%				28.05%	

Source: Indicus Estimates

[1] *Figures are of 2009*

[2] *Source: Based on PMI® and IPMA annual certification figures*

sectors, particularly among large private sector companies, of the benefits of certification and its value as a means of differentiation in promotion, marketing and prequalification stages. Accordingly, we have assumed a 20% annualised growth in the throughput of certifications over the next five years.

Executive Development Programmes: We have assumed a 10% annualised increase in this supply, as a base line trend in the organised sector, driven by public companies and large private sector companies.

Accordingly, the overall size of the project management related training market in 2015 is expected to be close to Rs 169 crore at constant prices, reaching out to around 71000 persons.

It is worthwhile to compare these estimates in the overall context of the market for training and executive development.

Putting the numbers in perspective, according to leading training organisations like NIS Sparta, Dale Carnegie Institute, and NIIT, the corporate training market in India is estimated to be around Rs 5000 crore, and is highly dispersed. On an average, India's corporate spend on employee training ranges between 0.5% and 2% of sales revenue, and about 2-3% in the highly skills-intensive and attrition-driven IT sector. These figures compare well with the international trends reported by the American Society for Training, which estimates overall average global training spends at 2-2.5% of revenues.

According to Dataquest, Indian IT industry's flagship journal, training spends in India's IT sector were estimated in the region of Rs 2135 crore in 2006-07, of which nearly 65% (Rs 1365 crore) was corporate spending. Training spends have been growing at 15% per annum, although there have been temporary spurts (40% in 2006) amidst attrition, major expansions, and relocation of personnel in international locations, besides induction of new product platforms.

Another important element of training in the IT sector is the certification-based training, particularly for process quality assurance in software development and testing. On line certification programmes run by Quality Assurance International (QAI) are immensely popular in India, and the scope of Operational Excellence covers Project Management, Quality Management, Process Management, Human Capital Management, Innovation Management, and Service Management. QAI conducts its programmes online, and its Certified Software Quality Analyst (CSQA) and Certified Software Test Engineer (CSTE) and have already delivered over 20,000 certifications in India. Organisations such as Infosys, TCS and Accenture have over 1000 certified CSQAs and CSTEs each. This comes closest to the trend of certification in the IT sector relevant to project management, even though process certification requirements in IT would be much more important in the hierarchy of training than generalised project management certification. Therefore, the overall market size in terms of pool of certified Project Management professionals i.e. 4000 certified professionals would appear to be reasonable.

D. Growth Drivers

The demand drivers of Project Management have been outlined below:

1. Infrastructure Boom

The link between infrastructure and economy is not a once and for all affair. It is a continuous process and progress in development has to be preceded, accompanied and followed with progress in infrastructure. The policies of the Indian government seek to encourage investment both from local and foreign capital.

Increase in FDI over the recent years ($27 billion in 2008-09, 11% growth over 2007-08) has fuelled the spurt in infrastructure activity. India's foreign investment policies- which permit investment in almost all sectors- have attracted large inflows of foreign direct investment (FDI) in manufacturing and where possible, infrastructure.

Further, due to the recent economic downturn, infrastructure investment has been singled out as the most important element in bringing the country back to the 8-9% growth trajectory. With $514 billion of investment proposed to flow in 2007-12, a spurt in infrastructure activity is expected.

Year-wise Projected Investment during the Eleventh Plan

Sectors	2007-08	2008-09	2009-10	2010-11	2011-12	Total XI Plan
Electricity (incl. NCE)	81,954	101,553	126,380	158,027	198,611	666,525
Roads and bridges	51,822	54,789	59,200	68,370	79,971	314,152
Telecommunications	31,375	38,134	48,593	61,646	78,690	258,439
Railways (incl. MRTS)	34,225	40,964	49,525	60,393	76,701	261,808
Irrigation (incl. WD)	27,497	35,916	47,189	62,266	80,433	253,301
Water supply and sanitation	19,298	22,781	27,323	33,266	41,063	143,730
Ports	12,409	14,822	17,374	19,980	23,410	87,995
Airports	5,208	5,520	5,904	6,646	7,690	30,968
Storage	3,777	4,098	4,446	4,824	5,234	22,378
Gas	2,708	3,003	3,332	3,700	4,111	16,855
TOTAL INVESTMENT						
(Rs. Crore)	270,273	321,579	389,266	479,117	595,913	2,056,150
(US $ bn)	67.57	80.39	97.32	119.78	148.98	514.04

Source: Planning Commission

With such a massive growth anticipated in the infrastructure sector and development of more complex projects, there will be a greater demand for structured Project Management Processes in corporations, which would in turn fuel the demand for certified Project Managers.

2. Client Led Demand In The IT Sector

In the IT Sector, there has been far greater level of acceptance of professional project management practices which has largely followed from the widespread and popular practices in the U.S. Client led Demand has been and continues to be the biggest influence of skill needs and standards in India's IT Sector.

Moreover, IT companies are known to have several projects underway at a single point of time. Each project is typically quite diverse, acquiring all aspects of multidimensional Project management practices. With the increasing share of the Indian IT sector in the global IT market, the sector would only clamour for matured project management practices including greater induction of certified Project Managers. In addition to this, project managers in this sector work on many projects simultaneously 'One to many', which necessitates the need for following formalized Project management practices.

3. Procurement Practices And Guidelines

a) Donor/ Financer Preconditions

Increased trend of large infrastructure projects being funded by donor agencies is one of the key factors likely to upscale the project management practices in the country. Majority of the donor agencies consider systematic information gathering, conceptual analysis, and the involvement of stakeholders as imperative for achieving desired results as development interventions, irrespective of their sectoral focus, affect the lives of people in a multitude of ways.

Such Projects are often challenging and prove to be a true testament of good project management practices by the Executing Agencies (EA), who are required

- to take responsibility for ensuring that funds are managed according to donor requirement as well as to donor standards, including accountability over use of funds, project reporting and record keeping
- to manage financial processes including co-financing requirements, preparation of financial claims, review of financial reports cash flow, donor audits which require extensive documentation
- to ensure proactive monitoring and management of grant financial risk to minimize potential for disallowed costs.
- to maximize opportunities to recover costs from grants by building full costs into budgets and negotiating with donors.

The donor agencies provide program and project team leaders, team members, consultants, executing and implementing agencies in developing member countries (DMCs) with a range of analytical tools for better design and subsequent monitoring and evaluation frameworks which strengthens the very foundation of the project management to be followed in particular range of projects. These tools help practitioners in better understanding of the complexity of issues, determine appropriate objectives, and select the most suitable strategy to address the development problem. The aim of this process is to analyze, conceptualize, and design a development intervention that builds on beneficiary participation and country ownership and delivers desired results. The Guidelines describe techniques to engage effectively with the borrower, beneficiaries, and other stakeholders, and offer suggestions on when, with whom, and how to apply these tools and techniques so as to deliver the end product effectively and efficiently as per the pre defined time and scope.

Salient texts from the ADB guidelines have been provided in the Annexure.

b) Projects implemented under PPP mode

The strategy for infrastructure development in the Eleventh Plan recognises that the resources required for bridging the deficit in infrastructure and to sustain a growth rate of 9 per cent in the economy exceed the capacity of the public sector. It is, therefore, necessary to attract private investment through appropriate forms of Public Private Partnership to meet the projected investments.

Because PPP infrastructure projects are public projects in which private capital is being deployed, the financial returns from these projects are of greater significance to the private partners. Given the likelihood of delays by government in enabling the closure and procuring necessary approvals for such projects, PPP projects are likely to see greater levels of pressure for on time and in-cost completions.

Guidelines for Monitoring of PPP Projects have already been issued by the Planning Commission with the objective of enabling project authorities to evolve institutional arrangements for monitoring and supervision of their respective projects. Monitoring the performance of PPP projects is likely to have a two-tier mechanism, which would consist of:

(i) PPP Projects Monitoring Unit (**PPP PMU**) at the Project Authority level; and

(ii) PPP Performance Review Unit (**PPP PRU**) at the Ministry or State Government level,

With the new regulations affixing accountability for delays and overruns within the administrative ministry for each project, it is the responsibility of every Project Authority to safeguard user interests and the public exchequer, and thus ensure appropriate project-specific monitoring arrangements to ensure compliance of the above mentioned guidelines. Therefore, there is likely to be a major change in the government machinery with respect to project monitoring. However, in most cases, as the implementation rests with private sector players, the heat would also be turned on these factors for improving their project management effectiveness. This would create a new form of client-induced demand, this time from the largest among all non-IT sectors.

C) Industry self Regulation and standards

Over the years there has been a remarkable increase in government's institutional capacity to monitor projects. With the increased complexity of the project environment supplemented by 'lack of client led demand' in India, it is desirable that there should regulations prescribing project management qualification during the tendering phase which can act as growth driver in the industry (36% of the respondents feel that there is no client led demand in India and 29% feel that the demand is slowly catching up mostly from the private sector).

Meanwhile the industry remains sceptical over the issue of project management certification becoming mandatory to participate in projects. 40% of the respondents strongly support that certifications should be mandatory, and project management certification should become mandatory to participate in below types of projects:

a. Projects that are multi-dimensional

b. Projects whose SHE (Safety, Health & Environment) aspects are very high.

c. Projects which are not routine - e.g. critical national assets (airports, highways, Power, Oil and Gas, Defence , Space and Aeronautical projects etc.).

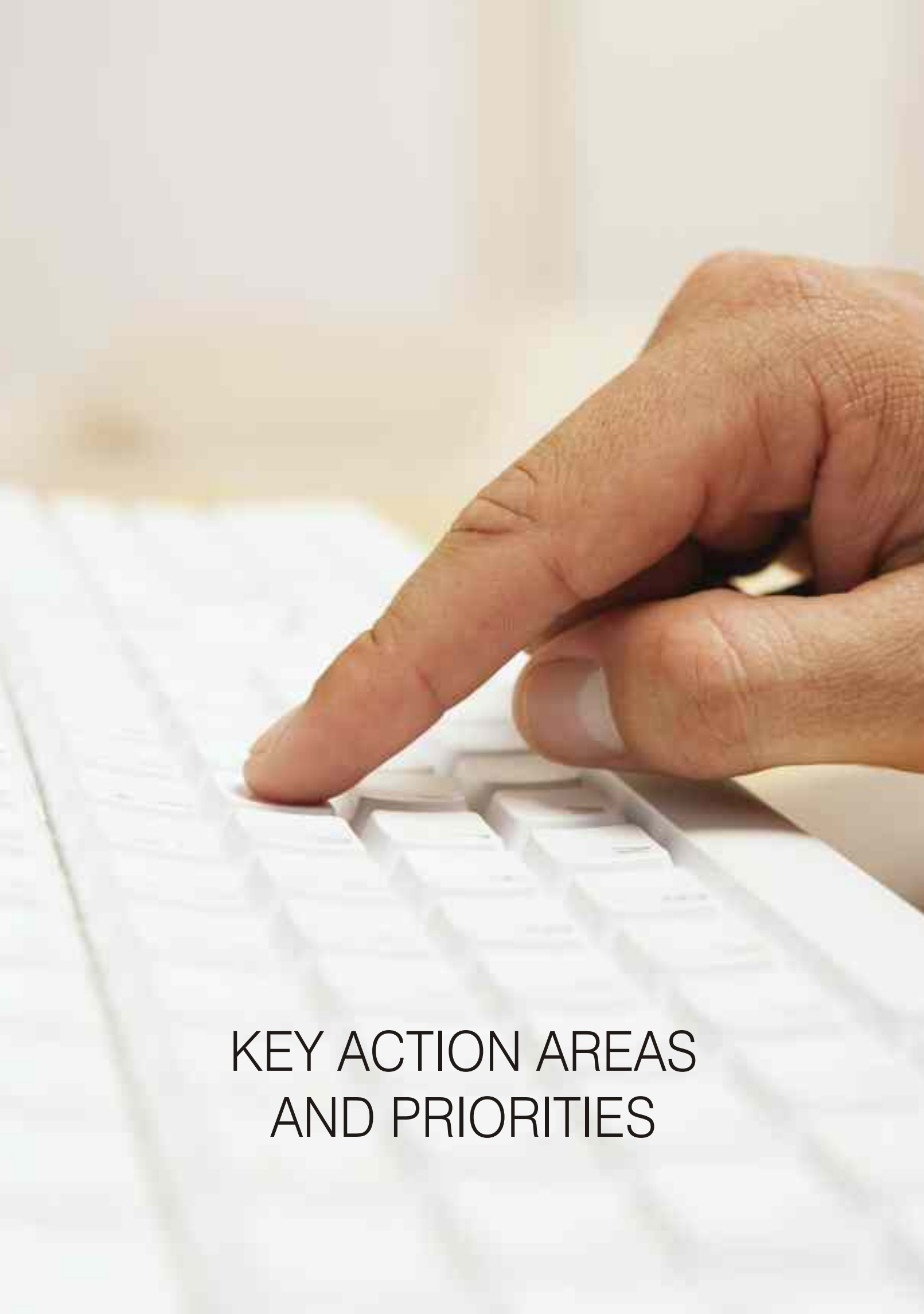
For the private sector, lack of client led demand for induction of project management practices is the single biggest factor hindering voluntary adoption of project management practices. Rather than going with the traditional LI norms, the policies should be altered in such a way that Project Management qualification carries as much weightage as commercial and technical qualifications. Such practices have been largely found in the private sector companies while engaging with EP&C companies, but it is desirable that induction of such procedures should be done at a mass level in the public sector companies as well.

4. Industry Best Practices

The biggest stimulus for industry-wide adoption of project management would be the emulation, based on evidence of good results and impacts, of similar practices followed by industry leaders and stalwarts. There are several cases of industry best practices in project management, which will have a rub-off effect on other players in these sectors, and percolate down across the sectors. Thus, the private sector would have to assume the role of a protagonist to build an ecosystem where there is some form of industry level induction of project management practices at all organizations, which can later also trickle into their public sector counterparts.

5. Supply Led Availability of Project Management Professionals

There has been increased awareness among the corporates, supplemented by demand from the multinationals particularly in the IT sector, which has led to a proliferation of training institutions offering Project Management courses, in the past few years. Their increasing number would only have a catalysing effect on the recruitment of entry level project management personnel by virtue of their increasing availability and enabling a wider choice of candidates.



KEY ACTION AREAS AND PRIORITIES

Key Action Areas and Priorities

A. Government

The strongest case for indoctrination of a culture of project management is the current state of public sector projects, marred by time and cost overruns. Going by the data on projects being tracked by the MOSPI, delays in government projects entail an opportunity cost of Rs. 65,464 crore, of which less than 150 projects alone account for overruns of Rs. 49,172 crore.

Demonstrate relevance of Project Management Principles in planning and appraisal stages

The findings of government-initiated studies have already established that there are major gaps in government agencies abilities and practices, even in upstream stages of project formulation, appraisal, validation and initial approvals. The need for induction of training and skills in project formulation, appraisal, and other preparatory actions is already established and accepted by the government, in general. However, the direct correspondence of these needs with project management training is not automatically understood, given the overlaps with other management streams, particularly finance, in which project formulation and appraisals are covered in considerable detail. On the other hand, project management is perceived more as an action-based implementation stage requirement, and less a planning stage need. The profile of training institutions recommended by the Committee is proof of the wide spread nature of such perceptions.

By correcting such perceptions through dissemination of appropriate international literature such as the *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* and other internationally accepted standards, awareness can be developed that the process of project management begins with the initiation stage, involving scoping, formulation and appraisals. This would enable inculcation of training content developed by international institutions specialising in the entire span of project management.

Raise profile of Project Management Institutions

There are sufficient indications of the government's willingness to address internal issues that impair efficiency of public sector projects. The recommendations of the Government's own reports, stress the need for skills development and training of a cross section of government employees across all relevant ministries and departments, through national institutions of management excellence. Indications are that the requisite funds would be available for any appropriate skills development programmes, and funds per se are not a constraint.

However, the government's orientation and leaning is considerably in favour of engaging its own institutions in each state, which have been specifically listed in the report. However, a number of private institutions have also been listed. It is noteworthy that none of the international associations for the project management profession are on the list, which indicates a clear need for awareness raising and profiling of institutions like PMI® .

Training Institution	Location
Administrative Staff College of India	Hyderabad
Lal Bahadur Shastri National Academy of Administration	Mussourie
National Productivity Council of India (NPC)	New Delhi
National Institute of Financial Management	Faridabad
Institute for Financial Management & Research	Chennai
HCM Rajasthan Institute of Public Administration	Jaipur
UP Academy of Administration	Nainital
Y. B. Chavan Academy of Developmental Administration	Pune
Assam Administrative Staff College	Guwahati
Indian Institutes of Management	Seven cities
Tata Consultancy Services (TCS)	Mumbai
Tata Management Training Centre	Pune
ORG-MARG Research Limited	Mumbai
Xavier Institute of Management	Bhubaneswar
Xavier Labour Relations Institute	Jamshedpur
Management Development Institute	Gurgaon
Institute of Development Studies	Jaipur
Symbiosis Institute of Management	Pune

Develop and deliver appropriate courseware targeting government agencies:

In the context of project management, the role of government agencies, particularly line ministries, is considerably different from the private sector, in that most government agencies tend to be sponsors and clients of public sector projects rather than direct implementation entities. Accordingly, the thrust of training and skill development for most government personnel would need to be more upstream in general. This would need some level of customisation of the conventional content of project management programmes, ideally with the involvement of bodies like MOSPI and government staff training institutions. Delivery of such programmes would considerably benefit from partnerships with training institutions that are more popular with government (a listing has been provided in the Reforms report).

Given the current vacuum in this regard, there are prospects for an early mover advantage.

Highlight the benefits of certification

One of the hypotheses examined in this research was that government could push for mandatory Project Management related certification like PMP in all its projects, particularly large capital outlay projects. However, such a regulatory move is being debated, due to the following reasons internal to the government:

- The boundaries of influence of project management alone, especially over external issues that are the identified major causes of delays in public sector projects
- The unfinished agenda of reforms in policies and procedures which are beyond the scope/ control of project management by non-government actors

Therefore, at best, the government can enhance the understanding and capacities of its own agencies in respect of project management and monitoring skills through appropriate training and knowledge transfer processes.

Another potential obstacle to steps for mandatory certification is the absence of clear consensus in the private sector as to certification being the touchstone of the effective inculcation and practice of project management. Certification is not the primary objective of training in project management principles in many organisations. Organisations tend to be more interested in appropriate training for persons involved at various levels in project environments than obtaining certification as such. The case for certification is also weakened by the lack of traction for the idea of a distinct identity for project management as specialist profession on the lines of accounting, medicine, engineering and architecture, and therefore requiring statutory and accredited qualification as a precondition to practice.

Notwithstanding the weak argument for mandatory certification, certification has its merits, particularly in the context of selection and deployment of suitable people to manage projects. Therefore, it is a desirable qualification, even if not absolutely essential. However, its usefulness is not yet adequately perceived by individuals, and there is a case for government agencies, particularly the Ministry of HRD and the All India Council for Technical Education to take some steps towards evaluating the potential for project management as a professional qualification. This would need to be initiated by institutions that have made the first moves toward offering full-fledged degree programmes, with an aim to promote it as a profession.

B. Industry Bodies

Obtain endorsement for project management through demonstration and documentation

Industry associations and federations can play a benevolent and catalytic role for the development, dissemination and promotion of a code of good practices, drawing from authoritative texts including the PMBOK® Guide, on the basis of satisfactory demonstration of the positive results and endorsements by leading companies, and documentation of best practice cases.

It has been a common practice for large industry federations like CII and FICCI to associate with leading consulting firms as well as other not-for-profit bodies, to co-brand and release special information publications (priced) for which content has been contributed by the partners. Industry associations have a large captive distribution channel through their membership network, bring convening power and add high visibility to events, besides generating sales revenue through the web as well as at numerous events.

The thrust on enhancing infrastructure investments and the growing need for project management skills present a timely opportunity to launch co-branded publications on the subject of project management. FICCI, which already has inked a MOU with PMI® , should be the ideal platform to launch such a product. Going one step further, industry bodies could also be interested in promoting co-branded short-duration executive development programmes for their members, on the lines of CII's own programme on project management, developed with a UK- based institution.

Promote project management certification down the supply chain beginning with EPC contracts

Despite the increasing acceptance of the usefulness of project management in industry leaders, the true potential of its benefits remains unharnessed, given that the culture of project management does not percolate down the supply chain. As a result, benefits of project management remain located only in activities that are directly within the organisation. However, if all the links in the supply chain can be made more efficient through the propagation of these practices, the impacts could be significantly higher. This has already been proved by the IT sector example, through the actions taken by international clients to ensure an acceptable level of project management skills in their vendors.

In non-IT sectors, particularly in the EPC sector, a beginning can be made with the Tier I suppliers of large EPC companies like L & T. Institutions like PMI® and IPMA can collaborate with such companies to upgrade the project management skills of their SME suppliers, particularly those affecting the critical paths of their key projects. Enormous opportunities will emerge in the area of nuclear power with a capital investment projection of more than Rs 80,000 crore in the next ten years, largely driven by foreign companies like GE and Areva in partnership with Indian EPC companies. A large part of these investments would be sourcing products and services from smaller companies in India.

We had two options PRINCE2 and the PMI® 's PMP certification. Based on our research and the preference of me and my colleagues, we were told to go for PMI® , as it is internationally recognized and is more popular and well-known.

Certified Project Manager in an IT company

"We need more training on operations and not on strategy. First let us strive to become followers rather than leaders. There is a huge unmet demand for good project managers in the country. The need of the hour is the emergence of quality international training institutions. To quote an old saying 'Coming up with the strategy is the easy part. Executing is the challenge'… PMI® is a very good certification system. Its training is too focused and detailed"

Prof. Goutam Dutta, IIM-A

Work with industry HR professionals to create an industry wide network/ community of project management professionals (unaffiliated to any training/ certification institution)

Another important stakeholder would be the community of HR professionals in the industry, as they are fraught with the challenges of recruitment and selection of project personnel

Building a community of project professionals associated with the industry would result in:

- Creating a project management community across India and in key sectors
- Enhancing industry wide awareness of the usefulness and perhaps necessity of more formalised project management practices
- Identifying key challenges in matching skills with needs on the ground
- Defining the environments and tasks in which mandatory certifications would bring in commensurate benefits and impacts
- Evolving self-regulation and adoption of standards

C. Academic Institutions

Develop project management courseware - general as well as sector-specific, matching international standards

Whether through a self-identified niche positioning, or as a result of industry-specific demand, the initial steps have been made towards a full-fledged project management curriculum. However, the relevant domain expertise of these management institutions remains unestablished. It would be in the interest of international associations and in the overall image of project management as a profession to ensure a controlled proliferation of offerings, and to ensure that there is an overall orientation, if not equivalence, to international standards. To this end, institutions like PMI® should actively collaborate in course design, irrespective of whether such arrangements are based on revenue-sharing or purely advisory in nature, to ensure appropriate coverage and content.

It would also be useful to assist a few leading academic institutions in obtaining international accreditation for their project management offerings, which would open the global market for Indian project managers passing out of such institutions.

Canvass for recognition of project management as a technical-managerial profession in itself

Obtaining due recognition for project management as a professional stream faces challenges of credibility as well as perception. As a result, unless there is official recognition of its unique value distinct from the other streams of management, there will not be adequate demand from students to enroll for project management courses at the graduate/ post graduate level.

Whether this substantially student and classroom oriented approach would work out in the interest of institutions like PMI® , needs to be evaluated, given the high importance attached by industry to prior work experience, and also the emphasis at PMI® on work practice. Therefore, there may be some arguments for supporting the recognition of project management as a management practice in the work environment although not necessarily to distinguish it as a full-fledged main stream academic discipline.

D. Financial Institutions

Build awareness among financial institutions and incentivise project management certification

The effects of ineffective project/ programme management can seriously affect the financial viability of some projects, particularly large capital-intensive projects involving debt financing. Therefore, financial institutions, which have large stakes in these projects, are potential supporters of any means that enable greater control over time and cost overruns. Further, they are in an advantageous position to influence the induction of structured project management at the time of project appraisal and to make funding contingent on threshold levels of project management expertise and practices being deployed into projects funded by them.

Donors such as World Bank, ADB and DFID already have some pre-requisites, such as a full time project manager with appropriate qualifications and experience, on their projects being implemented by state governments and other national institutions, including financial institutions like SIDBI.

Therefore, institutions like PMI® / IPMA need to specifically engage with the major financial institutions in India to propagate the importance and benefits of good project management practices in financially-assisted projects. This would in turn lead to an overall increase in the adoption of project management practices across industry and business in India.

"I wanted to go for Project Management, but I was forced to opt for Construction Management, because of the lack of internationally recognized PM training institutes. It is the Training Institutions who have to play a very crucial role in spreading awareness of benefits of PM. Construction Management is not enough for a complex scenario like today. This is why I went for certification in PM to make my understanding more vivid about project. "

Certified Project Manager in a private company in the Construction Sector


MR
MC
AC

ANNEXURE

Annexure

INSTITUTIONS OFFERING SPECIALIST POST GRADUATE PROGRAMMES ON PROJECT MANAGEMENT

Meanwhile, some new players are seizing the imitative and carving out a separate niche by developing full-fledged programmes under the overarching theme of **Project Management**. The initiatives of three such players are interesting to study in this respect.

a. Bharati Vidyapeeth University: Post Graduate Management Programme

Bharati Vidyapeeth University, Pune, one of India's oldest universities, with a student base of over 50,000 and campuses in several cities of India, has launched in July 2009, India's first full-time two-year "Post Graduate Management Program in Project Management PGDBPM". The programme has been designed as an Industry-Institute initiative, by Amplify Mindware, which is the business arm of Bharati Vidyapeeth University. The programme is targeted at industry professionals with at least two years of work experience, and the faculty includes several experienced and certified Project Management Professionals. The location is strategic: there is likely to be considerable local demand for the programme from Pune's diversified industrial base.

The programme is aligned to *PMBOK® Guide*, and students completing the programme shall be able to appear for PMI® certification without any further study. The two year programme entails a tuition fee of Rs. 277,500 in the first year and Rs. 210,000 in the second year.

b. Adani Institute of Infrastructure Management: Post Graduate Programme in Infrastructure Management (PGPIM)

This is an initiative launched by the Adani Group, one of India's major infrastructure players, with a diverse portfolio of big-ticket investments in ports, roads and highways, power, railway freight, logistics, real estate and industrial parks/ Special Economic Zones. The rapid growth of the group has created a captive demand for trained and qualified project management professionals within the group itself, which employs over 5000 personnel across its business verticals, many in project implementation currently. Adani Group has also acquired a project management company Howe India Ltd., to supervise all its captive projects.

The PGPIM is a one-year, full time, residential, Post Graduate Programme in Infrastructure Management, designed to provide a 360° grounding into all aspects of Infrastructure Management, through 39 courses across 560 sessions over 50 weeks. These include: Infrastructure Policy, Project Initiation, Infrastructure Marketing and Pricing, Financing, Risk management, Human Resources, Dispute Resolution, Logistics and Supply Chain Management, among others.

It is the only infrastructure sector focused management programme being offered in India. Specialization is provided in three industries of specific focus within the Adani Group: Transport, Energy and SEZ & Real Estate. The course fee is Rs 1,000,000, including tuition fee and accommodation, but excluding food, and the institute has tied up student loans with a number of banks.

The first batch is expected to have 30 students, and shall eventually ramp up to over 200. Besides the residential programme, management development programmes of 1-2 weeks duration are also being considered as a regular offering.

The backing and employment prospects at Adani as well as the high profile of the Director and staff (several having moved over from the IIM Ahmedabad), provide a high profile, credibility and attractiveness to this programme as a premium offering in the domain of project management related education. However, the institution does not yet have a tie-up with any specific content providers related to the project management modules, and would like to explore the same after the operations have stabilised.

c. National Institute of Construction Management and Research (NICMAR): Post Graduate Programme in Project Engineering and Management (PGPPEM)

NICMAR is an institute set up by a few established construction companies, with the Chair being the Chairman and promoter of Hindustan Construction Company. It focuses on the professional development of managerial skills specific to the construction industry, although more recently it has launched offerings directed at other industries as well. The campuses are at Pune, Goa, and Hyderabad.

NICMAR offers three full time two-year programmes, with considerable similarities in content, although with different industry orientation as inferred from the titles themselves:

1. PGP ACM: Post Graduate Programme in Advanced Construction Management
2. PGP PEM: Post Graduate Programme in Project Engineering and Management
3. PGP REUIM: Post Graduate Programme in Real Estate and Urban Infrastructure Management

Of these, the PGP PEM is most relevant to this research.

THE PGPPEM offers a rounded menu related to Project Engineering and Management, covering areas like: Operations Management, Project Planning and Scheduling; Project Cost Estimation, Accounting Controls; Project Marketing, Proposals and Tendering; Legal aspects, Procurement and Site Management; Finance and Structuring; Contract Management; Project Management Software, etc. Additionally, industry-specific themes are covered in the areas of Oil and Gas, Process Industry, Building Services, Piping Engineering, Power Plant Engineering, Telecom etc, based on the choice of elective courses. The Programme duration is two years, organised into 6 trimesters. Students are required to undergo summer training for a period of 8-10 weeks with the industry to gain field experience. The syllabus has been developed with assistance from MIT, USA. The total tuition fee spread over two years is close to Rs. 750,000.

INSTITUTIONS OFFERING CORRESPONDENCE PG DIPLOMA COURSES

a. Indira Gandhi National Open University (IGNOU)

IGNOU, under its School of Engineering and Technology, offers a Post Graduate Certificate in Project Management (PGCIPM), a six-month certification course, which is delivered by Centre for Excellence in Project Management (P) Ltd. (CEPM),. IGNOU has also tied up with Project Management Associates (PMA), a not-for-profit registered Society, to conduct the PGCIPM examination. The PGCIPM has 18 credit units and is based on World Class online course material. IGNOU expects to have over 10,000 students qualifying for PGCIPM in the next 3 to 4 years.

IGNOU Post Graduate Certificate in Project Management (PGCPM)

Programme Duration	6 Months (Minimum) and 1 Year(Maximum)
Programme Fee	Rs. 7,200 + Rs. 100 (Registration Fee)
Eligibility	Graduate in any discipline
Age	No bar

Source: IGNOU

b. National Institute of Construction Management and Research (NICMAR)

NICMAR, which has a campus-based project management programme, also provides a two-year, distance-mode, Post Graduate Programme in Project Management (PGP PM), through its School of Distance Education (SODE). The Programme duration of 24 months is divided in 4 Modules. The fee is Rs 85,000 for Indian Nationals resident in India and US$ 2500 for NRI and foreign students.

C. Alagappa University, Tamil Nadu.

The Alagappa University, Dept of Distance Education offers two courses: a one-year Advanced Diploma, and a two-year MBA in project management. It has study centres in most state capitals, and is among the top five distance education universities in Tamil Nadu. The MBA programme is offered at a fee of Rs 8000, inclusive of the study centre assistance.

INSTITUTIONS OFFERING EXECUTIVE DEVELOPMENT PROGRAMMES

a. Indian Institutes of Technology/ Management

Several IITs and IIMs offer regular programmes on project management, targeted at middle management executives. The courses are mostly residential and not more than one week in duration. Fees range from Rs 12,000 to Rs 70,000, with IIM Ahmedabad commanding the pole position in fees. The new entrant in this space is the Adani Institute of Infrastructure Management; however, its two programmes so far have been delivered only within the Adani group, the sponsor of the institution, hence not included in this comparison.

Programmes on Project Management by the IITs and IIMs

INSTITUTE	DURATION	FEES
IIT-Delhi	40-45hrs (online) spread over around 6-7 weeks.	Rs.42,000 - Indian students and US$2400- International students.
IIT-Kharagpur	4 days	Rs. 12,000
IIM-Calcutta	5 days	Rs. 37,500
IIM-Kozhikode	6 days	Residential - Rs. 18,000/- & Non -Residential - Rs. 15,000/-
IIM-Bangalore	5 days (software project management)	Residential: Rs. 60,000/- Non -Residential: Rs. 55,000/-
IIM - Ahmedabad	6 days	Rs. 70,000/- SAARC countries and US $ 2,400 non-SAARC countries
IIM- Lucknow	5 days	Rs. 20,250

Source: IIMs and IITs websites

b. Confederation of Indian Industry (CII):

CII, India's largest industry federation by membership and share of business revenues, has entered into a partnership with the University of Warwick to offer a Masters M.Sc in Engineering Business Management, through a 'distance delivery' arrangement under which the teaching staff is employed by the University. Its particular focus is the development of managers and executives in the engineering sector and it routinely provides short courses and other events for member companies of CII.

The CII- Dadabhai Naoroji Centre of Excellence, Mumbai, organises these short duration Management Development Programmes (MDPs) on Project Management, for the middle and senior level executives of Indian industries. Faculty is predominantly drawn from industry experts and practitioners.

During September 2009, the following Project Management programmes were held on a non-residential basis, each spanning for two days:

- Benefitting from Modern Project Management: a Management Systems Implementation Approach
- Project Cost Management
- Lean Construction
- Project Management using MS Project
- Legal Aspects of Project Contracts Management

Fee Structure of MDPs organised by CII

	CII MEMBER COMPANIES	CII SSI MEMBERS COMPANIES	NON-MEMBER COMPANIES
1 day duration	Rs 4, 500/-	Rs 3, 500/-	Rs 5 ,500/-
2 day duration	Rs 8, 000/-	Rs 6, 500/-	Rs 9 ,000/-
3 day duration	Rs 10, 500/-	Rs 7, 000/-	Rs 11, 500/-
Warwick Modules (5 days)	-	-	Rs 35, 000/-
Warwick MSc Programme	-	-	Rs 3, 50, 000/-

Source: CII

CII, in partnership with ACC, India's leading cement producer, is also currently setting up the CII-SN Centre of Excellence in Leadership, at Kolkata, which shall offer short term programmes covering management, including project management.

C. Construction Industry Development Council

The Construction Industry Development Council (CIDC) was set up in 1996 by the Planning Commission, Government of India along with Construction Industry. It offers short Executive Development Programmes targeted at the working executives and entrepreneurs not having formal management education.

Programmes offered by CIDC in project management

DESCRIPTION	DURATION	LOCATION	FEE-NON RESIDENTIAL L (in Rs.)	FEE-RESIDENTIAL L (in Rs.)
Project Management and Financing	2 days	Vishakhapatnam	12,000	25,000
Project Management for Rapid Results	2days	Simla	12,000	25,000
Computer Aided Project Management Tools and Techniques	2 days	New Delhi	12,000	25,000

Recently, FICCI, India's oldest business federation, has signed a MoU with PMI® , to offer executive development programmes in project management, and shall join the list of service providers in this sector.

OTHER TRAINING INSTITUTIONS OFFERING PROJECT MANAGEMENT COURSES

There are approximately 70 PMI® Registered Education Providers (REPs) who impart training on various aspects on Project Management.

The updated list is available on **www.PMI® .org.in**

THE SECTORAL COMPOSITION OF CORPORATE ACTIVITIES, BASED ON THE PAID-UP CAPITAL

Paid-up Capital of Government Companies Limited by shares as on 31st March, 2007: (Distribution by Industrial Activity)

(Revised) (Capital in Rs. Crore)

Sl. No.	Industrial Classification	PUBLIC		PRIVATE		TOTAL	
		No. of Companies	Paid-up capital*	No. of Companies	Paid-up capital*	No. of Companies	Paid-up capital*
1	Agriculture, Forestry & Fishing	60	263.41	25	129.16	85	392.57
2	Mining & Quarrying	45	4459.92	12	4269.93	57	8729.85
3	Manufact-uring	325	45356.42	80	16303.58	405	61660.00
4	Electricity, Gas & Water Companies	85	45672.27	10	596.10	95	4628.37
5	Construction	61	27570.79	22	339.38	83	27910.17
6	Trade, Hotels & Restaurants	45	524.40	19	59.72	64	584.12
7	Transport, Storage & Communi-cations	47	1891.95	8	344.71	55	2236.66
8	Finance, Insurance, Real Estate & Business Services	143	6260.33	48	1422.29	191	7682.62
9	Community, Personal & Social Services	91	18327.48	18	280.08	109	18607.56
10	Unclassified	74	25141.16	14	56.25	88	25197.41
	TOTAL	**976**	**175468.13**	**256**	**23801.20**	**1232**	**199269.33**

*Paid Up Capital is worked out on the basis of the companies' data available on the MCA Portal

Paid-up Capital of Non- Government Companies Limited by shares as on 31st March, 2007: (Distribution by Industrial Activity)

(Revised) (Capital in Rs. Crore)

Sl. No.	Industrial Classification	PUBLIC		PRIVATE		TOTAL	
		No. of Companies	Paid-up capital*	No. of Companies	Paid-up capital*	No. of Companies	Paid-up capital*
1	Agriculture, Forestry & Fishing	2877	4172.77	11151	5904.72	14028	10077.49
2	Mining & Quarrying	610	13169.49	5210	1496.08	5820	14665.57
3	Manufact-uring	19436	105487.14	132501	66837.58	151937	17324.72
4	Electricity, Gas & Water Companies	706	11353.29	2222	7473.60	2928	18826.89
5	Construction	2542	18794.51	34766	13141.37	37308	31935.88
6	Trade, Hotels & Restaurants	5776	14737.25	73140	25045.42	78916	39782.67
7	Transport, Storage & Communi-cations	1201	13502.77	16839	6834.21	18040	20336.98
8	Finance, Insurance, Real Estate & Business Services	18618	58941.68	126928	50994.35	145546	109936.03
9	Community, Personal & Social Services	2659	15669.48	24049	11172.09	26708	26841.57
10	Unclassified	6183	36918.27	47368	25644.61	53551	62562.88
	TOTAL	**60608**	**292746.65**	**474174**	**214544.03**	**534782**	**507290.68**

*Paid Up Capital is worked out on the basis of the companies' data available on the MCA Portal

Paid-up Capital of Companies Limited by shares as on 31st March, 2008: (Distribution by Industrial Activity)

(Revised)
(Capital in Rs. Crore)

Sl. No.	Industrial Classification	PUBLIC		PRIVATE		TOTAL	
		No. of Companies	Paid-up capital*	No. of Companies	Paid-up capital*	No. of Companies	Paid-up capital*
1	Agriculture, Forestry & Fishing	2948	4379.72	11632	6335.76	14580	10715.48
2	Mining & Quarrying	670	18566.46	5507	6093.80	6177	24660.26
3	Manufact-uring	19917	162048.89	135111	86813.10	155028	248861.99
4	Electricity, Gas & Water Companies	891	82928.71	2399	10874.42	3290	93803.13
5	Construction	2871	45016.72	38903	20893.25	41774	65909.97
6	Trade, Hotels & Restaurants	5894	17638.95	76340	28169.70	82234	45808.65
7	Transport, Storage & Commun-ications	1263	17408.45	17208	9000.72	18471	26409.17
8	Finance, Insurance, Real Estate & Business Services	19006	86769.86	131269	63747.68	150275	150517.54
9	Community Personal & Social Services	2795	35007.69	24692	12965.14	27487	47972.83,
10	Unclassified	6241	75636.22	47359	29542.73	53600	105178.95
	TOTAL	**62496**	**545401.67**	**490420**	**274436.30**	**552916**	**819837.97**

*Paid Up Capital is worked out on the basis of the companies' data available on the MCA Portal

Paid-up Capital of Government Companies Limited by shares as on 31st March, 2008: (Distribution by Industrial Activity)

(Revised)
(Capital in Rs. Crore)

Sl. No.	Industrial Classification	PUBLIC		PRIVATE		TOTAL	
		No. of Companies	Paid-up capital*	No. of Companies	Paid-up capital*	No. of Companies	Paid-up capital*
1	Agriculture, Forestry & Fishing	60	263.41	25	168.44	85	431.85
2	Mining & Quarrying	44	4295.46	12	4372.14	56	8667.60
3	Manufact-uring	323	33528.49	80	16278.95	403	49807.44
4	Electricity, Gas & Water Companies	96	66542.14	10	596.10	106	67138.24
5	Construction	61	22557.29	22	314.78	83	22872.07
6	Trade, Hotels & Restaurants	45	525.56	21	60.03	66	585.59
7	Transport, Storage & Commun-ications	48	2203.27	8	344.71	56	2547.98
8	Finance, Insurance, Real Estate & Business Services	147	9715.48	51	1482.20	198	11197.68
9	Community Personal & Social Services	89,	17149.56	18	280.08	107	17429.64
10	Unclassified	78	27579.91	14	186.33	92	27766.24
	TOTAL	**991**	**184360.57**	**261**	**24083.76**	**1252**	**208444.33**

*Paid Up Capital is worked out on the basis of the companies' data available on the MCA Portal

THE BREAKUP OF COMPANIES IN THE NON IT SECTORS BY TURNOVER AND EMPLOYEES

Companies in the Construction Sector by Turnover & Employees

Break up by Turnovers (in Rs. Crore)	Head Office	Offices
0-10	326	338
10-100	418	441
100-250	223	245
250-500	83	105
500-1000	60	84
1000-2500	33	78
2500-5000	17	44
5000+	5	3
Total	1165	1338

Break up by employees	Head Office	Offices
10-50	261	262
51-100	379	391
100-250	246	267
251-500	89	101
501-1000	111	143
1001-2500	41	90
2501-5000	22	65
5001 & above	16	22
Total	1165	1341

Companies in the Engineering Sector by Turnover & Employees

Break up by Turnovers (in Rs. Crores)	Head Office	Offices
0-10	421	458
10-100	257	315
100-250	119	198
250-500	47	80
500-1000	39	63
1000-2500	20	30
2500-5000	13	70
5000+	4	35
Total	920	1249

Break up by employees Office	Head	Offices
10-50	83	83
51-100	326	347
100-250	186	224
251-500	110	159
501-1000	129	213
1001-2500	59	140
2501-5000	12	17
5001 & above	16	66
Total	921	1249

Companies in the Transport & Logistics Sector by Turnover & Employees

Break up by Turnovers (in Rs. Crores)	Head Office	Offices
0-10	200	242
10-100	158	385
100-250	67	187
250-500	26	46
500-1000	14	68
1000-2500	7	59
2500-5000	0	0
5000+	2	2
Total	474	989

Break up by employees Office	Head	Offices
10-50	32	35
51-100	168	208
100-250	83	136
251-500	70	100
501-1000	90	260
1001-2500	19	193
2501-5000	6	14
5001 & above	6	43
Total	474	989

Companies in the Power Sector by Turnover & Employees

Break up by Turnovers (in Rs. Crores)	Head Office	Offices
0-10	56	59
10-100	53	82
100-250	24	24
250-500	26	45
500-1000	16	20
1000-2500	21	29
2500-5000	17	34
5000+	18	39
Total	231	332

Break up by employees	Head Office	Offices
10-50	8	8
51-100	46	48
100-250	23	28
251-500	26	35
501-1000	47	68
1001-2500	30	54
2501-5000	13	17
5001 & above	38	74
Total	231	332

Companies in the Telecom Sector by Turnover & Employees

Break up by Turnovers (in Rs. Crores)	Head Office	Offices
0-10	45	48
10-100	93	124
100-250	26	31
250-500	39	48
500-1000	15	21
1000-2500	5	5
2500-5000	4	24
5000+	6	22
Total	**233**	**323**

Break up by employees	Head Office	Offices
10-50	10	10
51-100	49	65
100-250	41	55
251-500	39	48
501-1000	41	72
1001-2500	16	34
2501-5000	5	24
5001 & above	6	20
Total	207	328

A LEAF FROM THE ASIAN DEVELOPMENT BANK GUIDELINES

The bank prescribes a DMF (Design, Monitoring & Formulation) approach for analyzing, conceptualizing, designing, implementing, monitoring, and evaluating projects to be funded by ADB. The DMF establishes the basis for performance monitoring and evaluation during and after implementation. The application of this approach essentially answers the following questions:

i. Why is this project done in the first place (impact)?

ii. What is the project going to accomplish (outcome)?

iii. What is the scope of the project (outputs) and what key activities need to be carried out?

iv. What resources (inputs) are required?

v. What are the potential problems (risks) that could affect the success of the project?

vi. What are the fundamental assumptions underlying the project design?

vii. How do we measure (performance indicators) and verify (data sources) that we have been successful?

The DMF communicates the following:

i. How the project will achieve results by converting a series of inputs into a defined set of outputs that are expected to achieve a desired development result or outcome, and contribute to a broader sector or subsector impact;

ii. Time-bound and quantifiable indicators and targets that allow the project to be monitored throughout implementation and evaluated subsequently;

iii. Identified project risks that may adversely affect achievement of desired results and appropriate mitigation measures; and

iv. Specific assumptions that must remain valid for the project to succeed.

Implementation

In the implementation stage, projects are implemented by the executing agency (EA) according to the agreed schedule and procedures. A project administration memorandum sets out the project's implementation agreements and details. Project consultants are recruited as needed to assist the Government. For example, in an infrastructure project, the detailed engineering design and bidding documents are prepared, machinery and equipment are procured, and civil works are constructed and installed.

These activities are encouraged to be completed prior to loan negotiation - except signing of contracts - to minimize any start-up delays in project implementation. ADB's project divisions review the physical implementation progress as well as monitor achievement of development objectives in close coordination with the borrower and the executing agencies. ADB disburses the loan for approved expenditures, as provided in the loan agreement.

ADB's review missions assess the progress of project implementation by visiting it at least twice a year throughout the implementation period.

If a project has significant environmental or social issues, ADB will often require the borrower to submit regular monitoring reports, in addition to progress reports. Information on the project's implementation progress and status of development objectives and loan covenants is added to the project information document during this implementation phase.

Monitoring, Review, and Assessment

The borrower or EA and ADB review missions constantly monitor project costs. Including information in the progress report comparing financial and physical performance assists in determining when total project cost overruns are occurring. When a cost overrun is likely, the borrower, EA, and ADB examine the items remaining to be procured and ascertain whether sufficient funds are available within the project budget.

Evaluation

After the project facilities and technical assistance activities are completed, ADB prepares a project completion report or technical assistance completion report to document the implementation experience. These reports are prepared within 12 - 24 months of the completion of the project.

Project Management Institute (PMI)®

Not-for-Profit Professional Association:

Founded in 1969 by working project managers, PMI's primary goal is to advance the practice, science and profession of project management throughout the world in a conscientious and proactive manner so that organizations everywhere will embrace, value and utilize project management and then attribute their successes to it. The PMI community has over 500,000 members and credential holders.

Membership:

Good things happen when you get involved with PMI.

When you become a PMI member, you'll gain access to knowledge, networks and resources that can help you to improve your work and advance your career in project management. Membership means you'll be recognized as someone who is:

› Serious about professional and personal development
› Enthusiastic about good practices in project management
› Dedicated to practicing your profession in an ethical manner

All of these factors give you **an edge in the job market** and distinguish you to employers, colleagues and stakeholders. Currently PMI® has

- 250 chapters in over 70 countries
- 7 chapters in India

Global Standards:

Global standards are crucial to the project management profession. Standards ensure a basic project management framework is applied consistently worldwide.

- 12 global standards (including Program and Portfolio Management)
- Nearly 3 million *A Guide to the Project Management Body of Knowledge* (*PMBOK® Guide*) Circulation

Credentials:

PMI's credentials and professional development opportunities can help business professionals start, build or advance their careers in project, program and portfolio management.

Certified Associates in Project Management (CAPM®)

- Understand the processes and terminology and have a fundamental knowledge of the*PMBOK® Guide*
- Demonstrate knowledge of project management practices

Project Management Professionals (PMP®)

- Are responsible for all aspects of the project for the life of the project
- Lead and direct cross-functional teams to deliver projects

Program Management Professionals (PgMP)®

- Are responsible for achieving an organizational objective by overseeing a program that consists of multiple projects.
- Maintain alignment of program scope with strategic business objectives.

PMI Risk Management Professional (PMI-RMP℠)

- A project risk management professional provides expertise in the specialized area of assessing and identifying project risks, along with plans to mitigate threats and capitalize on opportunities.

PMI Scheduling Professional (PMI-SP℠)

- A project scheduling professional provides expertise in the specialized area of developing and maintaining the project schedule.

Network of Registered Education Providers (R.E.P.s)

The PMI Registered Education Provider (R.E.P.) network consists of training organizations, executive development centers at universities and in companies that provide quality project management training services. Their educational offerings have been assessed by PMI. During this assessment, R.E.P. organizations have demonstrated their capability to provide effective project management training. There are more than 1,200 organizations that belong to the Registered Education Provider Program (R.E.P.) in over 60 countries.

Research Program

PMI is the only project management association with a dedicated research arm, responsible for initiating academic research taking place at institutions around the world, and guiding and coordinating PMI-funded research. To date, PMI has invested US $16 million in project management research and has been directly involved in the release of more than 350 publications. PMI's *Project Management Journal*, published in partnership with John Wiley & Sons, is a leading academic journal devoted to advancing the discipline of project management.

PMI Professional Awards

PMI's Professional Awards Program recognizes and celebrates the highest standard of projects, organizations and professional development products. Our esteemed Project of the Year Award is our highest honor, given to the project that demonstrates superior performance and exemplary execution.

Virtual Library

The PMI® James R. Snyder Center for Project Management Knowledge & Wisdom, also known as the Virtual Library, is a repository for relevant and reliable project management information. Assets include peer-contributed papers on the Knowledge Shelf, over 250 unabridged books on eReads & Reference, and expanded research assistance with Ask a Librarian.

Academic Program Accreditation

The PMI Global Accreditation Center for Project Management (GAC) is the world's leading global accrediting body for project management degree programs. The GAC's mission is to advance excellence in project management education, worldwide, and to ensure that GAC accredited programs meet current and anticipated talent needs for qualified project professionals. There are over 50 degree programs at more than 20 academic institutions currently accredited by PMI GAC.

PMI In India : There are 7 Chapters in India (Delhi, Mumbai, Bangalore, Chennai, Hyderabad, Pune & Trivandrum). The PMI community which includes members and credential holders exceed 27000 in India. The charter of PMI India office is to promote Project Management across Govt, Academia & Organization and grow the community of professional project management practitioners.

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Disclaimer

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