A Study on Knowledge Management about IT Sector in Chennai

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Abstract
The management philosophy of enterprises is going through a radical change with the recognition that only those organizations which are able to develop its own knowledge system can remain competitive. Knowledge system and its management have emerged as the key areas that will provide this competitive edge. The economy is becoming more and more knowledge-based; where the most fundamental resource is knowledge. Organizations generate wealth primarily through knowledge, not capital, to before specific. Another aspect of knowledge management is that it puts technology into perspective, as information and communication technology enable the processes within the knowledge system.
Moreover, knowledge management is about knowledge workers and they will learn more, innovate more and contribute more. It originates and is' applied in the minds of the knower. In -organizations, it often becomes embedded' not only in documents and repositories, but also in organizational routines, processes, practices and norms".
In the current global competitive set up, enterprises are struggling to sophisticate their products by ad9ing more and more utilities in a dynamic way and this is not possible without proper knowledge management. Accordingly, the present study f,Jcuses on the knowledge management aspects in the highly dynamic knowledge intensive' information technology sector in our developing context.

Key Words: Knowledge Management, Information Technology, Organisation.

INTRODUCTION:

It is highly strenuous an exercise to define knowledge in its proper sense because of its abstract nature. As our attempt here is to define knowledge from the perception of firm's application, it has become more confined. Referring Davenport and Prusak, "knowledge is a fluid mix of framed experience, values, contextual information, expert insight and grounded intuition that provides and environment and framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of the knower. In -organizations, it often becomes embedded' not only in documents and repositories, but also in organizational routines, processes, practices and norms". This definition of knowledge covers the tacit and explicit dimensions of knowledge and treats knowledge as an 'object'. Also, the definition made in the context of organizations, brings out the concept of considering knowledge as an integral part of an organization, residing in the minds of people, captured in documents and embedded in processes,-etc. The concepts of knowledge presented here also enable us to visualize knowledge as an organizational asset that can be utilized to generate wealth for the organization.

Management

A Graham Winch point out that management today is "coping with change and uncertainty". Fluidity, continual adjustment, task redefinition and flexibility have become the hallmarks of today's management.

In the context of our research we would need to conceptualize management as 'applied to the area of our research, i.e. knowledge management. We have to deviate from conventional way of looking at management, and instead, conceptualize management from a strategic point of view, as knowledge system is more missionary. In this sense, management here would mean building, integrating and utilizing the knowledge assets of an organization to realize its strategic objectives in a' fast changing environment. Organizations must develop dynamic systems that are open to continuously changing process, product and market contexts. Managers would be, compelled to build, integrate, and reconfigure organizational resources and competencies, driven by the dynamic forces at play.

Looking from a strategic viewpoint, organizations have to skillfully handle all these different dynamic forces which are essentially knowledge driven, in its pursuit to realize its long-term strategic goals. The knowledge management systems need to be integrated with the objectives and strategies of the firm and can therefore naturally lead the firm to advance towards strategically advantageous positions and sustain its competitive edge.

Knowledge management

Among the definitions of knowledge management presented in Appendix I, two Definitions which include more contemporary aspects stand out. For the sake. Of our discussion they are stated here again. The first one is the definition by Xerox quoted 'by Prof. Paul Quintas, which says that knowledge management is "about creating a thriving 3work and learning environment that fosters the continuous creation, aggregation, use and re-use of organizational and personal knowledge, The second definition provided by Nicholas Bahra has a pragmatic flavor which define KM "as a generic description of the culture, processes, infrastructure and technology within the organization which maintains, grows, and optimizes the use of its intellectual capital to deliver the strategic goals of an organization with measurable financial results in the market place.

The highlight of this definition is that this is quite comprehensive and encompasses how Knowledge management is visualized and practiced, albeit less ideally, by advanced companies in the world. The key aspects addressed are, the "tacit" dimension of knowledge and high importance of people as well as culture in the KM implementation, the enabler role of information and communication technologies, the emphasis on organization learning and innovation and the implementation processes involved

Objectives of the stud

y The broader objective of the research work is to look into the extent of knowledge management developed as well as the different aspects of knowledge management in the developing context of an information technology firm.

- To identify the determinants of knowledge management system.
- To study the changes in patterns of knowledge management corresponding to the variations of its determinants.
- To formulate policy suggestions for developing sound knowledge management practices.

Scope of the study

Knowledge management is getting evolved in information technology companies in India, as found out in our study. We have observed from the analysis of the survey that almost all information technology' firms have started embracing knowledge management in varying degrees, and are going ahead with additional focus in this area. It would be of interest to mention here that knowledge management systems in other segments and its comparison with the knowledge management systems in information

technology have not been addressed in the present study.

Analysis of Knowledge Management Survey

This chapter covers the analysis of knowledge management survey conducted as mentioned in the approach to the study.

The knowledge management aspects that need to be considered are identified on the basis of 'Knowledge management - Approaches and Processes' in the knowledge officer questionnaire. Accordingly, we have identified 23 knowledge management aspects as presented in table.

Knowledge management aspects included in knowledge management index (KMI)

S.No	Knowledge Management aspect
1	Organization policy on knowledge management
2	Knowledge management - strategy and awareness
3	Organizational environment, practice and culture pertaining to KM
4	Knowledge identification
5	Eliciting knowledge
6	Organizational learning
7	Transfer of knowledge from market/consultant/business partners
8	Internal knowledge transfer
9	Internal and external benchmarking to improve know-how
10	Project experience knowledge sharing
11	Externalization enablers
12	Workspace arrangement
13	Knowledge repositories
14	Information technology infrastructure
15	Knowledge management team
16	Training
17	Incentive schemes for knowledge management
18	Knowledge development
19	Knowledge application
20	Knowledge documentation
21	Knowledge renewal
22	Knowledge management scope
23	Knowledge engineering

Source: Literature review

The implementation of these aspects will indicate the extent and intensity of knowledge management in the organization.

Determinants of knowledge management

The knowledge management index (KMI) developed in the previous section indicates the level of implementation of knowledge management in a firm. As a result, we can take this index as a representative variable of knowledge management for the information technology firms. Now to find out the determinants of knowledge management in our developing context, we regressed the knowledge management index on the possible determinants mentioned above.

Regression coefficients

Determinants	Coefficients	T	Sig.
(Constant)	1.830	5.247	0.000
Knowledge identification	1.433	1.963	0.078
Eliciting knowledge	1.835	3.404	0.007
Knowledge management infrastructure	1.834	2.309	0.044
Advanced communication technology	4.804E-02	0.693	0.504
Highly qualified knowledge workers	8.310E-06	0.191	0.852
Organization culture	0.183	0.312	0.761

Source: Knowledge management survey data

Of all the determinants, we find that eliciting knowledge as the most significant variable (significance being 0.007). The significance of knowledge management infrastructure is also found to be remarkable (significance being 0.044). Also, the significance of knowledge identification is accountable (significance being 0.078). Besides, even if not, significant, the influence of advanced communication technology, organization culture and highly qualified knowledge workers are found to be positive.

OPINION ANALYSIS

An account of the analysis of the opinion study carried out is presented here. The inferences of each statement with consensus opinion (Median) and extent of consensus (measured by semi-inter quartile range) are given. The analysis of the opinion - is presented in this section.

Statement no.	Statement	Median (Consensus opinion)	Semi inter-quartile range (extent of consensus)
1.	The stage of knowledge management In Evolving Indian IT firms	Evolving	0

Among information technology firms in India, systems for managing knowledge are evolving. This "evolving" stage indicates that, information technology firms at the national level have started the knowledge management initiative at the conceptual and implementation levels while they face the teething problems. With a semi inter-quartile range of zero (0), it can be observed that there is perfect consensus in this opinion. This indirectly points out that successful knowledge management systems are yet to be implemented. Knowledge management is therefore getting geared up to hold centre stage in the coming years.

Statement no.	Statement	Median (Consensus opinion)	Semi inter-quartile range (extent of consensus)
2.	Information technology is an far as knowledge management is concerned	80	2.5

Knowledge management systems cannot be implemented successfully without the technology base provided by information technology (how information technology can enable knowledge management is covered in A scan of literature) .This observation which has a high value for median (80) and a very high level of consensus fully supports this viewpoint.

This finding also helps us to position the role of information technology with respect to knowledge management. Knowledge management was perceived by certain quarters as a technology solution suite for management and it is not more than use of certain specialised information technology tools in the enterprise for its knowledge workers. This expert opinion observation that looks at knowledge management more holistically negates this viewpoint and asserts that knowledge management is not just providing information technology solutions alone. Information technology takes up the role of an enabler.

S no.	Statement	Median (Consensus opinion)	Semi inter-quartile range (extent of consensus)
3.	How significant is knowledge management for an IT organization to be globally competitive.	80	6.25

The median value of 80 in 100 scales makes it explicit the high significance of knowledge management for an information technology firm. This finding, with a high consensus (semi inter-quartile range being 6.25), reiterates the fact that without a knowledge management system, information technology companies cannot become globally competitive. IT companies in India operate mostly in the global market, unlike many other industrial sectors. Unless they are competitive, they cannot survive. In this context, the expert opinion gives knowledge management a strategic importance.

S. no.	Statement	Median (Consensus opinion)	Semi inter-quartile range (extent of consensus)
4.	Performance levels of knowledge management activities by IT companies in India.		
	Knowledge identification	70	8
	Knowledge eliciting	65	6.5
	Knowledge management infrastructure	65	12.5
	Knowledge sharing	40	5
	Knowledge application	40	7.5
	Knowledge creation	30	7.5
	Knowledge distribution/sell	30	15

Among the various knowledge management activities, experts noted that certain activities perform better than others. The better performing activities (with median value 50 or above) are, Knowledge identification, which includes identifying what knowledge need to be acquired and location of the knowledge source.

- Eliciting knowledge, i.e. capturing the tacit knowledge through externalization and socialization processes.
- Knowledge management infrastructure which is the organization infrastructure formally and informally created for efficient knowledge management.

The other activities, viz., knowledge sharing, knowledge application, knowledge creation and

knowledge distribution/sell do not perform well. Therefore, in Indian IT firms, knowledge management activities are better determined by the three primary knowledge management factors mentioned above, i.e. knowledge identification, eliciting knowledge and knowledge management infrastructure.

S no.	Statement	Median (Consensus opinion)	Semi inter-quartile range (extent of consensus)
5.	How relevant IS the evaluation of intellectual capital from a long term Perspective for the firm?	80	3.75

This finding underlines the importance of intangible assets in the valuation of a firm. The value 80 shows that evaluation of intellectual capital is recognised as very important and this will result in more and more companies bringing out Intellectual capital reports and balance sheets that value intangible assets. There is a very high level of consensus in this opinion with a semi inter-quartile range of 3.75. The value of the intellectual capital can be enhanced only through efficient knowledge management. This again highlights the role of knowledge management in the market valuation of a firm.

WEIGHTAGES OF KNOWLEDGE MANAGEMENT ACTIVITIES

Statement	Median (Consensus opinion)	Semi inter-quartile range (extent of consensus)
Organization policy on knowledge management	80	10
Knowledge management - Strategy and Awareness	80	10
Organizational environment, practice and culture pertaining to KM	75	12.5
Knowledge identification	90	5
Eliciting knowledge	90	5
Organizational learning	70	10
Transfer of knowledge from market/consultant/business partners	70	10
Internal knowledge transfer	70	2.5
Internal and external benchmarking to improve the know-how	60	10
Project experience knowledge sharing	70	10
Externalization enablers	70	5
Workspace arrangement	60	10
Knowledge repositories	80	2.5
IT infrastructure	75	10
KM team	60	5
Training	70	5
Incentive schemes	70	5
Knowledge development	80	12.5
Knowledge application	80	10
Knowledge documentation	90	10
Knowledge renewal	65	2.5
Knowledge management scope	70	7.5
Knowledge engineering	70	10

Source: Primary data of expert opinion study

SUMMARY OF FINDINGS, SUGGESTION AND CONCLUSIONS

FINDINGS:

In this chapter, a discussion of different implications of findings is attempted.

The stage of knowledge management in our context:

It was observed from the regression analysis as well as simulation exercises, that in our context, the knowledge management function is significantly determined mostly by three factors, viz., knowledge identification, eliciting knowledge and knowledge management Infrastructure. Of these, eliciting knowledge is highly significant and the other two factors are moderately significant. In the knowledge management system implementation, these three activities form the initial activity set (primary activities).

Advanced communication facilities accelerate knowledge management:

Information technology and communication infrastructure occupy key positions in the development of knowledge system. In fact, from the determinants analysis of knowledge management we have attempted, advanced communication technology is found to have a positive impact on knowledge management. Organizations that have better infrastructure for communication perform well in managing knowledge. The point revealed is that implementation of advanced communication technology will contribute to better knowledge management. Intranet and Enterprise Information/Knowledge portals have become the standard vehicles for knowledge push and knowledge pull. A point we observed from the analysis is that organizations that have just adequate networking infrastructure fall short in knowledge management performance, because of minimum scalability aspect.

IT companies should embrace KM for developing competitive edge:

We are witnessing a revival in the IT industry in general after the global slowdown in 2001. All the major IT companies have reported good results and they are expanding their operations. The leading contributor again is software exports. With the presence of operations of leading multi-national IT companies in India, the Indian IT (software) companies are poised for an accelerated growth. The software exports from India are continuously rising and this is expected to touch 80 billion USD by 2008, from the last year's figure of 7.2 billion USD. The point of interest is that Indian IT companies are expected to go up in the vertical value chain, without giving up its current strong segments 19, 73. In this context, from a knowledge management perspective, the thrust of IT companies have to be on innovation. We have" already observed that knowledge development activity is not a significant determinant for the knowledge systems in India. Thus it is high time that Indian IT companies have to perform well on knowledge development by investing more on research and development activities.

Organization culture - the major hurdle for knowledge development:

Different studies reviewed by the researcher have highlighted the significant role for organization culture on knowledge management. The survey analysis revealed that organization culture is not a significant factor in our knowledge system in its infant stage. The finding from the Delphi analysis corroborated this. The experts opined that lack of favourable organization culture as a significant bottleneck, which could decelerate the pace of knowledge management in Indian IT firms. Delphi analysis also specifically 56 noted that knowledge management culture is yet to be evolved in India. This aspect need to be addressed on high priority by the top management of IT companies.

Specialised KM teams essential for fast KM implementation:

The presence of dedicated team for knowledge management will lead to accelerated implementation of knowledge management. Designated roles, like Chief Knowledge Officer (CKO), Knowledge Director, Knowledge Manager, and so forth exist in advanced organizations in the world, which have performed well in the knowledge management ; system implementation. The opinion from experts was that absence of dedicated team for knowledge management as a bottleneck for fast implementation or knowledge management system.

LIMITATIONS OF THE STUDY

The study however is not devoid of limitations. Knowledge engineering and use of knowledge bases in knowledge acquisition of experts and utilization by knowledge workers in select areas like problem solving, is coming up as a technology solution to capture and store knowledge in knowledge intensive organizations. The study was unable to collect data regarding these as we observed that these activities are right now less in practice, unlike in more advanced countries. Another limitation of the study was that the study could not collect information about intellectual capital reporting by information technology firms in general. This is because in our developing context, the knowledge management activities are in an evolutionary stage. In future more and more companies would come out with intellectual capital reports and balance sheets showing intangible 64 assets. It may be noted that the study was confined to the sector of information technology. There was no comparative study conducted with knowledge management in other segments. This is also a limitation of the study, because this would have provided additional dimensions to the research work.

SUGGESTIONS:

The study provided some significant Suggestions. The Indian information technology companies have started implementing knowledge management systems, in varying degrees. This marks an important beginning by our information technology firms in their endeavour to become global leaders and strategically a very significant initiative. Among the processes and subsystems analysed in knowledge management in information technology companies of our context, the most significant activity is eliciting knowledge. The other slightly lesser significant activities observed is development of knowledge management infrastructure and knowledge identification. Another point revealed is that the industry is facing some bottlenecks from a knowledge management perspective, like lack of urgency, absence of a favourable organization culture, absence of involvement of top management and shortage of dedicated team for knowledge management.

It has been highlighted that for successful knowledge management the firm requires sufficient knowledge base (in the study, in terms of qualified knowledge workers) as well as a dynamically optimum advanced communication technology base. The study also gave idea about the importance of knowledge audit in directing the knowledge management initiative on the right lines and the criticality of involvement of middle management in implementing knowledge management systems. The prospects of knowledge growth through knowledge transfer as a result of close association with advanced companies abroad and interactions with academicians were the other significant suggestions of the study.

CONCLUSIONS:

This concluding part points out some of the limitations of the study along with a few highlights based on certain important findings/inferences.

Knowledge management has emerged over the last few years as an important new approach to the problems of competitiveness and innovation confronting the organizations world over. From the overwhelming emphasis on tools and system-driven approaches to knowledge management in the initial phase of its genesis, the current thoughts in knowledge management are more holistic. This research

work was conducted against the above mentioned landscape, in the developing context of Indian information technology, a highly knowledge intensive industry segment.

A comprehensive review of available literature on knowledge management helped in conceptualizing the topic and this formed the foundation for the research. The multifaceted dimensions of knowledge management, its complementary association with the field of information technology with the latter's role as an enabler and case studies in leading IT firms were used to identify the knowledge management determinants in general as a first level input. A knowledge management survey was then conducted among entrepreneurs, knowledge officers and knowledge workers in information technology companies in India. The survey among entrepreneurs provided data about the knowledge management philosophy, incentive mechanisms and the vision of the organization. The survey conducted with knowledge officers collected all possible details of organization performance in knowledge management and also about the knowledge system processes of place. Knowledge workers were asked to provide details of their knowledge work, how they were creating, and transferring, learning and utilizing knowledge. The data collected from the knowledge management survey was subjected to multiple regression analysis to discover the more significant determinants of the knowledge management system and to develop a knowledge management index to represent the stage of knowledge management activities of the firm. The pattern variations of knowledge management against the more significant determinants were found out using simulation runs. The research findings were corroborated with the expert opinion analysis carried out based on the Delphi study. The expert opinion study also addressed the macro level challenges facing knowledge management in information technology in India in the form of policy formulation directives.

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