CHAPTER 3

READINESS ASSESSMENT FOR KNOWLEDGE MANAGEMENT SOLUTION IMPLEMENTATION

3.1 INTRODUCTION

In order for KM to deliver value to the organization it is essential for the organization to develop a number of pillars / dimensions. The KM strategy should ideally convert itself into actions in all areas. The primary target for KM will be creation, dissemination and exploitation. However, it has to be very strongly supported by all the enablers to realise the desired value. This is clearly depicted in the Figure 3.1 below:

![Figure 3.1 Value Chain of KM](image)

The strategy stage for KM will begin with a review of the organization’s goals and objectives for KM. Once the objectives are understood, it leads to the development of knowledge components, which describes what the organization needs to know to accomplish its goals. Next to the opportunity
and gap analysis, the state of readiness called knowledge maturity for any organization that can be achieved by systematically addressing and reviewing the critical three pillars of KM – people, process and technology (Krogh et al 2001; Nonaka et al 2002; Siemieniuch and Sinclair 2004). The aim is to reach a state where it gets entrenched in the business processes, by incessantly promoting the KM readiness. It is thus apparent that it is a path of continuous improvement and must be administrated by a strong readiness review approach, which has the ability to assess and benchmark the various aspects of people, process and technology in a holistic manner. Readers can refer Chen and Huang (2007) and Mrayyan et al (2008) to understand the organizational readiness. This review determines how well the organization is positioned to adopt KM. In order to develop a sense of direction, the readiness assessment outcome should give an indication on how organization needs to adapt when the KM initiative is rolled out. This research focuses on the development of readiness assessment framework and approach. The study has taken the case of the Indian textile machinery manufacturing industry and the readiness assessment framework and approach was developed for a typical organization and it is also generalised for engineering manufacturing industry.

3.2 RESEARCH GAP BASED ON LITERATURE

Cumulative evidence from past research in KM suggests that effective implementation of KM solution in any organization requires a readiness assessment of process, people and technology and its elements. The primary intention of readiness assessment is to devise and design the readiness assessment framework, approach and model for the implementation of KM solution. From the detailed literature survey the research gap is shown in Figure 3.2.
3.3. RESEARCH PROCESS AND METHODOLOGY

The readiness assessment framework, approach and model for the implementation of KM solution are developed through this study. The research process is divided into two phases:
Phase 1. Identification of KM Pillars for readiness and development of readiness framework with sub components of KM pillars towards the implementation of KM solution
The phase 1 includes two steps
Step 1 of Phase 1 – Identification of KM Pillars for readiness based on business and research literature
Step 2 of Phase 1 – Development of readiness framework with sub components of KM pillars for organizational readiness through semistructured interview and Delphi study
Phase 2. Sub-component impact for readiness
The phase 2 includes one step
Step 1 of Phase 2 - Identification of impact weightage of sub-components of three KM Pillars for organizational readiness of KM solution implementation through questionnaire based survey

This process is designed in such a way that any organization can use this as a base and they can develop organizational readiness framework based on the three pillars of KM and identify the impact of main and sub-components of KM pillars for organizational readiness in order to improve the readiness level of KM pillars in the organization for the implementation of KM solution.

The research methodology used in the research process is detailed here:
In the Step 1 of Phase 1, exploration of business and research literature is the methodology to identify the KM pillars. Organizations seek to develop a competitive advantage in market through reduction of lead time, reduction in cost and improved productivity. However, the market environment is dynamic and the issues of globalisation, rapid technology diffusion and dearth of quality human capital resources require an exemplar shift in the approach towards strategy management and development. In an economy where the
only certainty is uncertainty, the one certain resource of lasting competitive advantage is knowledge. KM seeks to improve an organization’s usefulness by leveraging the knowledge it has, to improve its core proficiency. When markets shift, technology flourishes, competitors proliferates, and products become superseded, successful organization are those that constantly create new knowledge, propagate it widely throughout the organization, and quickly exemplify it in new technologies and products. Success in such a highly dynamic environment requires that organizations are more receptive to their customers, more agile in the way they do business, and more focused on core competencies through the support of people, process and technology. From the business and research literature, it is evident that the three pillars along with its sub-components are solely responsible for the readiness of organization towards the implementation of KM (Figure 3.3). These three KM pillars can be used as a base for any manufacturing organization.

**Figure 3.3 Pillars of KM for Organizational Readiness**

In the Step 2 of Phase 1, a Delphi based semistructured interview with a structured questionnaire is the methodology. A generic questionnaire has been developed with list of questions. The questions are asked with all the employees in the organization. The sub-components of three KM pillars such as people, process and technology has been derived and categorised based on
semi-structured interview. For an improved clarity, categorizations of computable characteristic of the three above-mentioned pillars are arrived through a semi-structured interview conducted with 43 executives belong to 32 manufacturing organization. Based on the semi-structured interview and Delphi study, the sub-components of three $KM$ pillars towards the organizational readiness are identified at the end of 3rd round of Delphi study. The critical sub-components of $KM$ pillars are - People: skills, leadership, culture/structure and exploitation; Process: processes, measures, explicit knowledge and tacit knowledge; and technology: knowledge centers and infrastructure. The sample of semi-structured interview is shown in Table 3.1. Once the sub-components are derived based on the semi-structured interview and Delphi study, the readiness assessment framework should be developed by involving all the three $KM$ pillars and sub-components of $KM$ pillars. The readiness assessment framework with all the $KM$ pillars and sub-components of $KM$ pillars should be derived in this step and the derived framework based on 40 executives is depicted in Figure 3.4.

People: Skills, leadership, culture/structure and exploitation – these address the ‘mindset’ and relate to attributes of assessing community and civilisation. People element also includes customers.

Process: Processes, measures, explicit knowledge and tacit knowledge – these are the facilitators for people to strap up the knowledge in a standardised way across the organization.

Technology: Knowledge centers and infrastructure – these address the enablers and facilities which help people and process to bind the utmost out of the $KM$ initiative.

To deal with the needs for an organization’s $KM$ readiness, one needs to consider that it is time dependent and would be pretentious with any change in the basic subcomponents of the three critical pillars people, process and technology. Hence the subcomponents under each pillar must be viewed in
lieu with context of organization and a suitable set of subcomponents under each pillar would need to be defined for different organizations and also for different readiness levels. Any manufacturing organization can use this procedure to develop the readiness assessment framework. This generic readiness framework developed in this research can be used as a base for any manufacturing organization.

In the Step 1 of Phase 2, a weightage approach for the questions is used as a research methodology. Weightage should be provided to each question and based on the weightage of the question and also based on the number of participants / executives participated in the survey, the weightage proportion or percentage of sub-components of KM pillars for the organizational readiness needs to be identified. The survey involves ten questions that aimed at providing a quick check of where an organization comes along ten subcomponents under three critical success pillars. The scores are arrived by calculating the mean and standard deviation of all response weightage. The weightage of each sub-component is calculated as follows:

\[
\text{Weightage for each component} = \left( \frac{\text{Summation of the weightage of each component for all responses}}{\text{Summation of maximum scale of each component for all responses}} \right)
\]

The weightage proportion for all the sub-components of KM pillars are calculated based on the 40 executives and the benchmark values are detailed in Figure 3.5.
Table 3.1 Sample Template for Semi-Structure Interview and Delphi Study

<table>
<thead>
<tr>
<th>No.</th>
<th>Knowledge Components</th>
<th>Objective</th>
<th>Function / CSO</th>
<th>Gap</th>
<th>Reason for Gap</th>
<th>Solution for the Gaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cost of materials, man and machine</td>
<td>Functional</td>
<td>Finance &amp; Accounts</td>
<td>Currently no structured database (DB) is available that can provide such information</td>
<td>X X</td>
<td>Database Cost</td>
</tr>
<tr>
<td>2</td>
<td>Latest Industry Trends in Accounting &amp; Costing</td>
<td>Functional</td>
<td>Finance &amp; Accounts</td>
<td>Currently no structured database (DB) is available that can provide such information</td>
<td>X X</td>
<td>Industry Analysis</td>
</tr>
<tr>
<td>3</td>
<td>Machine Price data, Application details, Operations Data, Ratios</td>
<td>Functional</td>
<td>Finance &amp; Accounts</td>
<td>Data though available, is not captured or stored in a structured manner</td>
<td>X</td>
<td>Product database</td>
</tr>
<tr>
<td>4</td>
<td>Order to Cash process, Procure to Pay process</td>
<td>Functional</td>
<td>Finance &amp; Accounts</td>
<td>Processes not documented properly and not stored in a structured manner</td>
<td>X</td>
<td>Standard Operating Procedures (SOPs)</td>
</tr>
<tr>
<td>5</td>
<td>Finance Act(s), State Legislations</td>
<td>Functional</td>
<td>Finance &amp; Accounts</td>
<td>Not easily accessible</td>
<td>X</td>
<td>Document Library</td>
</tr>
<tr>
<td>6</td>
<td>Classification of Accounts - Capital &amp; Revenue, Income &amp; Expenditure, Taxation data (Central Excise, Sales Tax, Income Tax, TAX Reporter)</td>
<td>Functional</td>
<td>Finance &amp; Accounts</td>
<td>Data though available, is not captured or stored in a structured manner</td>
<td>X</td>
<td>Records Library</td>
</tr>
<tr>
<td>7</td>
<td>Management &amp; Technical Institutes</td>
<td>Functional</td>
<td>Finance &amp; Accounts</td>
<td>Key contacts not available</td>
<td>X</td>
<td>Database Institutes</td>
</tr>
<tr>
<td>8</td>
<td>Technical Newsletter / Business / Economy related Articles / Analysis / Surveys / Journals / Periodicals / Annual reports</td>
<td>Functional</td>
<td>Finance &amp; Accounts</td>
<td>Single point access to all resources not available</td>
<td>X X</td>
<td>Technical information center</td>
</tr>
</tbody>
</table>
Figure 3.4 Readiness Assessment Framework with KM Pillars and Sub-Components
Figure 3.5 Benchmark Values for Sub-components Based on Questionnaire Survey
The research design for readiness assessment is detailed in Figure 3.6.

**Research design organizational readiness for KM solution**

<table>
<thead>
<tr>
<th>Step 1: Pillar and readiness framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1.1: Identification of KM Pillars by Business and Research Literature</td>
</tr>
<tr>
<td>Phase 1.2 Development of organizational readiness framework with sub components of KM Pillars based on semistructured interview and Delphi analysis</td>
</tr>
<tr>
<td>Step 2: Sub-component impact for readiness</td>
</tr>
<tr>
<td>Phase 2.1 Identification of impact weightage of sub-components of three KM Pillars for organizational readiness of KM by questionnaire based survey</td>
</tr>
</tbody>
</table>

**Figure 3.6 Research Design**

### 3.4. CASE STUDY DEMONSTRATION

The entire research process and methodology is demonstrated and applied through a real-life case study for Indian textile machinery manufacturing company. The Indian textile industry is the second largest in the world. Indian textiles also account for 38% of the country’s total exports of nearly $45 billion and are therefore, a very important industry. The textile industry is the single largest foreign exchange earner for India. Currently, it
accounts for about 8 % of Gross Domestic Product (GDP), 20 % of the industrial production and over 30 % of export earnings of India. It generates employment opportunities for approximately 38 million workers directly, and 54.85 million workers indirectly (60 % of them are women) and it is the second largest employment providing sector after agriculture.

Cotton remains the most significant raw material and India is the second largest producer of the fiber in the world. Other fibers used are silk, jute, wool, and man-made fibers. Currently India has the second highest spindleage in the world after China. India's contribution in world production of cotton textiles was about 15%. There are approximately 1200 medium to large scale textile mills in India. India has 34 million cotton textile spindles for manufacturing cotton yarn. Approximately 120 companies manufacture the complete range of textile machinery. India has 3 % share in the export production of clothing. State of Gujarat and TamilNadu, the two largest textile manufacturing states of India. USA is known to be the largest purchaser of Indian textiles. Also India has a marked presence in United Arab Emirates (UAE), Saudi Arabia, Canada, Bangladesh, China, Turkey and Japan.

Textile machinery is used in the fabrication and processing of fabrics, textiles, and other woven and non-woven materials. The major product segments under the head ‘Textile machinery’ include textile processing machinery and textile working machinery. The further classification of these two segments may be done as fiber-fabric machinery (cleaning and opening machinery, carding and combing machinery, drawing and rowing frames, spinning and twisting frames, yarn winding machines, yarn preparing machines, and other fiber-to-fabric machines), fabric machinery (weaving machinery, knitting machinery, and other fabric machinery) and other textile machinery (bleaching, mercerizing and dyeing machinery, textile printing
machinery, textile finishing machinery, and other complete textile machinery),
and textile machinery parts and accessories.

The case organization established in 1962, is currently one of the
three global companies to manufacture the entire range of textile machinery
and is the topmost manufacturer of textile machinery in India. The case
organization has a market share of around 60% in the spinning machinery
textile industry in India and located in South India, the state of TamilNadu.
The case organization was the first Indian company to introduce the automatic
bale plucking machine which surpassed any other bale plucking machine in
the world. There are at least 20 domestic companies offering textile machinery
in India and the major suppliers other than the case organization are located in
northern regions. Approximately USD80 million in Indian textile machinery is
exported to other developing countries. World production of manufactured
textile fiber is projected to rise over 62 million metric tons in 2012. Overall
growth rise is because of demand for textile fibers used in upholstery,
household furnishings and apparel and floor coverings. The recent
development is also in the field of medical textiles, geotextiles, agrotextiles
and protective textiles. This case organization decided to implement the \textit{KM}
solution to improve the productivity and to enhance the position of
organization. The case organization is traditional and the readiness for any
new change is a great challenge. So, there is a need to understand the readiness
of the organization towards the initiative of implementation of \textit{KM} solution.
The readiness assessment model is devised for this case organization.

For the implementation of \textit{KM} solution in the case study
organization, we have considered three \textit{KM} pillars as stated earlier. The \textit{KM}
pillars for this organization were identified based on business and research
literature. The sub-components of \textit{KM} pillars are identified and the readiness
assessment framework is developed based on semistructured interview and
Delphi study. The weightage for the sub-components of KM pillars are identified based on questionnaire survey. The respondents include various hierarchical positions of employees like members of the management committee / board of organization, few strategic top level executives, few tactical and operational employees. Thus 216 executives of this textile machinery manufacturing organization were interviewed for the study. The details of each phase of research process and methodology are explained for the case study.

Step 1 of Phase 1:
The same KM pillars such as people, process and technology are leveraged for this case study based on business and research literature.

Step 2 of Phase 1:
The sub-components are identified based on semistructured interview and Delphi analysis. There are total 216 executives participated in this Delphi study. We conducted 3 rounds to finalize the outcome of the sub-components. All the 3 rounds were conducted in a big auditorium covering the entire day. All these 216 include key members from bottom to top level of organization. 216 are considered as a sample size out of 700 employees in the organization. The sampling is done on a random basis. The questions are rated and based on the outcome of 3rd round, the same sub-components indicated in Section 3.3 are identified. The readiness assessment framework for the case study is indicated in Figure 3.7

Step 1 of Phase 2:
The impact weightage of the sub-components are identified based on questionnaire survey and impact weightage is detailed in Figure 3.8.
Figure 3.7 Readiness Assessment Framework for the Case Study
Figure 3.8 Weightage for the Case Study
The ranks are converted to relative percentage by dividing each rank, by the total of all ranks for the group of measures / characteristic. This approach is similar to the method used in Pareto analysis wherein problem frequencies are converted to percentages to show relative performance. The percentages better highlight differences in the importance of the characteristic. The assessment outcome is purely based on individual perception of how knowledge is being managed in their respective areas and should be used for planning and implementing KM at an organization. This assessment is also only an indication of where organization stands as of today in terms of the critical pillars that contribute to the KM. The comparison of case study values against the benchmark values is depicted in Figure 3.9.
Figure 3.9 Comparison of Case Study and Bench Mark Values
3.5 MANAGERIAL IMPLICATIONS

The outcome of the readiness assessment for textile machinery manufacturing organization is:

- Organization has a compelling knowledge vision and strategy, actively promoted by the top management that clearly articulates how KM contributes to achieving organizational objectives. This is highly evident from the fact that the assessment outcome shows around 50-60% for leadership.

- Another aspect that is highlighted in the assessment outcome is that the organization has a fairly good technological infrastructure to support an initiative like KM. Even in the existing scenario, important information can be found/ shared on the intranet.

- Organization also portrays a fairly good level of exploitation of knowledge. It is being seen that knowledge and experiences are converted into projects or initiatives that help the organization's growth.

- The primary obstacle to KM in the organization comes from explicit knowledge and tacit knowledge. These are pretty low in the organization and thus shows that the organization does not maintain any knowledge inventory and also that there is no clear ownership of knowledge entities that is readily accessible across the organization. Further, though the organization has a rich pool of domain experts with key knowledge, there is no mechanism in place to codify, capture and use this for the organization.

- One aspect that would need concentration on is the knowledge centers to coordinate knowledge repositories and act as focal point for provision of information to support key decision making and business functions. It is expected that the proposed KM-Cell will address this aspect.
• In a nutshell, compared to the other subcomponents, availability of knowledge (explicit and tacit) is a weak area that needs to be addressed immediately. KM initiatives thus need to prioritize in developing these areas first and subsequently move to other subcomponents. Further, areas like leadership and technology are comparatively better, organization thus needs to leverage on these aspects to maximise the momentum for KM.
• Some of the other aspects that needs attention from the KM initiative at the organization would be:
  a) measurement and management of intellectual capital in a systematic way, and publish regular reports to stakeholders
  b) development systematic process for gathering, organizing, exploiting and protecting key knowledge assets
  c) creation of culture of knowledge sharing across departmental boundaries
  d) Identification and assignment of specific knowledge roles, and ensure that all senior managers and professionals are trained in KM techniques.
• Over all there is a positive attitude towards the KM initiative across the organization with a lot of expectations. The same kind of enthusiasm needs to be sustained by ensuring that the expectation is met to the maximum possible extent from the implementation of KM.

3.6 CONCLUSIONS

KM is all about the ability of organizations to leverage the intellectual assets quickly and accurately. To achieve successful KM, a readiness assessment approach is vital to investigate an organization’s knowledge ‘health’. The readiness assessment approach provides an evidence based assessment of where the organization needs to focus before the implementation of KM effort. It can reveal the organization’s needs, strengths,
weaknesses, opportunities, threats and risks towards the implementation of KM. As many methodologies of readiness assessment approach suggested in most of the previous research were very general and aimed at company-wide uses, it may not be appropriate for companies as a generic format. In this research, a systematic readiness assessment approach is proposed. The readiness assessment approach will address the organization's KM awareness level, analyse its knowledge support processes, its structures and roles, and identify the key business areas that serve as the targets for the KM initiatives. The readiness assessment approach helps the organization to develop KM strategies that linked to its business strategies. The organization will be able to set the criteria for choosing the appropriate knowledge that it planned to pursue and formulate plans to capture and share it. Also the organization will be able to plan effectively for future KM activities. It successfully develop a detailed KM project plan towards the organization readiness to reserve appropriate resources and manpower for project implementation and monitor the progress of various KM activities. KM is still in its infancy in India. Very few companies have appointed dedicated personnel to take responsibility of KM. In most firms KM has been tagged on to somebody’s existing responsibilities, often resulting in a step-motherly treatment. But this situation cannot last given the increasing competitive business environment in India. KM is no longer a luxury for Indian companies. It is a necessity that can make all the difference between survival and an early demise.