

Project Management Knowledge Transfer Upshots: Success Story of Chinese Project Management Firm

Fiaz Muhammad, Baseerat Rizwan, Bai Sijun and Bai Libiao

School of Management, Northwestern Polytechnical University, Xi'an, China

Hazara University, Mansehra, Pakistan

fiaz0128@gmail.com, baseerat_khan@hotmail.com, baisj@nwpu.edu.cn,

hanshannuanyang@163.com

Abstract

Project management knowledge has gained much intention due to ever-changing market demands, shorten life span of innovations and technological complex scenarios. Projects managers in all domains are using scientific project management tools and techniques. Nevertheless, still project successes are deemed not to be real due to higher rate of failures. To help the project management professionals and practitioners, consulting firms have come forward with the aim to exploit tacit knowledge, its formation in implicit knowledge and its implementation for project management success. Project management consulting firms are outfitted with up-to-dated project management professionals to transfer this knowledge. These professionals are comprehended with project management experiences and skillfulness in the command of fundamental deriving for practice and familiarity with project management tools. These organizations help the firms or enterprises to train their project managers for best project management techniques to accomplish the project targets.

This research contribution has portrayed the case study of Huading Project Management (HPM) in China. HPM has trained almost 6 million project management experts, practitioners and managers which is a great achievement for any domestic project management firm. HPM has provided project management consultancy services to a large state owned petrochemical enterprise in oil and gas sector, China Petroleum Engineering and Construction Company (CPECC). CPECC faced problems in project execution where mega projects were deviating from its target to meet time lines and budget constraints. CPECC hired the services of HPM to provide better solutions in the light of scientific approaches of project management practices. It has been reported that after implementing the project management scientific approach, projects comes close to the successful execution and met the time and budget restraints. HPM has provided solution in the form of enterprise project management system with various and parallel modules. Considering the characteristics of client organization, project can be carried out at three levels through this enterprise system: company level, molecular level and project level.

Keywords: *Project Management Knowledge, Knowledge Transfer, Project Management Trainings*

1. Introduction

Organizations initiate projects to achieve strategic goals and objectives. These projects are executed by drawing various specific lines and using project management tools to keep project on track. Scientific approaches to manage projects had been adopted after World-War-II when mega projects regarding aeronautics, astronautics, construction and communication became complex. Project management knowledge and trainings have gained much attention

during last few decades as many organizations have turned their directions to adopt new project management tools and techniques [1, 2]. Taking in practice of project management tools and techniques has increased the project managers' knowledge but complexity of projects has also been increased during last few decades. Project management knowledge is about managing intellectual property regarding project management. This knowledge-base is established and maintained during project execution for further developments. Literature has explained three major categories of knowledge: explicit, implicit and tacit knowledge [3, 4]. Explicit knowledge is disseminated with the help of knowledge assets like organizational documents and standard operating procedures, *etc.* This sort of knowledge is articulated, encoded and shared on the basis of direct experience [3]. Implicit knowledge is not composed in the written form but these are like methods stored in brains of labor. Implicit knowledge can be stored in the explicit knowledge depending upon its need. Implicit knowledge cannot be passed on easily and deals mostly with implicit or unstated knowledge. Tacit knowledge is the knowledge-in-practice or we can say that the knowledge in minds. These sorts of knowledge are not stored in data bases. Individuals, who possess this knowledge either don't know that they possess some unique knowledge that can be shared with others, or they think that it is routine and do not know the value of the knowledge they possess. These stimulating situations triggered the project management professionals to manage the tacit knowledge, and most often these professionals realized the importance of tacit knowledge in crisis situations. Explicit knowledge, specific acquirements, instinctive knowing, personal notions and experience are the building blocks for tacit knowledge [5]. Project management knowledge falls in third category; tacit knowledge, as many project managers and practitioners are doing excellent practices but they don't have time to share these expertise. Management consultancy firms help to exploit and share this knowledge-base with other personnel of the same firms or other firms to get benefit from these practices. It's very difficult to transfer tacit knowledge or project management knowledge as these are very close to personals' personality. Management knowledge is very helpful for formulating and resolving managerial issues [6]. Experience is the best tool to acquire tacit knowledge (in this research, it is project management knowledge). Project management firms providing consultancy in the field of project management are performing this duty to transfer this tacit knowledge to the firms for better project executions.

Project management knowledge transfer can generally delineated in terms of its degree to which target organizations apply this knowledge, scientific approaches, tool and skills to their jobs [7, 8]. The period of time that is happening now, such transformations are supported by consultant companies. Transfer of knowledge can be determined in terms of its consequences on the organization's performance: positive, negative or zero consequences. If the performance of target organization is increased by hiring the services of consultant firms to apply project management trainings and approaches, it is considered that a positive transfer of project management knowledge has been occurred. Project management knowledge transfer is believed as negative if performance of target has been dwindled down after applying project management approaches. Zero transfer means that application of such approaches has not significant effect on organizations' performance [7]. There are many problems while employing scientific project management approaches in organizations. Lack of assistance by the organization's staff, poor recognition of work modules, reluctance of staff for extra work load to prepare standard operation procedures (SOPs) for each event/activity and misalignment of approaches between consultant firms and target organizations are major hurdles while applying such practices in organization. Smooth transfer of such knowledge can only be occurred when trainees are willing to use the project management knowledge and skills to improve their job standards and ultimately organization's performance [9, 7]. Last

few decades have witnessed that support for training the project management professionals has been increased in many developing nations at both local and national levels. In the vision of 2020 by Malaysian government to stand in the line of developed nation [10], heavy budget of RM 33.4 billion has been allocated in the 2007 [11] to strengthen the trainings of professionals at every level to increase the skilled and professional human capital in the country. Allocation of this budget is also helpful to transfer of scientific knowledge and trainings to professionals for improvements in their job performance [12]. These trainings are of little use if no values are added in the organization's performance over the time [13]. Purpose of using the scientific approached of project management to transfer knowledge is to gain competitive advantages by the organizations. Project management enterprises are more sensitive to meet their objectives in terms of time and costs. If project managers are equipped with proper trainings and techniques to cope with these challenges, organization's performance can be increased [14] to get competitive advantages.

Authors as [6] believe that managers exploit tacit knowledge among others in the course of formulating problems and their solutions. Hiring of project management knowledge is another approach to share the tacit knowledge. Academicians are considered as best source for knowledge transfer, nowadays, especially in management, science and engineering studies. Many developed nations have used this approach to develop policies in the fields of science and technology [15]. There are many risks for the firms while making contract with project management academicians. Collaboration ties have been used as tool to acquire and utilize external knowledge [16, 17]. Trust is only the way to enhance the collaboration ties. In case of ties with academicians, benefits like: project management human capital mobility, professionals clusters, exchange of project management knowledge through open access materials as thesis, reports, publications in the form of journals and conference proceedings, *etc.*, [18] are major stimulating aspects for client firms. Social structure of actors or project managers play key role to access the knowledge property [19] on the basis of trust as trust is considered as best social lubricant. Such tacit knowledge provides the basis to attain organization's competitive advantages to sustain good position in the global market for higher international market shares [20] business returns shortly. A project manager with project management traits or equipped with tacit knowledge, in other words, can manage project perfectly and can communicate with more easiness. Such managers are proved as good leader with success in their hands all the times.

2. Case Study-Huading Project Management

The Huading project management consulting company incorporated in 2001 with 5.4 million Yuan registered capital. This company is cosponsored by the China Law Project Management Research Council (PMRC) and Northwestern Polytechnical University, Xi'an, China. It has been established as the sole professional project management consulting and training organization in China by the International Project Management Association (IPMA). The team members at Huading exhibit marvelous mixture of experience and education. Other than diversity in age, the team also possesses wide range of practical experience of various disciplines and domains. Almost 120 full time staff is employed at the Huading head office. In order to increase and expand the areas of project management consulting and training, Huading established a committee of experts in 2003. This committee has 146 members in all regions of the country, scattered in various geographical locations in China. Well known project management experts and professionals, belonging to various industries, equipped with diverse nature of experience of many years, became the part of this prestigious organization. University professors and senior project managers were also included in this community. With such a high quality team of experts, superior quality of the services provided by

Huading is undisputed. Huading’s goal is to satisfy customer needs with dedication and purpose. Huading wants to create a name in the specialized consulting services which is committed to project management profession and business development mission through project team and project management services. To achieve these motives, Huading has conducted scientific design process of consulting projects, used international methods of project management and trainings to ensure quality of the services through proper implementation and monitoring of the project goals and objectives.

In 2010, the company has successfully completed nearly 100 consulting projects, and provided advisory services and trainings to transfer project management scientific knowledge to the project professionals. These professionals belonged to variety of organizations, including government sector organizations, software industry, military, construction sector, energy sector, petroleum as well as the chemical industry. The services, currently being provided by Huading are, project management certification, project management trainings, business consultancy, software development, project management and engineering insurance services. After being in operation for many years, now Huading has more than 70 branches in the country. These twigs are located in Shanghai, Nanjing, Shandong, Multisuns, Shenzhen, Beijing (Five branches) and Xi’an. Due to well established benevolence in the market, the business of Huading is flourishing and currently has more than 150 projects in the domains as: consultancy and training. Huading has trained almost 6 million project management experts in past few years that has posited this company among top domestic project management firms. In addition to the above, Huading is also the main sponsor for the Project Management Institute of Shaanxi Province and the affiliated with Development and Reform Commission of Shaanxi Province. Vice Governor of Shaanxi Province is honorary president of Huading. Huading aims at creating long term strategic partnerships with its customers, by creating values in its consulting services through emphasizing on knowledge transfer.

Consultant firms use various techniques to collect data from client organizations. Quality objectives are determined on the bases of evaluation of associated metrics. These metrics are designed by reviewing the standardized operation procedures (SOPs) of each department for every task and event. Table 1 depicts a proposed quality objective & associated metrics to collect data regarding a specific department.

Table 1. Quality objective & associated metrics to collect data

Metric – 1	(Define Task here)
Definition	
Polarity	
Data Source	
Responsibility	
Frequency	
Method of measurement	$\frac{\text{No of Employed Graduates}}{\text{Total No of Graduates}} \times 100$
Process of Data Collection & Reporting	The concerned department will collect the data in Excel Sheet for further analysis.

Quality objective & associated metrics are colligated with job description forms. Job description forms are helpful to overcome problems as poor job recognition and flaws in SOPs of work modules for each event/activity. These forms are sent to each project manager to know about job details. Forms in Table 2 are been used to collect data from trainees to inquire about job details.

Huading Project Management Company has executed well renowned mega projects successfully as,

- China Petroleum Engineering and Design Company Limited, EPC Project Management System.
- Group Design Institute of Design and Construction Contract Project Management System.
- Project Management System for China Railway Group Design.
- Project Management Program for Fly Large Aircraft.
- Project Management Services for 2011 World Horticultural Exposition.
- Shanghai World Expo Construction Project Management
- Project Management System for China Pharmaceutical

Table 2. Job description form

Job Title:		
Reports to:	Immediate Subordinate:	
PURPOSE OF THE JOB: (What are the objectives or end results of this position?)		
A.		
B.		
JOB SPECIFICATIONS		
FACTORS		REQUIREMENTS
a)	Minimum Age	
b)	Minimum Formal Qualification/ Education	
c)	Minimum job related experience required	
d)	Any specific job-related skills required (e.g., technical skills, communication skills, inter-relationship skills, computer skills, etc.)	
e)	Knowledge	
FUNCTIONS & RESPONSIBILITIES (duties to be performed by this Office)		
A.		
B.		
Additional RESPONSIBILITIES (duties to be performed by this position)		
A.		
B.		
C.		
D.		
V. AUTHORITIES: (type of personnel supervised, level of authority to hire or fire or to make recommendations or to sanction leaves, etc.)		
A.		
B.		
C.		
D.		
Required Trainings/Courses		
A.		
B.		
C.		
D.		

Keeping in view of the Huading profile, CPECC Company has hired the project management consultancy services to train their project managers and professionals to share the tacit knowledge of scientific approaches to manage mega projects. CPECC is handling many projects in various domains. They want to improve the quality of projects for achieving the ultimate goals of organization: profit maximization and timely project completion. This case study has explained the basic design of this training and how this training has affected the performance of CPECC. Tacit knowledge of HPM was transferred to the project management professionals of CPECC.

2.1. CPECC: Company Profile

China Petroleum Engineering and Construction Company (CPECC) is a large state owned petrochemical enterprise in oil and gas sector industry. The company has a long history. In 1980, it was accorded by the State Council of China to start operating in overseas projects. Since then, China National Petroleum Corporation (CNPC) was also established. Due to its performance and contribution in state's development, now CNPC has been renowned as one of the influential firms in the international oil and gas construction sector. With passage of time, CPECC has come up with verdicts of fast progress in terms of its structure and revenue. Following strengths have enabled CPECC to hold major market shares during last few decades;

- Strong technical resources
- Highly skilled personnel
- Well equipped and experienced professionals
- Experienced and devoted employees
- High market shares
- Strong project profiles

Due to its large technological infrastructure and skill based top management, familiar with international standards and practices, the company postulates eminent status in the market of contracting services, including pre-development services, design of large scale industrial construction projects, procurement, commissioning and production. The company has mainly engaged in oil and gas fields, refineries, petrochemical plants, fertilizer plants, gas processing plants, oil and gas reservoirs, long distance pipelines, power communications, environmental control, industrial and civil buildings, roads and bridges, municipal utilities (project consulting, design, supervision and general contracting). The company also provides the technology, equipment and materials for projects in abroad, along with skilled and technical human resources.

2.2. Challenges to CPECC

Commercialization and globalization has triggered public sector community to earn revenues from their own resources. State owned enterprises are turning their faces towards project commercialization. The CPE has strived to be market oriented and has been trying continuously to establish and improve its market position. CPE has cooperation with nearly 800 companies in more than 50 countries located in North Africa, Middle East, Central Asia, South Asia and South America. Petroleum and petrochemical engineering (including design, procurement, construction, contract), construction of oil and gas fields, refineries,

petrochemical plants, fertilizer plants, gas processing plants, oil and gas reservoirs, long distance pipelines, power communications, environmental control, industrial and civil buildings, roads and bridges, municipal utilities (project consulting, design, supervision and general contracting) and other construction projects are core competencies for this company. All these branches are engaged with mega projects in various geographies of the world. Ever-changing market trends, market fluctuations and economical crisis during past years have made the project and enterprises risk pron. Company felt deflation in the moral of professionals to execute mega projects. These situations alarmed the CPECC's top management to deviate from its goals in terms of project cost and time. Such business environments actuated the company moguls to protect the company's competitiveness and success rate of the projects. For this reason the company decided to implement international standards corporate project management system. The CPE believed that the project management system will regulate and streamline the EPC's projects to achieve its goals. Company wanted to resolve the issues faced by the top management, project managers and other stakeholders to integrate and execute projects successfully. In case of CPE, company considers that success of individual project will not guarantee the overall success. So, for all projects to be successful, CPE required a mature enterprise project management system.

2.3. Consulting Solutions

CPE wanted to equip her professionals with latest scientific project management approaches. Company aimed to exploit the tacit knowledge of professionals to cope with project complexities. To overcome these problems, CPE decided to get help from HPM for a mature and applicable project management system for all activities as design, procure, construct, contract etc. This consultancy project was decided to be designed on the basis of international project management concepts, tools, methods, norms, and project management scientific techniques keeping CPE (EPC) projects and processes in mind. Project management system was designed to achieve the following objectives,

- Avoiding project risks in CPE
- High quality assurance for effective achievement of CPE projects
- EPC project would have clear project roles and responsibilities
- Clear project implementation process workflows and business relationships
- Clear project operating rules

Huading designed a comprehensive enterprise project management system (EPMS) for CPE. EPMS comprised of all the modules to execute a project in the organization. This system provided a dynamic program of the project process and helped in visualizations of the processes. The project program also help CPE to create project management process, ideas, general roles and responsibilities for project management, work break down structures (work flows) and finally a project management operation outlines.

In short, EPMS is endowed with complete guidelines for project concepts, project organization, implementation, monitoring and evaluation process and also helps to reduce uncertainty and risk associated with projects.

2.4. Application Bright Spots

CPE project management system was deployed successfully in target organization. This system was tested to check the effect on performance. It has been reported that EPMS has

been proved very helpful to establish suitable enterprise level project management for creating methodology to identify the goals and targets. This methodology is also helpful to highlight the important issues which are needed to be addressed. The system includes following major modules,

- Project life cycle
- Process definition
- Process inputs
- Process outcomes
- Operation results

All the above tasks are arranged and concatenated to assure the project success simultaneously. These steps have been depicted in Figure 1.

EPC project management system has been designed to performs following major tasks,

- To highlight major problems, which need attention at the time of implementation
- Clarify that how to handle problems which may occur during the project
- Clarifies the responsibilities; who will do what, for smooth project operations
- Defines process to execute the routines and tasks
- Shows how processes are to be carried out and done
- Ensure process consistency
- Avoid risks
- Provide work flow and stable operating rules
- Includes a project control system (a project can be affected by many factors during the implementation process. To ensure smooth running, it is imperative that problems are identified early in the implementation process and rectified)
- Provides a common language and communication system (having a proper communication system will help the team members to understand the processes, work structure and also know how to keep them in smooth operations)
- Consistency with the industry standards and characteristics (CPE Enterprise Project Management System is based on design, procurement, construction and contracting) molded as per the size and type of project being carried out

3. CPE Project Management Operational Style

To design above said system, it was very necessary to understand the organizational structure of client organization. As already has been mentioned that CPE is a brobdingnagian multinational firm with various primary industries. It was a big challenge for Huading company to synchronize all modules for each primary industry. Huading designed the whole knowledge management transfer process in various steps based on departments in CPE. The Figure 2 gives a brief overview of the CPE group scope and its organizational structure to meet the project management operational style. Design process started with brief vision of whole project. Management consultants have been involved to prepare feasibility report for

EPM system. Outlines regarding design and processes have also been narrated at same stage. Preliminary and basic designs have been made on the basis of design process. Detailed design comprised of all basic drawings, procurement process and stakeholders' responsibilities. Client organization has been ensured that consultant team will continuously revisit to resolve issues to implement EPMS at CPE.

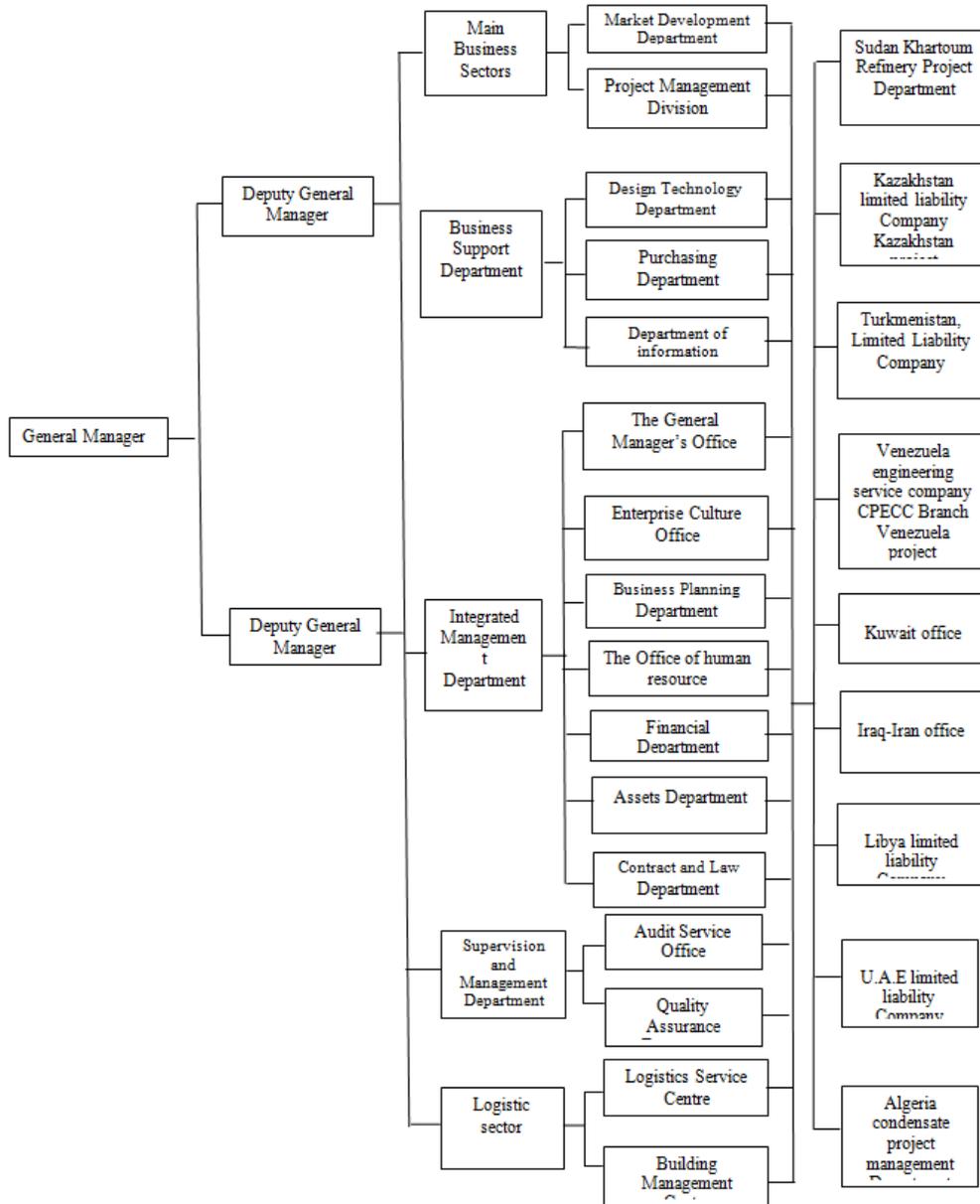


Figure 1. Steps for EPC project management system

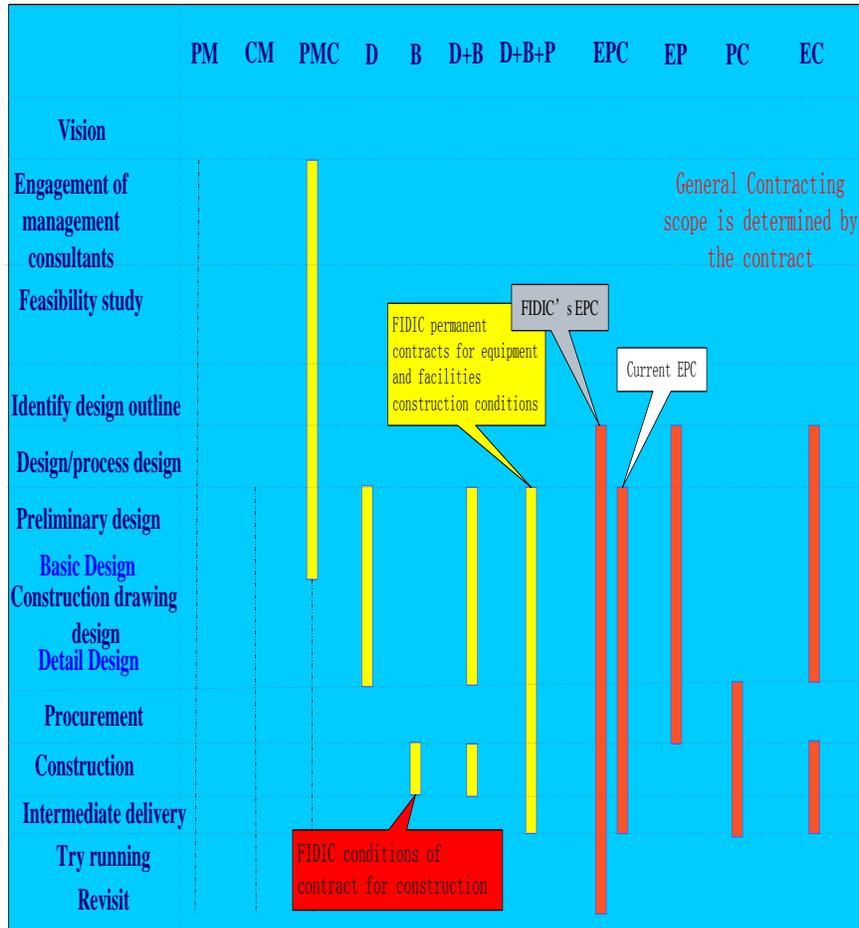


Figure 2. CPE group scope and its organizational structure

EPMS includes following steps,

3.1. Customer Perceived Value

After exhaustive study of the CPE group, Huading came up with CPE project management system. The system has been approved by the panel of project management experts. Some customer perceived value perspectives of the system are,

- The system provides a clear and documented understanding of the project concept
- Provides guidelines for design and operations
- Allows for further improvement into the system being progressively elaborative in nature
- Documentation of project management is visually shown

3.2. Effective Communication

For effective implementation of projects, it is pivotal that the project organization must have very effective internal and external communication. A proper system can provide such a

barrier free mode of communication. The organizational characteristics of CPE group show that CPE projects would be carried out at three levels;

- Company Level
- Molecular Level
- Project Level

Activities and responsibilities for each level has been narrated in coming subsections.

3.2.1. Company Level:

The corporate level is responsible for the concept and general idea of the project. At this level, the organization and implementation of A-Level project activities and resource allocation takes place. Decision making for the A-Level activities, their supervision, monitoring and control will also take place at the corporate level of the organization. All the project management initiation activities will be carried out at this level along with monitoring and controlling activities.

3.2.2. Molecular Level

The molecular level of the organization is responsible for the B-Level activities which include the project planning and design activities. Appointment of project managers, implementing and stating project standards, monitoring, controlling the methods, guidelines for implementation phase and the coordination of resources of the project are major tasks to be performed during this phase. The change control procedures for tendering and project implementation will also be carried out at this level.

3.2.3. Molecular Level

At project molecular level, organization is responsible for the implementation of the project. After the project team has been created, the implementation is the responsibility of the project team. Same team is also responsible for achieving the project goals and targets.

A comprehensive performance appraisal system for the EPC project is also the responsibility of the management. When CPE groups objectives and targets are delegated into subsidiary objectives, it becomes easy to set targets for projects, project organizations and personnel at all the levels. The CPE, EPC project management system uses scientific project monitoring metrics such as CPI (cost index) and SPI (progress index) to effectively supervise and control the project using data being generated by the project at all levels. This system is helpful in reducing risk and also provides early warnings for threats. Detailed EPMS system with complete process and functions have been depicted in Figure 3.

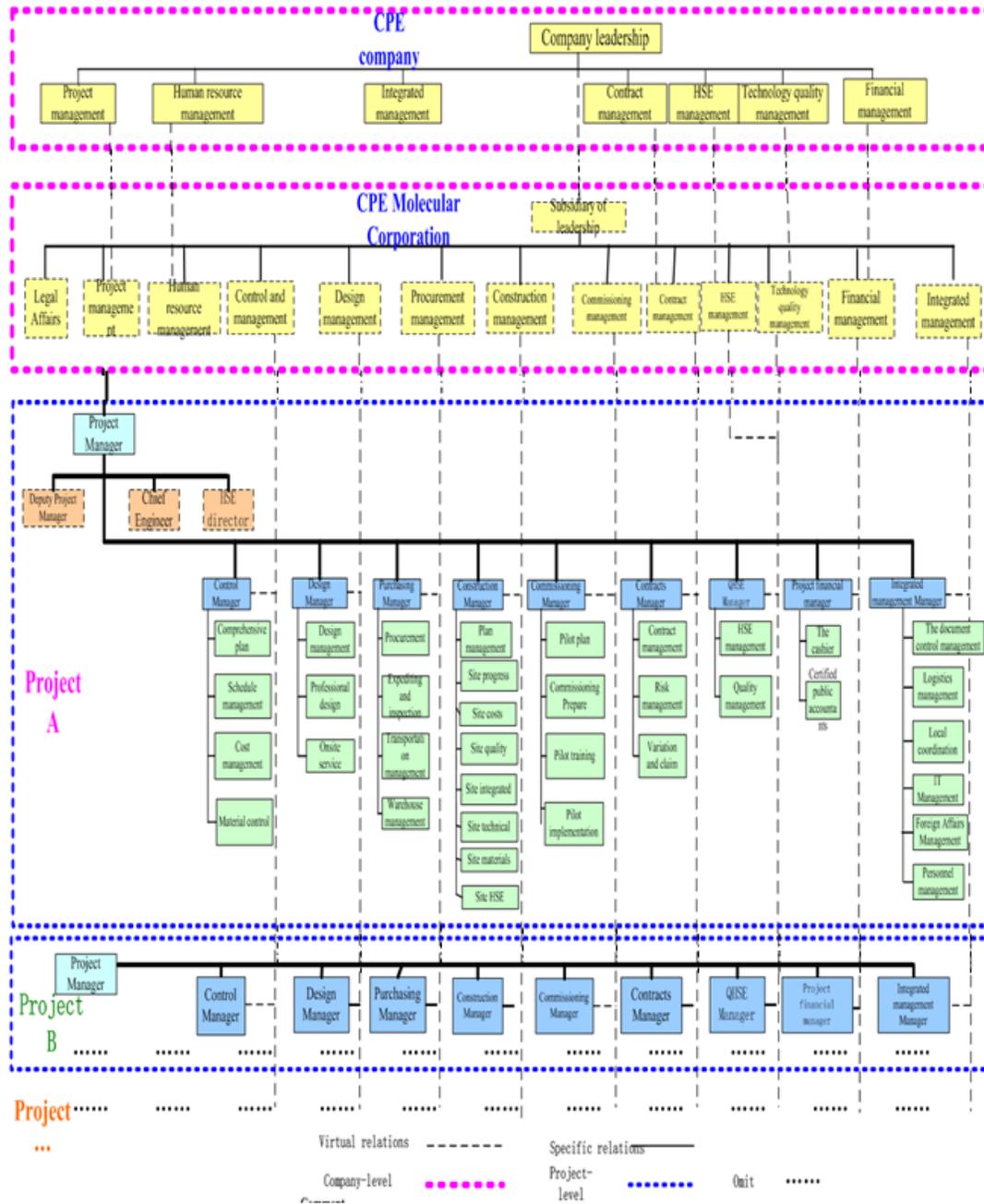


Figure 3. EPMS Complete process and functions

4. Conclusion

This research article has been drafted to highlight the importance of project management knowledge and scientific project management approaches in organizations. This implicit knowledge plays a key role for successful execution of projects. It is not easy to transmit this implicit knowledge in tacit knowledge. Project managers with this knowledge in their minds are utilizing their full potentials to come up with successful project execution in terms of time and cost. But missing gaps are causing to create hurdles for achieving maximum outcomes.

To overcome, this challenge, enterprises with mega projects hire the services of consultant firms to develop professional project management enterprise systems to support the project managers. These consultant firms are also responsible to train professionals to cope with project uncertainties. This research has portrayed the case study of Huading project Management Company. Huading provides services to train professionals to manage projects. This company also provides solution to the client enterprises to overcome project issues. CPE is a multinational company doing projects in various domains as oil refinery, construction, telecom and other arenas. CPE is engaged with many mega projects in collaboration with national and international firms. Company aimed to increase the performance of their professionals to meet the organization goals. CPE has hired the services of Huading to transfer/implement project management scientific approaches to their personnel. They have also an ambitious plan to implement a mature and perfect enterprise management system for CPE. EPMS has been developed by Huading to provide project management solutions. This system is based on two steps: customer perceived value and effective communication. Based on CPE characteristics, EPMS manages projects at three levels, company level, molecular level and project level. Each level has been characterized with specific tasks to ensure the quality of project within budget and time constraints. This system is helpful to create clear and documented project concepts within organization. Detailed project concepts provide guidelines for design and operations for further improvement.

Future Directions

EPMS system is being used by professionals and trainings are also in progress. Various risks are involved while deploying such systems. Misalignment of working attitudes of trainers from consultant firms and professionals at client organization causes to derail such systems if not handled properly. On the basis of this case study, next stratum will determine those major risks which can lead to create hurdles for transferring knowledge to project managers.

Practical Implications

This research article has depicted a clear picture of a mature enterprise management system which can help project management professionals as a roadmap to be implemented to achieve organizations' goals.

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