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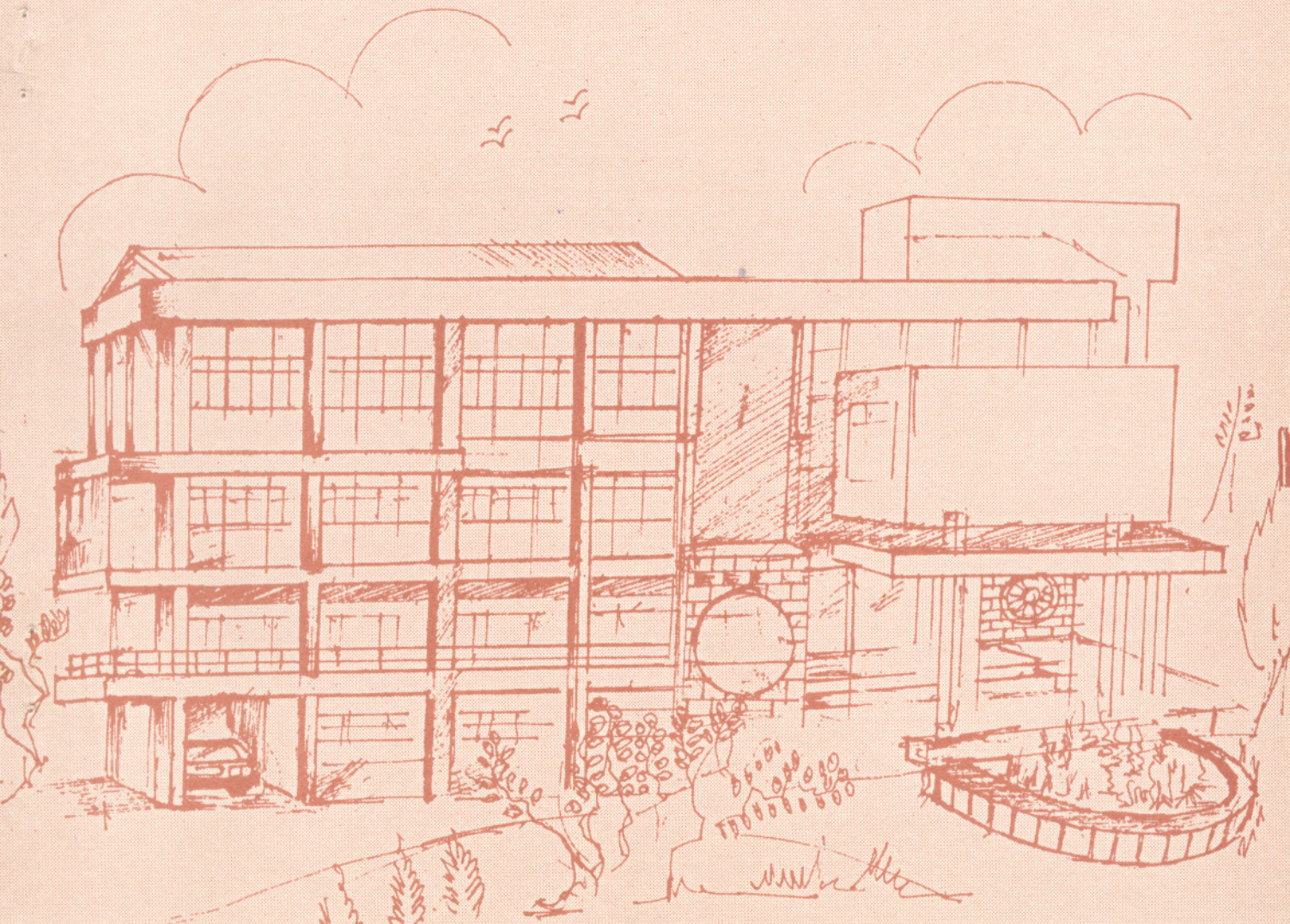
Managing Knowledge in a High Performance Construction Company A Case Study



Managing Knowledge in a High Performance Construction Company A Case Study

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Abstract of the study

This study tries to understand the knowledge management practices in a high performing Architecture Engineering Construction company. The construction industry is a highly fragmented industry, characterised by a migrant workforce, temporary labour, emphasis on manual labour rather than mechanisation, and slow pace of innovation and change. The AEC company where the study was conducted has shown high performance and consistent over the past few years. Research reveals that among others, employee skill and knowledge development and creating motivation to learn at individual and team levels form an important focus of the high performance organization. Therefore, this particular case site was chosen in order to understand the process of knowledge management in contributing to high performance. This organization has a project-based structure which is found to be one important characteristic of a knowledge-intensive firm.

The methodology used was a Qualitative Case-based approach. The projects were the unit of analysis. Both primary and secondary data were collected and analysed based on categories, themes and concepts. The categories were the content and the process of knowledge management. One of the important themes that evolved was leadership that had related concepts of entrepreneurship, enhancing core competence, mentoring and collectivism. Another theme was Learning through Training which had related conepts of identification of learnability, innovative approaches, participative involvement and ongoing feedback.

Another significant theme was Quality initiatives which had concepts of compulsive Perfectionism, Normative standards and stress on superlativity as linking concepts. Synergy of Knowledge and skill through problem solving also evolved as a theme and had the concepts Integration of heterogenity and evolutionary experiential learning related to it. Another powerful theme that evolved was Implementation managementwith concepts like enforcement efforts, Attention to Detail and Punishment to non-adherence associated with it. The last theme was Innovation efforts with concepts like Institutionalising innovativeness and reward systems linked with it.

A model of knowledge content creation and process knowledge managed have been evolved. Knowledge content is generated through three dimensions – efforts at adherence to quality standards, efforts towards detection and correction of errors in critical activities and efforts on screening ideas and implementation of innovations. All these activities lead to the generation of explicit knowledge of technical understanding of the engineer and the tacit knowledge of the skills of the tradesmen. The two types of knowledge affect and lead to the development of the other and also in turn affect the three dimensions that again contribute to knowledge. We understand that strategic and implementation efforts at adhering to quality efforts and learning through training and process management with attention to detail is a major understanding of managing knowledge for high performance.

An Introduction to the study

The AEC Industry

The Architecture Engineering Construction industry (AEC) in India is a humungous industry consisting of players in a wide variety of sizes, from tiny one-man shows to large organisations employing thousands of people. It is a highly fragmented industry characterised by a migrant workforce, temporary labour, emphasis on manual labour rather than mechanisation, and slow pace of innovation and change.

According to a report of the National Academy of construction (2005), the value of construction in India has gone up from 8,500 corres in 1975 to Rs. 2,50,000 crores per annum in the year 2000. The industry is powered by a work force of 31 million people and construction equipment worth 14, 000 crores. The projected national growth for the construction industry is 15%, way above other sectors in the country today. The industry will invite investments in the infrastructure sector-be it power, highways, ports, telecommunication, urban infrastructure or water supply. This investment will total over Rs. 2,000,000 crores in the next ten years, of which 50% will be on construction activity.

Literature Review

In one of the management classics "In search of excellence", Peters and Waterman (1982) describe the core principles of excellent companies as action orientation, customer proximity, autonomy and entrepreneurship, productivity through people, value-driven, strengthening and sticking on to what the company knows best, simple form, lean staff and simultaneous stringency with central values and at the same time allowing tolerance for all employees who accept those values.

High performance work systems include a variety of such specific innovations and practices that draw on a common set of principles. No single set of practices or components makes up a high – performance work system. There is very little systematic knowledge about the processes of change through which high performance workplace systems are created. It is crucial to identify and measure the intervening processes that may result in higher performance. They enable people working together to produce and deliver products and services that meet customer requirements in the context of environments that change rapidly They may include skill and

knowledge development, employee motivation and commitment and learning at the individual, team and organizational levels (Gephart,1995).

We understand, therefore, based on the focus of this study that skill and knowledge development is an important process of high performance organizations. Knowledge has begun to supplant land, labor, and capital as the primary source of competitive advantage in the market place, the ability to create new knowledge, share existing knowledge and apply organizational knowledge to new situations becomes critical (Lesser, 2001). Mintzberg (1989) defines a knowledge intensive firm as an adhocracy which is characterized by highly organic structures, little formalization of behaviour, high horizontal job specialization with formal training, to deploy specialists in small market-based project teams to do their work and rely on liaison devices to encourage mutual adjustment- the key coordinating mechanism within and between projects, selective decentralization to and within these teams which are located at various places and involve various mixtures of line managers, staff and operating experts.
The essence of a team-based organization is the recognition that integration is best achieved through the direct involvement of *individual specialists* because otherwise, managers as official coordinators cannot effectively coordinate if they cannot access the range of specialist knowledge that a task requires (Grant, 1996).

Knowledge management systems and strategies are more recently being researched and developed by Architectural Engineering Construction (AEC) organizations (Kamara et al, 2002). Construction projects involve a large number of both direct stakeholders which includes clients, professional teams, contractors, etc. and indirect stakeholders such as local authorities, residents and workers Current methods of communicating building design information can lead to several types of difficulties e.g. incomplete understanding of the planned construction, functional inefficiencies, inaccurate initial work or clashes between components, etc. (Aspin et al, 2001). In order to counteract this situation, the modular structure is in practice in the construction industry.

The project team based organization is an adequate organizational configuration for knowledge-intensive firms because it guarantees an appropriate integration of specialist knowledge and a sufficient level of innovation. Meaningfully enough, the team-based structures require a hierarchy in order to link different sub systems, for example- the various project teams together.

The hierarchical design is fundamental to the modular design where the critical factor is the separation of the total system into a number of modular sub systems and then to design and standardize the interfaces between these subsystems. The key distinction here is the *component knowledge* required by the subsystem and the *architectural knowledge* required for the linking of the various subsystems (Grant, 1996). This is being categorised as the *content* and the *process* for the purpose of this study.

Rationale for the Study

This Case study explores into the process of knowledge management in Sobha Developers which is a High performance Construction company. It is a high turnover[1] company with a consistent high growth trend. Starting in 1994 with no credentials in India apart from the Chairman's burning desire to set up a company that will one day be a global benchmark for construction companies in the world, it has reached a turnover of Rs. 600 crores for FY 2004-05. From one building at inception, it is now constructing about 6 million square feet of construction. Today it employs 1250 people, of whom about 550 are trained engineers. It has carved a name for itself as a premium builder, whose brand rests on strong foundations of quality and ethical dealings. Starting from Bangalore in South India (which still remains its base), it is diversifying nationally in an expansion mode aimed at reaching a total area of 8 million square feet and a turnover of about Rs.1000 crores within the next two years.

The study attempts to understand how knowledge is managed in this AEC knowledge intensive organisation that has a project- based structure.

Objectives of the Study

1) To identify the key factors in managing knowledge content towards High performance

2) To evolve a framework of the process of knowledge utilization towards High performance

The Assumptions and Scope of the Study

The link between the Knowledge Process and High performance is being established by analysing the *conscious actions* that have been brought about prior to and through the High growth phase. The focus has been on studying how the changes have contributed to knowledge utilization towards High Performance.

[1] Appendix 1 reveals the Turnover details for the past four years

The study restricts itself to one case-site only. The Project is the main focus of study. Data collected has been restricted in terms of relevance to a span of 4 years when the high spurt in growth of the organization had begun and has continued. In order to understand the process in depth, the paper focuses only on project management delivery.

Methodology

- The Research Design is a Case study. It is a qualitative study.
- The Source of Data has been both Primary and Secondary. The primary sources of data have been extensive interactions with senior management, project management & team and HR in charge of training.
- The secondary sources of Data have been the Project documents, Documents on the Sobha Construction Academy, messages on posters, notice boards, The Chairman's document etc. Data on training needs and views of trainees have been taken from a primary HR survey with about 823 respondents across the organization.
- The details of Respondents from whom primary Data was collected and the criteria of choice is presented in the following table

The Respondents	The criterion of choice
The Managing Director	To explore into Leadership and vision
The Director in charge of HR and Contracts	To explore into the implementation issues
The Head of HR	To understand the Human Resource Management philosophy and Process
The Training Manager	To understand the process of training
The Project Managers	To understand the process of acquiring and sharing knowledge within teams from their point of view
The Engineers	To understand the process of acquiring and sharing knowledge within teams from their point of view
The Supervisors	To understand the process of acquiring and sharing knowledge within teams from their point of view

- The knowledge process in projects is the focus of analysis. Analytical generalizations have been attempted at based on inferences from primary and secondary data (Yin, 1994).

- In order to analyse the process (Daymon & Holloway,2003)
  - **Categories** have been formed based on the dimensions of the observed data.
  - **Themes** have been identified based on observation of any **patterns** among the categories**.**

-**Concepts** have been identified based on the frequency of occurrence of any quality and have been defined as the key characteristics of the themes.

- A **Framework** has been developed based on the observed **connect** between themes.

- Validation of understanding has been done by
  - Doing a member check by asking the top level management to go through the interpretation

Analysis

The data collected have been analysed based on categories, themes and concepts. The links between the themes have been tied together as the framework.

Categories –

The major categories analysed are the **content** which has been analysed as the input and the output and the **process** of knowledge management which has been the *conscious method* adopted in this organisation. A framework has been developed based on the link between the data on content and process.

Themes

The important themes that have emerged are
1. Leadership
2. Learning through Training
3. Quality Initiatives
4. Synergy of Knowledge and skill through problem solving
5. Implementation management
6. Innovation efforts

1. Leadership

The Quality of Leadership has emerged as a significant and recurrent theme in the creation of a high performance culture at the workplace. There are some concepts (qualities) that are connected to this theme. Those have been identified from the documents and interviews. Leaders in performance cultures are clear about what they lead: Strategy and change, self, their people and teams, their organization and their results. They are also clear about how they lead: with authenticity and vulnerability, with discipline and tough empathy, with intuitive thinking and decision making and by playing to people's strengths and respective differences (Goffee & Jones, 2000).

The Chairman, PNC Menon is an inspiring leader who leads by example. His dream, he says, is simple- "to create a company in India that will be the global benchmark for construction". While most organisations follow the outsourced model of growth and development, Sobha has chosen to develop all strengths in house. It today boasts of an architectural division with about 60 architects, a projects execution team of about 400 engineers, a sales and marketing team of about 50 people, a mechanical and electrical division of 40 engineers. The Sobha brand has positioned itself as a premium brand known for high quality workmanship, unique features and superior design. There is a belief in developing internal capacity, reliance on developing and nurturing in-house capabilities for most aspects of construction and not much work is outsourced to subcontractors Allied strengths are created in interiors which has a factory space of 120,000 sqft, which makes it the largest interiors factory in India, a structural steel and glazing factory, and a concrete products plant. All the products of the SBUs have been great value additions to the final product. There are also future plans to get into related areas of Sanitaryware and Tiles. This backward integration is a conscious strategy to have a business model that focuses on *total control* over all allied activities keeping in view the prime need for a very high level of quality assurance. Here two concepts are identified *'entrepreneurship' and 'enhancing core competence'*.

The focus on 'youth' is quite interesting in this organization. Research puts forth that the psychological contract has become more transactional now than in the past (Hollebeche, 2003). Employees are more obviously taking responsibility for managing their own interests, including their career. In the case context, bringing in highly qualified, but inexperienced youth who aspire to learn and grow is an important strategy identified. By conforming to rigorous standards, it is a win-win situation in terms of learning for the younger employees and better standards of work for the organization. The 'right fit' is thus established. The theme of *'mentoring'* emerges from this context. The chairman has built a team of eminently qualified professionals who operate the various parts of his business with a relatively high degree of autonomy. They have over time extended the philosophy and thought over the organizational cadres.

A significant trait of the Chairman's management style is the repeated emphasis on the 'family'. He sees the Sobha Group as an extended family, which should work hard to optimise their working in the most ethical and transparent manner possible, so that the entire family can share the results that accrue due to the profits that are made. The values that drive the company are

therefore traditional Indian values- integrity, dealing properly at a human level with whomever you come into contact with. This gives us insight into the concept, '*collectivism'*. Facilities are provided for workmen - creche, school for children of construction labour, accommodation in labour camps are provided. It conveys a sense of family and cohesiveness even to the contract labourers because their needs are adequately met with care.

2. Learning through Training

In the construction industry, the lack of a permanent or even semi-permanent workforce has reduced the incentives for organisations to take up their training seriously. Most of the training is on-the-job, with a worker joining a construction site as a helper to a mason or "*mistry*" and slowly learning the tricks of the trade to himself become a mason over the course of time. The process is not monitored for any quality benchmark, and it is often the bargaining power of the person, which determines the emoluments for his skills. This has several effects. Most importantly, there is no quality control at the level of the skilled tradesmen and no standard evaluative benchmark against which they can be judged to have achieved a level of proficiency.

In order to deal with these difficulties and also develop in house capability and nuture tacit knowledge of the tradesmen, the organization has set up the Sobha Training Academy which has as its objectives the training of young people to be skilled artisans in the construction trades and giving them an exposure to the "right"way of working to high quality standards. The broader intent is to provide young people an opportunity to channelise their energy into productive activity and making an impetus in changing the culture of the construction industry in India. The concept identified here is '*innovative approaches'*.

Through this initiative, the organisation has developed a set of skilled tradesmen in various areas of operations, with teams of tile masons, granite masons, skilled carpenters, electricians, plumbers and waterproofing tradesmen. The best-in-class practices for these tradesmen are brought in by a group of German master craftsmen, who provide expert advice on tools to be used in these trades and the best practices for the methodology of installation and inspection of works. Young people who join the trade are trained at the Sobha Construction Academy in these best practices, while existing tradesmen are trained through onsite training sessions to upgrade to the latest technologies.

It is felt that it is easier to train enthusiastic young Engineers rather than try to change the outmoded work practices of the older set. Such Engineers, who are not "corrupted" by too much of outside influence, take to training and implement it with almost missionary zeal. The young Indian engineers are found to be the brightest, quickest in grasping things, and most enthusiastic in implementing new ideas. The thrust on youth, of progressively increasing the fresh engineers in the organization comes from this belief. As part of the performance management system, training needs are identified for each individual by his or her immediate supervisor. They are then trained either by external faculty or by sponsoring them for seminars or training sessions at other institutions. When the employee enters the organisation, technical induction is 4 to 6 weeks on the 22 activities.

Youth is a commodity prized in the organisation, a fact that is evident even in the relative youth of its top management personnel. This has led, over time, to the development of a unique Sobha Training Model for training fresh engineers simultaneously with the task of active project management, and picking the best ones among the young engineers for progressively greater responsibilities in such a way that they repeat the process with even more fresh engineers. This provides the organisation with a continuous source of trained manpower, which is very necessary since it helps to germinate and transmit the core values of the organisation's unique operating style across its many projects and its ever-increasing number of fresh engineering recruits. The concept identified here is '*Identification of learnability* '.

Training is an essential means of developing the capacity to co-operate and show the behaviours typical of a good climate for working in a team, namely, offering constructive feedback, presenting ideas openly, understanding the viewpoints of the other members. Together with the benefit of enhanced capability, which traditionally stems from training, this type of training also has other benefits. In particular, it sends signals about the importance of sharing and creating knowledge, to strengthen a corporate culture focused on that objective and to increase employee's commitment to that objective (Baron and Kreps, 1999).

The General Managers in charge of individual projects are responsible for five projects and the project managers who are in charge of individual projects provide guidelines for the team. The ongoing training regime in projects is a major responsibility of the General mangers and Project managers who are expected to devote about 60% of their work time. i.e, about 6 hours per day on

training the subordinates. There is a major impact on productivity and quality through on-going training in technical and problem solving skills Process-oriented tracking and management of results is crucial (Gephart,1995). The concept identified in this context is *'participative involvement'*.

The manager's function is to serve as models to the collaborators, openly sharing their information, putting themselves in others shoes, providing feedback and showing all those attitudes and behaviours associated with a climate of 'high care' (Eppler and Sukowski, 2000). One concept identified here is *'ongoing feedback'* which is an important factor in regulating learning. Ongoing feedback on observable and/ or measurable performance outcomes: a focus on strengths and the future; employees engaged with their goal-setting and self-appraisals feel that they are contributing in meaningful ways and not just being 'average' (Reid & Hubbell, 2005).

3. Quality Initiatives

Stimulating people to sustainable levels of high performance (how to enable people to put in discretionary effort) and offering a great place to work (how to provide the right employee value proposition or 'deal') seem to be of particular relevance. The culture is to focus on the necessary levers like developing people strategies that both serve both short term and long term needs and also shaping policies that go beyond compliance to enable the application of best practice and imaginative treatment of employees. Building future capability may always be a matter of intuition and informed guess-work, linked with some determination and some luck. Credibility will depend on high caliber delivery in the here-and-now and having the confidence to lead thinking and practice on strategic people issues (Hollebeche, 2004).

On one of the notice boards at the Office was observed the Vision of the Chairman, "My dream employee is one who is totally committed to following our processes to the core, is highly innovative and delivers world class quality at unimaginable speed". The work culture is very demanding. One employee notes - '*Working for perfectionists who insist on perfection in every activity is not an easy task, but those who have worked with him will never fail to acknowledge the impact he has had on their thinking and approach to problems'*. The concept identified here is '*compulsive Perfectionism'*. It is worthy to mention here that people who are not able to cope with working to the Quality standards and the process that is involved leave the organisation.

The organization has built up a brand value and work experience at this organization is highly valued outside and those who leave command a higher market price.

The Quality team is led by Germans master craftsmen, who are known for their quality consciousness at delivering. They have been instrumental in most of documentation of the technical aspects of work. This is evident from one of the documents which stresses that many concepts of quality construction have been brought in over the years including fixing of tiles and granite works in perfect symmetry, woodwork that is unique to the organisation and an artistic enhancement of building quality and finishing that is free of defects. A detailed Construction Manual encompassing the best of British and DIN standards was drawn up to specify best-in-class practices. *'High Normative standards'* is another concept identified.
It is not surprising to note that over the high growth phase of the company, the focus of the German Quality team has shifted from Quality control through inspection (in 2002) to Quality assurance through Training in (2005). One of the prime reasons for backward integration into the three business units was the need for quality assurance. 'Zero' error is the expected standard in the organization. Every 'square inch' is to be inspected for a zero error state. Posters in the organization and also in the project sites reveal the sentiment towards a 'zero error state'.

In most of documents which detail the different roles of the project team, there has been a stress on using 'superlative adjectives' in the context of listing their role responsibilities. For example- Adjectives attached to roles for example- A 'dream professional' or a 'dream tradesman' conveys the need for an effective synergy of technical knowledge and skill. The acquired explicit knowledge by the engineer and the acquired tacit knowledge by the tradesmen, are considered equally important as highlighted by the Chairman where he attaches the same adjective for both. The concept that has been identified is '*stress on superlativity*". While perusing other documents, For example- the Quality team responsibilities include adjectives like 'thorough knowledge' and 'Correct methodology'.

4. Synergy of Knowledge and skill through problem solving

Managing construction projects is a complex task and the role of a project manger lies at the heart of any project. There is a need for 'techniques' and 'technical assistance' felt. In planning, it is important to know the dependency between the information and how the information flows towards the final objectives. Once the information flows are understood, monitoring and

controlling the flow of information assures that the right people receive the right information at the right time (Saad, 2002). No single individual can manage to carry out all the activities necessary to produce improvements and innovations in the collective work process. Only by combining individuals with different and complementary skills and perspectives and by achieving cooperation among them, can this process be carried out and improvements and innovations made. (Swan et al,1999).

Unlike traditional companies which tend to be designed around functions, High performance companies design organizational units around products, services or processes. Such units tend to be smaller, more autonomous and more empowered which can enable a company to achieve greater focus, accountability, speed-to-market and enhanced customer responsiveness While using teams to enhance problem solving and learning, they must have clear performance goals, the opportunity to contribute to effective solutions and the skills and information needed to do so (Gephart,1995). Often employees find working in ambiguous or remote relationships difficult, and managers are challenged by managing 'new' forms of team, made up of contractors, people working remotely or on various forms of flexible work pattern alongside full-time employees (Hollebeche, 2004).

A typical project requires involvement of several key players, from architects, structural designers, skilled labour for structural works such as formwork, steel reinforcement, concreting, blockwork, plastering, waterproofing, plumbing, electrification, interior design, air-conditioning, glazing, interior works and painting. A typical building project requires, on an average, the involvement of thousands of workmen, both skilled and unskilled, and a careful co-ordination and sequencing of activities related to project completion. In this company, the technical knowledge of the engineers merges with the tacit skill of the tradesmen and they manage their delivery working with unskilled labour force in order to deliver. The concept identified here is '*Integration of heterogenity'*.

Knowledge-intensive firms learn by creating routines which are guidelines that have provided knowledge integrating solutions to past problem solving (Nelson & Winter, 1982) Knowledge is applied information that actively guides task execution, problem solving and decision making (Leibowitz & Beckman, 1998) in construction projects. Activities take place both in a sequential

phase[2] as well as in a parallel manner. Therefore, there is a mix of sequential and parallel link to the 25 critical activities. For all these activities, there are check lists for quality work for different areas like safety and housekeeping, Tiles, reinforcement, Punning, Gypsum works, granite work, concreting, form work, earthwork, plastering and Block work. This kind of on-going continuous monitoring is a meaningful effort in learning.

There are 22 critical activities that are required to create a construction product. The responsibility of the project manager is mainly with training, 'imparting' knowledge, correct mistakes and vigilant guiding. The mix of technical knowledge, skilled labour, semi-skilled labour and unskilled labour is required to get construction projects completed on time & cost to the organisation's exacting quality standards. The technical knowledge resides with the engineer, the skilled and process knowledge lies with the contractor, the skilled labour is provided by the tradesmen and the unskilled labour. As the engineers are usually young their understanding is theoretical and conceptual. The site supervisors are usually Diploma holders. However, the experiential skill or *tacit knowledge* of tradesmen complements the *technical knowledge* of the engineers and the *process knowledge* of the supervisors. The table shows an indicative mix of the distribution of the knowledge and skill levels of the team.

Category	Engineer	Supervisor	Tradesman
Knowledge	High	Medium	Low
Skill	Low	Medium	High

Therefore, in order to actualize the activity, there has to be a synergy of knowledge and skills. The supervisors are usually fluent in about 5 Indian languages like Kannada, Telugu, Tamil and Hindi. This helps to deal with the workers. Due to the familiarity of languages the supervisors act as a *live medium* of exchange between the engineers and the tradesmen. The supervisors are rich in the *process of managing* the unskilled labour force too. Here, the content knowledge and the process of knowledge evolves with interactions within the team. The concept identified here is '*evolutionary experiential learning*'.

5. Implementation management

Another sharing by an employee '*Creating and attempting to perfect a business model that relies on doing things in-house to ensure quality, and having the courage of conviction to back it is a*

[2] Appendix 2 – The 22 critical activities of construction

mind that places construction at-par with other knowledge-based industries, and seeks to create facilities that are the best in the world, through a company driven by processes, not individuals'. This is the philosophy with which the company is driven.

The salient pages of the Construction Manual are photocopied in large type and are kept on every floor of the building under construction, in addition to the site office. The Chairman has made it a rule that Project Engineers have to read these pages, pertaining to their current activity, *everyday* before they take up any job on the site. This is a way of reinforcing the tenets of good construction practice in a way that makes them an integral part of the Engineer's mental makeup. The project team is supposed to 'eat, breathe and sleep' the 22 critical activities of project delivery. The processes, procedures and quality standards are *drilled* into the heads of the workers at the construction site very frequently, like every other day, which might look to an outsider as if it is a waste of time or an unnecessary effort. The crux of this process is the effort spent on trying the hammer and make the workers internalize the concepts of Quality construction. Another employee comment -'*Getting the job done in the manner in which it is supposed to be done are all virtues that make up the complete employee*'. On construction sites, it translates into a mantra that assumes almost religious proportions- Quality; Safety and Cleanliness are drilled into the heads of every Engineer. The accent on cleanliness is particularly noteworthy as it is so dramatically different from most other construction companies'. The concept identified is '*enforcement efforts*'.

The Chairman has identified technology, processes and training as the pillars of this approach. He wants every role, responsibility and process defined, to the extent that a person serving tea should serve tea in exactly the right way! Elaborate process manuals have been made detailing different departments and their interaction with other organisational members. The concept

identified here is *'Attention to Detail'*. Simplicity and focus are stressed in implementation and there is clarity and precision on defining what needs to be done and how. Implementation is seen as a key business discipline and a core element of the corporate culture. It is the leader's job. There is great emphasis on monitoring and Audit, to ensure conformance to the laid-down processes.

Organisational structures in High performance systems tend to be less-hierarchical than in traditional companies. But flatter organizational structures are not an end in themselves. They are better if they improve the flow of information, strengthen accountability and facilitate the creation and effectiveness of smaller units and teams (Gephart,1995). In this case context, though the structure is not flat, the stress is not on beauracratic procedures, but on active implementation by the team where everyone is accountable in some way or the other in a rigorous manner.

While referring to Performance culture, Reid & Hubbell (2005) hold that the foundation is discipline. It promotes decisiveness and standards of excellence and ensures direct accountability and brings in clarity in terms of commitments and expectations. The work culture in this organization inculcates a high sense of discipline. Errors on the job through carelessness are never appreciated. There are usually 'relationship' complaints and process violation. A person can commit errors twice not more. The third time process violation is not tolerated. When the person does not go by prescribed standards at work, it is seriously viewed. The concept of '*punishment to non-adherence*' is identified here.

One the 10 principles of Knowledge management as delineated by Davenport (1996) is about improving knowledge work processes to manage knowledge. Knowledge Management is thus a systematic process of connecting people to people and people to the knowledge and information they need to act effectively and create new knowledge (Dell, 2004). This connection happens in

this organization through two important modes – links and participative involvement of the project teams and the conscious link that is designed in terms of participation between the higher-up and the subordinate where the higher is responsible for teaching, guiding and mentoring and the subordinate is responsible /accountable through implementation of the concepts he is being trained in.

6. Innovation efforts

Another characteristic that emerges is thrust on Innovation. There is a constant thrust on understanding and implementing the best work practices. New ideas, it is felt, are the only way forward, and any new idea from anybody is welcome and rewarded. From a personalized reward system based on the chairman's reaction to the innovation, it has now turned into a continuous forum of ideas to be developed, debated and rewarded. The concept identified here is ' *institutionalising innovativeness'*.

While referring to the creation of a knowledge-rich context for innovation (Hollebeche, 2004) stresses that Leaders also have a key role to play in *leading* rather than *supervising*, providing clarity of direction and parameters within which experimentation is encouraged. HR can train people in the creative thinking process and ensure that work is structured to include the whole task – which produces greater flexibility and wider career paths, resulting in broader experience. The HR function gets into devising contest like idea space, where innovative ideas are rewarded. There is an innovation campaign organized in the company. A form is circulated called the *Idea Space* and the *Idea Courtroom* assesses these products. The contest encourages areas of interest and the thinking through of a plan of action, that is not the usual and which could lead to cost saving or any other benefit. It is like encouraging on a controlled way or accountability in creativity. The concept identified here is ' *reward systems'*.

Findings and Conclusions

Knowledge Management is not a technical problem of introducing an efficient information system. Many psycho-socio variables like the involvement of a leader or co-ordinator, reward systems linked to knowledge sharing, training to work in a team and social events of the

company are important in determining the transfer as well as creation of knowledge in work teams (Zarraga and Bonache, 2003).

In this study, some important insights were arrived in terms of the creation of Knowledge and also the process of Knowledge in this High Performance Organisation. The content and the process of knowledge cannot be seen as mutually exclusive entities as one does not exist without the other. However, some understanding has been possible with regard to how knowledge content is created and the process is managed.

There were relevant concepts identified within the themes that were identified. All the themes have been identified to be relating to the process. The concepts identified have been the key force in the process.

Themes	Concepts
Leadership	*entrepreneurship, enhancing core competence, mentoring, collectivism*
Learning through Training	*Identification of learnability, innovative approaches, ongoing feedback, participative involvement*
Quality initiatives	*compulsive Perfectionism, Normative standards, stress on superlativity*
Synergy of Knowledge and skill through problem solving	*Integration of Heterogenity, interconnectedness by design, evolutionary experiential learning*
Implementation management	*Enforcement efforts, Attention to Detail, punishment to non-adherence*
Innovation efforts	*Institutionalising innovativeness', reward systems*

Visionary companies tend to bring in a balance between preservation and change, the focus being on preserving core values and core purpose and changing in terms of cultural and operating practices, specific goals and strategies (Collins & Porras, 1997). The goal of this High performance company is in delivering a Quality product. In order to reach the goal of ensuring quality at every stage, each of the process is consciously and rigorously followed. One of the differentiating characteristic of a High performance company is its thrust on *implementation.*

Research in High performance cultures, shows that effective leaders clearly articulate a strategic framework of mission, vision and values, strategic goals and the 'critical few' measurable priorities. The senior team creates a new strategic framework outlining where they want to head, *how they want to operate* and what they want as their top priorities. Thus the performance

management process provides a foundation tool for multi-level leadership development initiative. (Reid and Hubbell, 2005).

In the case of Sobha Developers we find that they are sure about their priorities in terms of quality for which they take considerable initiatives. They are also extremely conscious about the implementation through a detailed process. They promote leadership through *deliberate planned strategic* training approaches. Monitoring, mentoring, participation and feedback are what characterizes the leader at every stage or level whether it be the chairman, the general managers, and the project managers of the supervisors. Among others, Unquestionable integrity, outstanding capability, extremely fair and extraordinary commitment are the qualities expected of a visionary leader.

A Knowledge organization is an entity that realizes the importance of its knowledge, internal and external to the organization and applies techniques to maximize the use of its knowledge to its employees, shareholders and customers (Liebowitz & Beckmann, 1998). In this case, we find a process approach to developing knowledge. The starting point is the learnability which is the openness to be moulded especially found in the young workforce. The conditions of developing knowledge is an input of technical knowledge through training and the tacit knowledge of skills required to deliver the final product. The process is about adhering to quality standards, and very importantly the evolutionary experiential learning that happens through the project phase. Knowledge gets generated in this manner. The high level of conscious initiatives in terms of prescribing standards and initiating and implementing the process is one of the key reasons for managing knowledge effectively for high performance in this organisation.

The High Performance Organisation model based on a survey of 400 organisations places employee needs and expectations alongside business needs. The 'deal' for the employees and the organizational context and climate for which the work will take place, have to be right if employees are to commit to the company and provide the high performance required of them (Hollebeche, 2004). In an HR survey done within the organization, the satisfaction has been the highest with regard to employee development and chances of growth and development. This is one more micro evidence to prove that knowledge is managed effectively in the organization in terms of learning and growth for the individual employees too.

Thus, we conclude on this note –

- A knowledge-based approach to systematically match scaling up of business, business model and HR practices needs to be put in place to result in high performance on a sustained basis.
- A knowledge-based approach is possible in areas which are not seen as typical 'knowledge-based' industries like IT, Telecom, Biotechnology and others.
- KM processes and practices need not be heavily dependent on technology, specifically IT, as the carrier. They can as well be implemented through a clearly articulated leadership and mentoring from the top, sincere unflagging implementation efforts by senior management, and adaptation and feedback from junior management.
- Given the rapid scale of growth, and attrition inherent to many industries, developing KM process may be a business necessity, not an option for High performance.
- Knowledge seems to managed from two perspectives – Content and Process. Please refer to the Models presented as Fig 1 and Fig 2..

Limitations of the study-

- The study is restricted to a single site case study only. More research needs to be done across different organizations to draw more general conclusions.
- This study is limited to the construction project activity, and needs to be extended to other departments.

FIG -1 MODEL OF KNOWLEDGE CONTENT CREATION

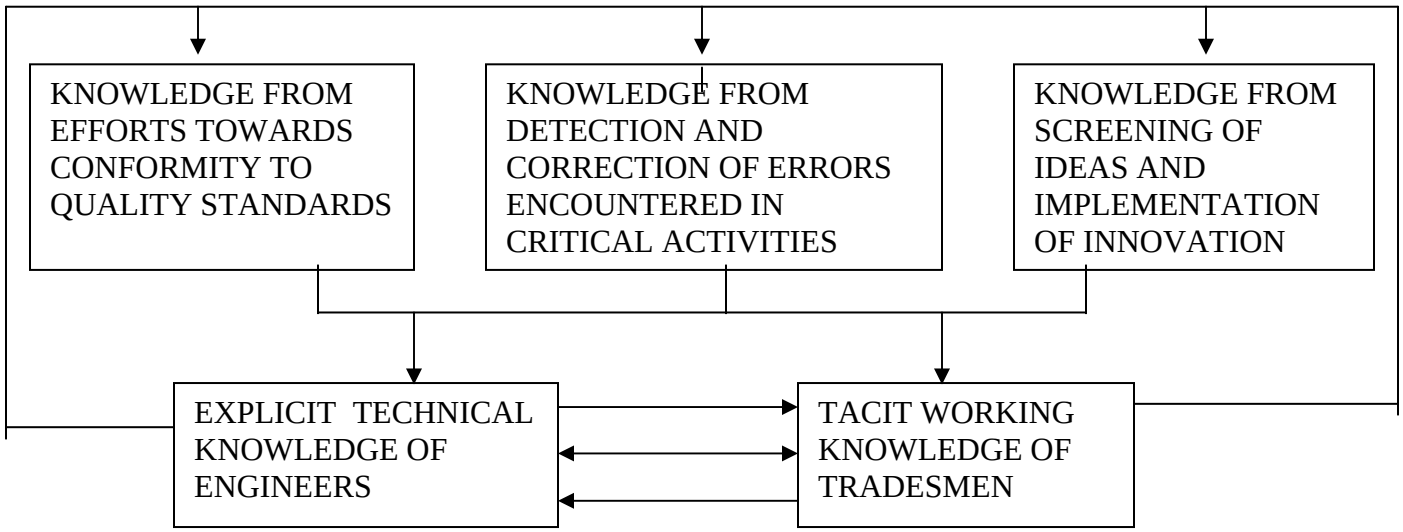
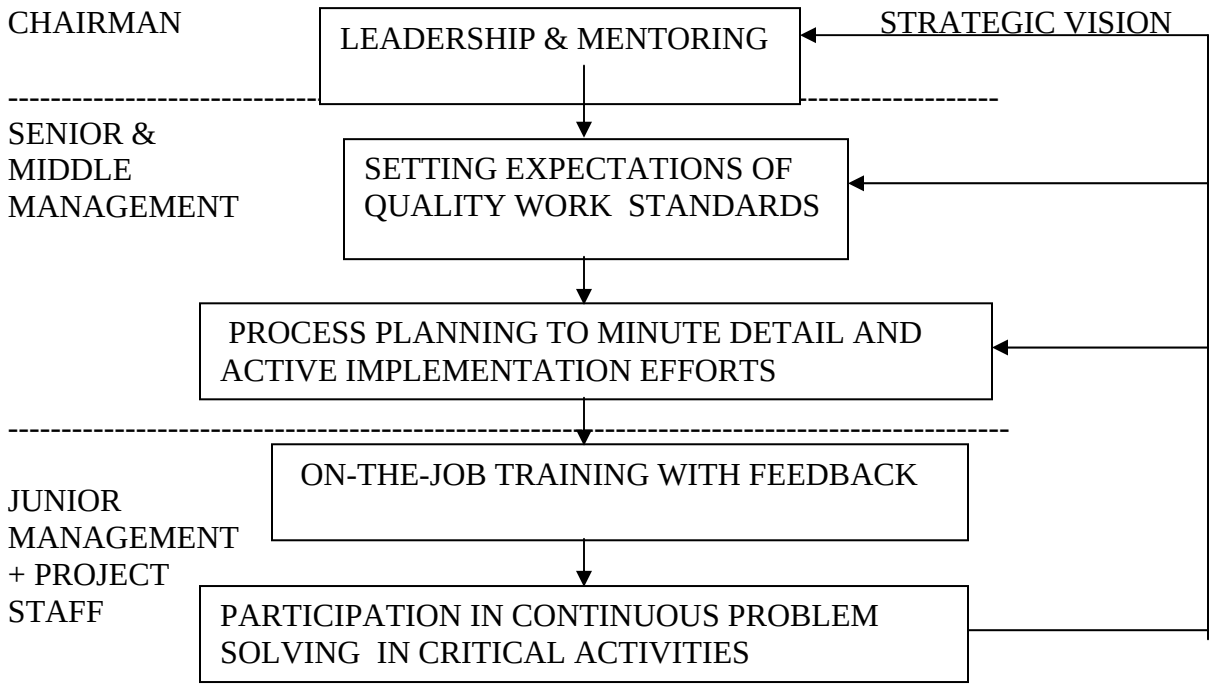


FIG -2 A PROCESS MODEL OF MANAGING OF KNOWLEDGE



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Appendix 1 Turnover of the organization or the years 1999-2004 in Million dollars

1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
3.23	7.20	27.29	30.59	51.47

Appendix 2 Critical activities involved in Construction

1	SAFETY & HOUSEKEEPING	13.	PLASTERING
2	GROUND DEVELOPMENT	a.	INTERNAL
a	MARKING	b.	CEILING
b.	EXCAVATION	c.	EXTERNAL
c.	FILLING & COMPACTION	d.	LIME
d.	GROUND TREATMENT	e.	PUTTING
e.	SOILING	14.	GYPSUM WORKS
3.	MASONRY	15.	WALLS CEILING
4.	FORMWORK	16.	WATER PROOFING
5.	REINFORCEMENT	a.	FLAT ROOFS
6.	CONCRETING	b.	SLOPED ROOFS
a.	PLAIN CEMENT	c.	SUNKEN SLABS
b.	CONCRETE OF FOOTINGS	d.	TOILETS & SHOWERS
c.	CONCRETING OF COLUMNS	e.	WASH AREAS
d.	CONCRETING OF BEAMS & SLABS	17	. PAINTING
7.	BLOCK WORK	18.	TILING
8.	HACKING	a.	WALL TILING/ DADOING
9.	EXPANDED METAL FIXING	b.	FLOOR TILING
10.	CORNER BEADS	19	. GRANITE & MARBLE WORKS
11.	PLUMBING	20.	METAL WORK
12.	ELECTRICAL WORKS	21.	WOOD WORK
		22.	ALUMINIUM WORK

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