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Knowledge management has been a growing area of interest over the last ten to fifteen years. With role players and stakeholders seeking to understand the relevance and importance of knowledge management and its relationship to organizational performance, there has been a virtual explosion in interest in the field. Knowledge is now being treated as one of the most critical assets in organizations. The productivity of knowledge is the most important issue that needs to be taken care of. Indian industry is facing tough competition in this hyper-competitive global-mall. Good knowledge management practices could help the industry in this scenario. But unfortunately, knowledge management has not received its due importance and recognition in Indian industry and this will have far reaching implications for firms, industries and the country as a whole. The study examines the evolution of SMEs in India and concomitant policy framework for classification and promotion of this sector in the country. It also provides a comprehensive review of literature revolving around the patterns, impact, and effectiveness of knowledge management practices in SMEs around the world. The study captures the spirit of owner/managers of SMEs towards adopting knowledge management as an ingredient for gaining competitive advantage in the knowledge driven economy in the wake of liberalization and globalization that began in 1991.

The first logical step is to comprehensively review the literature for understanding the knowledge management paradigm. There are several definitions of knowledge, knowledge management, risks and rewards associated with knowledge management.

Indeed, knowledge management has emerged as a formidable academic discipline despite a definite lack of a universally acceptable theory or a set of theories. Even the lack of consensus on a definition of knowledge has not

undermined the desire of the entrepreneurs and managers to exploit the tacit as well as explicit knowledge of their workers. The need to focus on managing knowledge within the enterprise actually results from both economic and market-driven requirements created by customer demands and international competition. Rewards of Knowledge Management programmes often outweigh the risks. This accounts for the immense popularity of Knowledge Management among the managers all over the world.

There are large numbers of studies globally in the area of knowledge management particularly focussing on large organisations. Though extended knowledge locations and flows are obvious in larger organizations, knowledge management approach is important area of concern in SMEs primarily because of the cited reasons – (a) Knowledge in SMEs tends to be tacit/informal/not recorded, (b) Know-how in SMEs may not be valued as highly as it might be, (c) Lack of know-how may be hard to talk about in SMEs, (d) Short-term approaches to knowledge gaps may work sufficiently to make change appear unnecessary and (e) Know-how in an SME may easily be lost or fragmented when the owner sells the business or retires.

Accordingly, the objectives of the research study were capsulated into four interrelated objectives – (a) to examine current organizational practices and strategies in SMEs about use of knowledge management in business; (b) to identify the extent to which knowledge management is essential in business activities within SMEs in terms of risks and rewards; (c) to collate and develop metrics relevant for the SME that includes risks and rewards as measures of intangible asset like knowledge and (d) to develop a risk-reward model for implementation of knowledge management in SMEs

These objectives have been met through analysis based descriptive statistics, regression techniques, AHP model etc. indicated in the following paragraphs.

The major finding of the study and conclusions drawn there from are shown in the following section.

The study uses both primary and secondary data to examine the current organisational practices and strategies in SMEs about the use of KM in businesses. The primary data collected through questionnaires gives insight of the extent to which KM is essential in business activities within SMEs in terms of risks and rewards. Issues regarding reliability and validity have also been addressed adequately. Besides, there is an introduction to the constructs and choice of analysis and the statistical and mathematical tools used in the study.

The study uses the path analysis as a regression technique for studying causal relationships between the research constructs. A causal model has also been developed and presented in this chapter. Further results of data analysis have been presented under various categories such as descriptive analysis, reliability analysis, correlation analysis, multiple regression analysis, and collinearity.

A practical model addressing issues concerning implementation of knowledge management has been provided using Analytic Hierarchy Process (AHP) –a mathematical technique where the decision maker prioritises actions on the factors that influence knowledge management implementations within small and medium enterprises (SMEs).

## **6.1 Key Findings & Conclusions**

The results indicate certain *positive trends* as well as some *problem areas*. There are also a few alarming trends. Positive features of knowledge management practices in Indian SMEs are greater employee involvement and generation of ideas by them. Employees of SMEs are well aware of the objective and outcomes of knowledge management. This helps in strengthening knowledge management practices. The Indian SMEs are good at identification of key knowledge assets.

Fairly good numbers of SMEs are engaged in periodic assessment of knowledge needs. Use of Information Technology in managing knowledge although not very significant, is picking up.

*Problem areas* in the knowledge management practices in Indian SMEs are significant lack of independent decision-making by the employees and low client involvement. Most of the SMEs in India are not involved in creating knowledge repositories in their respective firms. Fewer firms have a system of periodic assessment of the impact of knowledge management.

*Alarming trends* include indifference of the SMEs towards consensus building and impact assessment of knowledge management.

#### RISK & REWARDS OF KM

The risks of knowledge management are multi fold. These risk vary from simple operational risks to strategic risks that can seriously affect the value generation process in organisations. The owner/managers of SMEs consider deletion of data, employee leaking knowledge to competitors, employee using knowledge for personal gains, and employees walking away with knowledge as major risks in that order.

Moreover, they also consider *increased cost of knowledge management implementation* as a potential risk in terms of tangible benefits. This observation is based on their overall perceptions about major risks associated with knowledge management implementation. Risk of data theft and copyright/patent infringement is considered as moderate risks. Owner/managers are concerned that employees are not using knowledge to the best advantage of the firms.

The creation of single platform knowledge pool, improved business intelligence, system improvement, process improvement and employees enthusiasm in

creating and sharing knowledge are considered by the owner/managers as major rewards. However, the owner/managers feel that there is no significant influence of knowledge management in terms of increased profitability, increased customer satisfaction and increased employee satisfaction or reduced employee turnover rate. They are also not sure whether knowledge management implementation helps in reducing operational costs or expanding the client base.

#### RISK-REWARD MODEL

Modelling KM for risk and reward is the central issue in the study. To meet this objective, an empirical study was conducted that used path analysis on the data collected by means of a questionnaire on a sample of 119 Small and Medium Enterprises (SMEs). An argument has been presented in the research of using causal linkage to enable following individual streams of possible cause. This led to 'the Causal Model' which gave us the path of the exogenous variables Awareness-Perception ( $A_w$ ), Practice ( $P_r$ ), Risks ( $R_k$ ), Rewards ( $R_w$ ), Size of the firm in terms of number of employees ( $S_e$ ), Age of firm ( $A_g$ ) and Sales Turnover of the firm ( $T_s$ ) and leading to the endogenous variable Knowledge Management ( $KM_s$ ).

To test the reliability of the data Cornbach's alpha was used, which gave us an output of 0.89. Since a reliability coefficient of 0.70 or higher is considered acceptable according to the standard norms, the data was termed satisfactorily reliable; hence proving further analysis.

Pearson correlation coefficient had been used to determine the 'degree of relationship' between the various constructs. It showed that there exists some kind of casual connection between the groups. It helped us to make relatively more dependable forecasts, and reduce the range of uncertainty associated with decision-making. By using correlation we tried to estimate the likely change in a

variable with a particular amount of change in the related variables. The interrelationship studies established here between different variables are very helpful in promoting research and opening new frontiers of knowledge.

Accordingly Pearson correlation was applied and the correlation matrix was constructed, the results when interpreted showed there exists some kind of positive correlation between knowledge management and awareness-perception, knowledge management and practice, knowledge management and reward. Implying they move in the same direction that is an increase in one results in a simultaneous increase in the other. But a negative correlation was observed between knowledge management and risk, which indicate that both the variables are varying in opposite direction.

Furthermore it was observed that there exists a positive correlation between awareness-perception and practice, awareness-perception and reward and also practice and reward. Also there exists a positive relationship between age of the organization and size and age and turnover and similarly between size and turnover.

However, some variables show negative variation like knowledge management varies in an opposite direction with age, size, turnover of the organization, awareness-perception varies in opposite direction with risk and risk varies oppositely with reward all implying that if one variable is increasing the other is decreasing. By this it can be further considered that as the exogenous variables  $A_w$ ,  $P_r$ ,  $R_w$  increases the endogenous variable  $KM_s$  also increases and as  $A_g$ ,  $S_e$  and  $T_s$  increases  $KM_s$  declines.

After having established the fact that the variables in consideration are closely related, the value of one variable given the value of another was estimated. Regression analysis revealed average relationship between two variables and this

makes possible estimation or prediction. In order to facilitate research seven propositions had been established and each proposition has been tested with a regression analysis. In the first proposition it was stated that better awareness-perception about knowledge management leads to better knowledge management, this proposition was established by the value of  $R^2$ . So it can be conclusively said awareness-perception positively influences knowledge management. And the proposition holds good. From this it can also be concluded that it is important for the organizations to generate awareness and develop perceptions about knowledge management then only knowledge management would be successful within an organization.

The second proposition was taken as better practices of knowledge management leads to better knowledge management. The results of regression analysis show that knowledge management improves with better practice. Thus more the knowledge management is practiced more efficiently it is implied proving the proposition taken. The third proposition undertaken was risks associated with knowledge management restrict knowledge management. However the results indicate that as knowledge management increases risks associated decline. And as per the fourth proposition rewards associated with knowledge management results in better knowledge management. This is supported by the results, which indicate that reward and knowledge management increase simultaneously.

As per the fifth proposition SMEs with higher number of employees have better knowledge management. The results of the regression analysis however show that as the size increases success of knowledge management declines. The sixth proposition taken is older the SME better the knowledge management. When the regression analysis is run the value of R square indicate that as the SME grows in age the significance of knowledge management decreases. Similarly the results for the seventh proposition sales turnover improves through knowledge

management show that as the turnover increases knowledge management decreases.

After the relationship between each variable and  $KM_s$  has been established individually, a composite regression analysis was carried out to study the combined effect of all the variables, which gave the following equation:

$$KM_s = 11.916 + 0.167 A_w + 0.388 P_r - 0.242 R_k + 0.286 R_w + 0.061 A_g - 0.018 S_e - 0.081 T_s + e$$

This equation shows that there exists a positive relationship between knowledge management and awareness-perception, knowledge management and practice, knowledge management and rewards. A very strong relationship is evident between knowledge management and practice, as the practice of knowledge management increases it leads to better knowledge management. If practice is increased knowledge management increases by three times. So it is quiet evident that knowledge management depends on how well it is practiced.

Furthermore it can be stated that as the organization increases the practice of knowledge management there is an evident increase in awareness-perception leading to motivations to further practice knowledge management. So more the knowledge management is practiced more successful it is in generating awareness-perception. Similarly an increase in practice of knowledge management correspondingly increases rewards. Thereby it emphasis the fact that as the organization efficiently practice knowledge management the rewards increase simultaneously.

On the other hand it has been noticed that as the knowledge management increases with an increase in practice, awareness-perception, and rewards, risks show a negative trend. Risks associated with knowledge management reduce



with an increase in the practice, awareness-perception and rewards. So as knowledge management grows risk reduces. It is also evident from the equation that as the age, size and turnover grows knowledge management decreases.

So it can be conclusively said that awareness-perception, practice and reward show significant influence on knowledge management. Nonetheless, the relationship between knowledge management and risks cannot be overlooked as it emphasizes the trend that knowledge management leads to decrease in risks by a significant value. Another trend that is apparent here is that as an organization grows in size, turnover and number of years, knowledge management begins to diminish.

Finally, for the fourth objective the empirical test based on AHP technique has demonstrated that creating awareness-perception about knowledge management is more important than practice. More awareness about benefits of knowledge management needs to be generated amongst owner/managers of SMEs before they can embark actually into practicing knowledge management.

The results of the survey suggest that to make owner/managers aware and to practice knowledge management both risks and rewards are equally important. While it is important to highlight rewards associated with knowledge management in the awareness-perception process, the risks associated cannot also be ignored. Similarly while practicing as well, a clear understanding of the risks and the rewards are important.

The risks associated with generating awareness-perception among owner/managers mainly arise out of concerns of financial losses involved in knowledge management. The fear of technical implementations and human attritions are lesser risks considered by owner/managers in the awareness process. The owner/managers of SMEs seem to be more aware of investments in

technology (automation) being an ultimate solution to all problems and see it greatly as a reward from knowledge management.

While practicing knowledge management the biggest inhibitor seems to be financial investments in knowledge management. Owner/managers consider that there are heavy financial investment requirements for knowledge management. Loss of manpower or risks associated with technology tends to take a back seat when compared with financial risks. On the contrary, owner/managers are willing to reward employees to share their knowledge and invest into technology to do knowledge management and financial considerations seem to take a back seat.

For owner/managers of SMEs to be aware of and practice knowledge management, they will need to prioritise their understanding in terms of technical infrastructure requirements, risks and rewards of loss of human knowledge and financial implications (both risks and rewards) involved in the entire knowledge management process.

## **6.2 Limitations of the Study**

It is a well-accepted fact that no research study is perfect and free of all errors and limitations. In fact, deliberating on the limitations of the study is as important as any other section of the report. The limitations of the research study are both *Data type and Structural type*.

On the structural side, the regression model for path analysis and AHP model presumes a linear behaviour of the variables under consideration. The dependent variable  $KM_5$  implicitly captures only the derived research constructs converted into measurable variables. This logically leaves room for other variables, which were out of the scope of the study.

Also, the proposed models may be argued for generalisation since the data set is relatively small because of use of Prowess, which consider only companies

fulfilling the criteria for inclusion in the database. There may be large number of other databases, which may be useful.

The period for data collection was during February-April 2009, which is after the US sub-prime crisis. This had a positive impact because the concept of risk became increasingly contemporary. But there may be many organisations, which ceased operations or sold businesses and therefore lost their identity. These were obviously excluded from the selected database. A study of these organisations separately would be meaningful in context of KM.

On the Data side, there were several limitations. The respondents were presumed to have cursory knowledge of the concept of Knowledge Management, which is not true in significant number or target respondents. The study examined a sample of 119 small and medium business units representing several sectors issues of concern remain as:

- (a) The awareness-perception, practice, risks and rewards are all ongoing phenomena. In our study, these constructs were measured at a *static point* in time rather than as they happen.
- (b) The study was conducted in the NCT of Delhi. A future national study of knowledge management among diverse organizational groups could probably further support the findings.

In absence of any valid data, it is difficult to exclusively estimate the impact of KM in tangible terms. Even, with large professional organisations, this is still a critical and elusive area.

## **6.3 Major Implications & Directions for Further Research**

The evaluation model of knowledge management appears to have implications for both researchers and managers. The findings of this study indicate that knowledge management depends on awareness-perception, practice, risks and rewards. The following sections further analyse these two different, but fully complementary, implications.

### **6.3.1 Implications for Researchers**

During the course of the study, there have been two main sources for the implications for researchers. First, from the analysis of the previous empirical studies it can be concluded that efforts should be focused on deciding on the most appropriate method in order to measure the results. It is also important to identify the meaningful measures in relation to knowledge management. Questions to be answered include, but are not limited to:

- (a) What should be measured?
- (b) What can be measured?
- (c) What are the key performance indicators to be connected with:
  - awareness-perception activities,
  - the practice of knowledge management,
  - associated risks,
  - associated rewards

in relation to the researchers effort to capture their contribution to knowledge management.

Answering these and similar type of questions may play a very significant role in shaping the future of knowledge management implementation.

Second, the limitations of the study, listed above, are leading to two future research indications:

- (a) As awareness-perception, practice, rewards and risks– within knowledge management- vary over time, one could possibly investigate the relationship of those ongoing changes to success of knowledge management, maintaining the same company samples. It would also be interesting to possibly relate the changes noted over time, with actual changes in both the rewards and the risks within the organization.
- (b) An across the country study of knowledge management among varied organizational groups could further support the findings of the regional study, like this.

The directions are given despite the fact that there are difficulties associated with these two additional parameters of time and cross-national studies to the future researcher.

*Finally*, there is one more generic indication for a future investigation. This study leaves further scope of research as other exogenous variables can be associated with the variable knowledge management and their interrelationship can be analysed leading to significant outcomes, which would aid decision-making. Also, both the knowledge management models proposed in the study could be used as a theoretical lens to examine similar organizational relationships in totally different environments.

### **6.3.2 Managerial Implications**

The evaluation model used in the study has been tailored to best evaluate the contribution of awareness-perception, practice, risks and rewards to knowledge management. The results of the investigation, combined with the following historic remark, steer us in formulating some guidelines for managers.

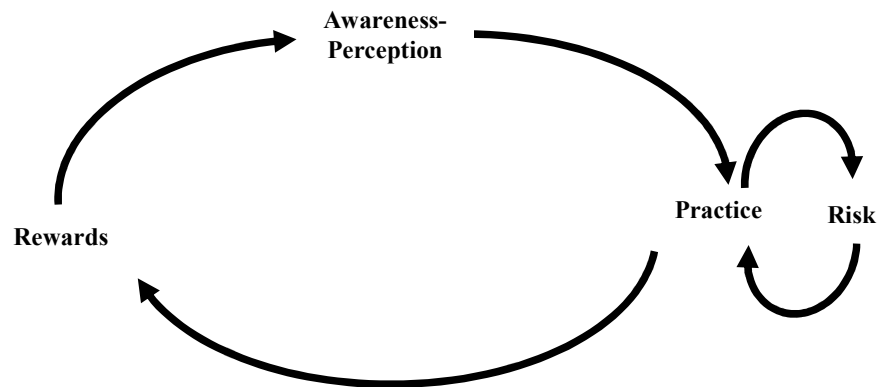
In the old times, capital was considered as the company's most critical resource, and management was concerned with the return of investment in equipment and plants. In the recent past, the mix of business resources (land, capital, and labour) have drastically changed in terms of the relative importance they bear in attaining sustainable competitive advantage. In the 21<sup>st</sup> century, companies shall be guided by a new logic of value and shall consider knowledge as a sort of capital and innovation as a complex process depending on the development of knowledge and the innovative efforts of its employees. Academics and economists have argued that factors like globalization, increasingly strong competition and the growing complexity of new products are the main contributors towards the new reallocation.

Owner/managers, under this new shift, should become aware that the great challenge is settled on investment in knowledge processes -indispensable for a constant flow of innovation- and knowledge workers. They should recognize knowledge and knowledge workers as the company's intellectual capital and a key factor to its sustainable development. In order for the company's intellectual capital not to be under-managed, management putting to practice the main findings of the study should make sure that their subordinates:

- (a) include in their objectives the task to share knowledge and available information with colleagues in collaborating groups;
- (b) are entirely aware of the knowledge management resources available.

In doing so, their companies will take maximum advantage of the knowledge available within the organization. The owner/managers need to realize that the implementation process of knowledge management is a cyclic process as shown in Exhibit 33.

## Exhibit 1 Cyclic Process of Knowledge Management Implementation



Building upon both literature findings, interactions with SME owner/managers, experts and the results of the study regarding knowledge management it can be said that as more knowledge management is practiced in firms, the SMEs tend to reap benefits/rewards from it. With the rewards, SMEs can establish a knowledge management strategy that includes a mission statement, ongoing awareness-perception process and monitoring of knowledge management activities. As knowledge management is practiced the risks associated with it also tends to reduce providing enough motivation to practice knowledge management even further.

A SME with effective knowledge management practice shall have a high cultural fit that enables it to diffuse knowledge as well as alignment of knowledge performance measurement. The characteristics of such an organization support organizational learning at strategic and operational levels. It offers strategic benefits for the following reasons:

- (a) Better proactive risk management, taking into account knowledge risk areas and priorities for relocating internal resources for the creation of business value.

(b) Improved competitiveness in the global market by better understanding of internal capabilities, external market place and how the organization is positioned to take advantage of business opportunities.

(c) Well-structured, transparent and easily communicable working practices which help motivates people and encourage team-based approaches.

SMEs should use an awareness-perception framework through measuring, monitoring and reporting intangible asset like knowledge to regularly assess themselves against organizations with good knowledge practice, thus identifying performance gaps and areas for improvement. This allows SMEs to learn from and act on the knowledge and best practice of others.

Training employees to understand the importance and value of knowledge management is also essential. Information cannot be turned into something of business value if employees do not have the skills to put information into context. This should also be backed up by a technological infrastructure to facilitate communication and information flow.

A business case for a knowledge investment programme should be based on alignment with key business success factors and associated performance measures. This should take into account a view of the organization as a system interconnecting capabilities and enablers, with knowledge representing the understanding of the relationships and interactions between business assets and between stakeholders. This helps to ensure knowledge becomes more meaningful in the business context.

Management should not underestimate the unique characteristic of knowledge being one of the few assets that grows almost exponentially when shared. As employees from one group share knowledge with colleagues in the collaborating group, the interactive potential of their knowledge grows at an exponential,



creating exponential value-added growth. Getting professionals from various groups to share and thus leverage their knowledge capabilities across the borders of their groups, is one of the most demanding management tasks. In the recent past, companies have tried to force knowledge sharing by putting concepts like Kaizen, Quality Circles and Total Quality Management.

Owner/managers should also be aware that sharing knowledge in a meaningful manner requires a well-balanced merge of technology with the company's culture, in a way that creates an environment supporting collaboration. Management has to create a climate of trust in the organization, for knowledge sharing to become reality. In such an environment people from different groups must feel comfortable to seek for others with the 'missing piece of knowledge' to share. Trust is a necessary condition for, and can lead to cooperative behaviour among individuals and groups, especially where tacit knowledge has to be shared. It is only in such an environment that the IT made available (groupware software, knowledge repositories or knowledge sharing networks) may lead to the production of innovative products.

Finally, owner/managers has also a very important role to play. They have the difficult task to manage the employees in an effort to minimize the negative effects due to:

- (a) Resistance to change
- (b) Barriers to communication

Factors that help eliminate such negative effects may include training on dependent and inter-dependent tasks, joint planning sessions and formation of cross-functional teams. In addition, strategic rotation– the temporary movement of employees from one group to another- can lead to managing knowledge, the true antidote to both resistance to change and barriers to communication.

This section with guidelines to managers have been derived from extensive review of the relevant literature and the results of the investigation, with the target to contribute to a better understanding of the consequences of a new management orientation capable of leveraging knowledge advantages to the benefit of the firm. Overall, it is expected that the study will inspire SME managers to see their firms as knowledge-based. Such recognition is an important step towards a more general attention to the sources of knowledge, the processes of learning within and across the organization, and the growth options that become available to them.

The taste of the pudding, they say, lies in having it. Just as with the pudding, so with the knowledge management. The success of the knowledge management was taken as the preferred principal attribute dependent upon the awareness-perception and practice. It was seen that awareness-perception weighed more in determining the success of the knowledge management than practice of it. Further, the SMEs need to develop industry-wide code of conduct and ethics in order to institutionalise knowledge management practices in India.

