CHAPTER-6
SUMMARY AND CONCLUSIONS

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6.6. Conclusions
6.1. Identification of results of the study and analysis of performance of BSP w.r.t. KM:

6.1.1. Knowledge Management at BSP:

As has always been the case of BSP, whatever jobs it undertakes, it takes them very seriously and ensures that success is derived. The examples are numerous, whether it is pertaining to production challenges or quality assurance or safety or corporate social responsibility or implementation of state of the art technologies or new management tools like quality circles, suggestion schemes, benchmarking, six sigma, ERP and so on. So is the case with implementation of Knowledge management practices in the organization.

BSP embarked upon the implementation of KM in all earnestness in the year of the turn of the century, gradually built up teams, identified experts who facilitated creation of knowledge teams and task forces, knowledge workers, imparted the knowledge of basic theory behind the KM, organized creation of domains, sub-domains, earmarking the responsibilities and initiatives required to be undertaken by team leaders. They created various communities of practice with CoP champions and CoP coordinators so that all main units of the plant are covered. BSP intranet was created where people can post their knowledge pieces.

6.1.2. Inferences from the observed data:

From the data collected and placed in the Chapter-4 in the form of tables, annexures and lists and observing the same closely, following inferences can be drawn:

- **BSP is a continuously profit earning unit making enormous profits from 2001 onwards.** (Table-4.3.) giving an indication of its capability and expertise.
- It has followed systematic and phase-wise investments so that interest and depreciation burden does not affect profits beyond control or limit, as happened with other sister steel plants like Durgapur Steel Plant for instance. (Table-4.4.)
- **BSP has been breaking all the production records and improving techno-economic parameters consistently over the years and got several awards in all**
fields of activities, prominent being Prime Minister's Trophy seven times.

- At BSP, though the man-power has drastically reduced over the years from about 54,000 to about 34,000, the effect of the same is not visible on the performance parameters. (Tables-4.5. to 4.7.).
- Major techno-economic parameters on all fronts like general plant performance, steel melt units and rolling mills, show a continual improvement surpassing best figures year by year, every year. (Tables-4.8. to 4.10.). This indicates the innate strength of BSP in its systems, practices, policies and the frame work in which it executes its responsibilities.
- BSP's visionary capacity can be judged by the way it has chalked out its future road map for expansion, indicating its readiness to take the advantage of congenial market conditions. (4.2.5.).
- Copy book follow up of KM implementation could be observed through examination of the data from points 4.3.1. & 4.3.2., tables 4.11. & 4.12., annexures-4.2. to 4.7. This draws us to infer that BSP has the necessary sound infrastructure for successful KM implementation.

6.2. Interpretation of Results through simple analysis using weighted percentages:

The present research study was made through obtaining responses to a variety of questionnaire, all depicting to various facets of KM implementation and sustained practice. About 90 questions were asked to be answered dividing them into two different sets. Some were overlapping also in nature. The basic idea behind this was to ascertain how much people were aware of KM and how much they realize its importance, its benefits to the company.

While in the Chapter-5 itself, a detailed mention has been made about the analysis, inference and interpretation of answers to the questions, the overall picture is represented here again in a summarized manner in the following paragraphs:

Main findings are:

- People at BSP are aware of the advantages of KM implementation
SUMMARY AND CONCLUSION

- People at BSP understand the basic tenets of KM.
- They know what has to be learned what has to be un-learned and the timings of these learnings and un-learnings.

The weighted score of more than 60% for almost all the questions in the second set, numbering about sixty indicate the excellent general awareness of entire BSP collective on the subject of KM and the agenda for action requiring special attention is limited to few areas of questions that comparatively scored less weighted %s as compared to the other questions. Notable among them are question numbers 2, 3, 8, 33, 35, 42, 43, 45, 48 & 59.

The above mentioned questions with weighted %s are represented in the following Table6.1;

**Table-6.1:**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Question No.</th>
<th>Question Description</th>
<th>Weighted Score %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>People routinely share their expertise and document as well.</td>
<td>62</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>There are systematic processes to share knowledge.</td>
<td>63</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>Communities of specialists are easily accessible to those who seek information.</td>
<td>62</td>
</tr>
<tr>
<td>4</td>
<td>33</td>
<td>People in BSP do not believe that sharing their knowledge reduces their value in the</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>organization.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>35</td>
<td>Knowledge sharing behaviour is reflected in performance appraisal system.</td>
<td>60</td>
</tr>
<tr>
<td>6</td>
<td>42</td>
<td>BSP has methods to measure and it measures Knowledge Management Processes and their</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>results.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>43</td>
<td>KM activities have links to measurable results.</td>
<td>62</td>
</tr>
<tr>
<td>8</td>
<td>45</td>
<td>External and internal documents are issued indicating how well BSP manages knowledge.</td>
<td>62</td>
</tr>
<tr>
<td>9</td>
<td>48</td>
<td>Qualitative and quantitative metrics to gauge effectiveness of KM processes and results</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td></td>
<td>are established at BSP.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>59</td>
<td>Promotion policies are reviewed with a view to ensure knowledge retention.</td>
<td>57</td>
</tr>
</tbody>
</table>
The statements mentioned in the above ten questions, having obtained comparatively lower weighted response score percentages as compared to other questions, need to be addressed suitably by the top management so that the continued interest and alignment towards KM remains in the minds of the people.

While the study revealed broadly the competence alignment and interest in KM, a look at the actual performance statistics shows a little amount of complacency creeping into the minds of people. For example, take the instance of decline in the number of knowledge pieces being posted by the people every month. It has really dwindled from a peak of over 1600 in the month of August 2005 to just 4 in August 2007. However, contrary to the apprehension, there seems to be a qualitative improvement and awareness as the K-pieces submitted subsequently, though less in number, have caught the attention of sister plants like DSP, RSP etc. (Ref. April 9th 2008, news item in the English newspaper “The Hitavada” published from Raipur.)

In any case, the management and the core group in-charges responsible for KM implementation need to take initiative to rejuvenate the interest by way of what they did in mid 2005, namely organizing seminars, conducting quizzes and competitions, offering attractive incentives and prizes, and creating a path for recognitions at national and international levels as well, as has been the practice at Tatasteel.

6.3. Interpretation of Results based on Statistical Analysis using EXCEL and SPSS-16.0:

The first set of questionnaire, numbering 27, was designed to test the awareness of BSP employees about Knowledge Management. Based on secondary data, it was hypothesized that there would be differences in the awareness among the three groups of employees, namely, non-executives, executives and senior executives. To test the differences between these groups, it was decided to use two-way ANOVA technique to reveal any significant differences between the three groups. Two-way ANOVA technique would reveal the difference between the three groups when the differences across columns are considered, which are responses from Non-Executives, Executives and Senior Executives. The results of the 2-way ANOVA technique that are summarized in Table 2 in chapter-5 indicate that the differences in responses are not
significant across non-executives, executives and senior executives. In other words, the level of awareness about KM is equally good across the three groups. This implied that there is no need to differentiate between these 3 groups of employees during further analysis, especially for the second set of questions.

From the second set of questions, about seventeen questions were taken for conducting factor analysis and five constructs were obtained. As can be seen from the Table 3, of chapter-5, these 17 questions that are clearly loaded on individual factors with loading greater than 0.400.

Questions, V1, V2, V6, V7 and V8 were loaded together. These questions attempt to measure the information exchange that takes place amongst BSP employees (Factor-1).

Questions V24, V25 and V26 were loaded together on Construct 2. These questions attempt to measure the employees' ability / desire to learn from failures.

Questions V52, V53, V54 and V56 were loaded together on Construct 3. These questions attempt to measure the IT support provided by the organization for practicing KM.

Questions V4 and V5 were loaded together on Construct 4. These questions attempt to measure the information availability in KM platform.

Questions V3, V34 and V35 were loaded together on Construct 5. These questions attempt to measure the support provided by the organization for practicing knowledge management.

The above five factors were tested for their reliability using reliability analysis tool in SPSS 16.0. The results of the analysis show that CRONBACH’S ALPHA is 0.757, 0.712, 0.676, 0.623 and 0.619 respectively for the five factors. (Shown in Table 5. of chapter-5 also).

Further, analysis was done by attempting to relate the identified factors to indicators of success of KM. Basically two indicators of KM success were analyzed in set 1, namely,

- Value of KM to employees and
- Time spent by employees on KM.
Naturally, if KM is successful in an organization, it should be reflected by increase in time spent by employees on KM and their valuing of KM. And through the success of KM company is expected to derive its pride place in the industrial fraternity.

To conduct the analysis Multiple Regression Technique was used.

Firstly, relating the identified factors with the Value of KM to employees was tried:

The results of regression analysis indicate that information exchange and information availability are two important factors that influence value of KM to employees. It is natural that if the information exchange (t-value=7.21, p-value=0.00) and information availability (t-value=4.07, p-value=0.00) is greater, it would promote the value of KM among the employees. The coefficient of determination is 0.172, which means that the model explains 17.2% of variation in value of KM to employees.

Secondly, relating the identified factors with the Time spent by the employees on KM was tried:

The results of regression analysis show that value (t-value=5.803, p-value=0.00), learning from failures (t-value=2.478, p-value=0.014) and support provided by the organization (t-value=4.170, p-value=0.00) are important factors that influence time spent on KM by employees. However, the influence of information availability is negative (t-value=-3.006, p-value=0.003), which means with the information readily available and in an organized way, people do not have to start from the first principle or waste much time in searching. The coefficient of determination is 0.15, which means that the model explains 15.0% of variation in time spent on KM by employees.

Thus, regarding value of KM to employees, it was found that information exchange among employees and information availability were the two important factors that explain 17.2% of variation in Value. Information exchange and information availability are two most basic features of any KM platform and hence it is clear that they would have significant influence on value to employees of BSP. However, on the contrary, it was found that learning from failures, organizational support and IT support did not significantly influence value of KM to employees. Rather, organizational support and learning from failures had direct influence on time spent by employees on KM. Although BSP employees may be valuing KM for its
usefulness, however, it was found that for usage support from organization, and employee's ability to learn from failures had significant influence on their time spent. Information exchange and information availability had indirect influence on time spent by employees on KM through value. Information availability, as such, also had negative influence on time spent. This implies that greater the information availability, the less would be the time spent by employees on KM. It is possible when with greater availability of information, search needs of employees reduces thus reducing their effective time spent on KM.

6.4. Hypotheses Results:

Based on the results of application of the statistical tools, the following are the hypotheses results at Table 6.2:

Criteria for acceptance: t-value has to be >1.96 and p-value has to be <0.05

Table 6.2

<table>
<thead>
<tr>
<th>No.</th>
<th>Hypothesis</th>
<th>t-value</th>
<th>p-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Employee related factors: Information Exchange among Employees is positively related to Value of KM to Employee.</td>
<td>7.21</td>
<td>0.00</td>
<td>Accepted</td>
</tr>
<tr>
<td>2</td>
<td>Learning from failures in organization is positively related to Value of KM to Employee.</td>
<td>0.33</td>
<td>0.75</td>
<td>Rejected</td>
</tr>
<tr>
<td>3</td>
<td>Information Exchange among Employees is positively related to Time spent on KM by Employee.</td>
<td>1.380</td>
<td>0.168</td>
<td>Rejected</td>
</tr>
<tr>
<td>4</td>
<td>Learning from failures in organization is positively related to Time spent on KM by Employee.</td>
<td>2.478</td>
<td>0.014</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>Organization related factors: Information Availability in</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.07</td>
<td>0.00</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>Hypothesis</td>
<td>Coefficient</td>
<td>p-value</td>
<td>Status</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------------</td>
<td>-------------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>2</td>
<td>Information Availability in organization is positively related to Time spent on KM by Employee.</td>
<td>-3.006</td>
<td>0.003</td>
<td>Accepted</td>
</tr>
<tr>
<td>3</td>
<td>Organization Support and encouragement is positively related to Value of KM to Employee.</td>
<td>1.88</td>
<td>0.06</td>
<td>Rejected</td>
</tr>
<tr>
<td>4</td>
<td>Organization Support and encouragement is positively related to Time spent on KM by Employee.</td>
<td>4.17</td>
<td>0.00</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

**System related factors:**

<table>
<thead>
<tr>
<th></th>
<th>Hypothesis</th>
<th>Coefficient</th>
<th>p-value</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IT and System Support in organization is positively related to Value of KM to Employee.</td>
<td>0.09</td>
<td>0.93</td>
<td>Rejected</td>
</tr>
<tr>
<td>2</td>
<td>IT and System Support in organization is positively related to Time Spent on KM.</td>
<td>0.113</td>
<td>0.910</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td>The Value of KM is positively related to the Time spent.</td>
<td>5.803</td>
<td>0.00</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

Going by the above analysis, it can be concluded that BSP can lay more emphasis on the factors where the hypotheses got accepted, as they can enhance contribution to the success of KM. The study reveals that the other factors do not have any significant relationship and hence it is considered that those factors may not be able to contribute much towards KM.

6.5. Summary, Findings and Conclusions:

As can be seen in the earlier described paragraphs in this chapter as well as in the previous chapters, BSP collective is well aware of KM and the values accrued to the company by its implementation.
SUMMARY AND CONCLUSION

Findings:

1. From the general observations and inferences, it is seen that BSP has a unique position in all fields of activities including successful implementation of KM Practices.

2. From the analysis of 1st set of questions, it is seen that there is an excellent, equal and common awareness about KM in all groups of BSP collective.

3. From the analysis of 2nd set of questions, following factors are identified that can enhance contribution to the success of KM:
   - Information Exchange among Employees is positively related to Value of KM to Employee.
   - Learning from failures in organization is positively related to Time spent on KM by Employee.
   - Information Availability in organization is positively related to Value of KM to Employee.
   - Organization Support and encouragement is positively related to Time spent on KM by Employee.
   - The Value of KM is positively related to the Time spent.

In addition, from the general observation, it is also seen that BSP collective needs additional attention in the following areas as well to reap the benefits of KM implementation:

   - Sustained interest and monitoring at all levels including from top management as well.
   - Regular reviews.
   - Sustained encouragement.
   - There has to be proper recognition for the persons doing good work in the field of KM.
   - Recognition of such people or groups by way of awards will go a long way.
   - Suitable and better way of recognition to the contributors of good knowledge pieces is needed, which should be different to what is done with suggestion schemes, quality circles and other such schemes.
SUMMARY AND CONCLUSION

- Task force also needs motivation such that they feel proud to implement KM in the plant and are made aware of the value of their contribution to the company through their efforts to cover the entire BSP collective in KM practices.
- Formation of dedicated task force or department exclusively for KM can be one of the steps to stem the waning of interest. At TISCO, a separate department was formed with a staff that exclusively not only monitors KM implementation but also facilitates promotion of the same. They hold the total responsibility for everything connected with the subject. (TISCO website accessed through internet, January 2008).
- Integration of KM into the daily routine activities such as production, maintenance, quality assurance can be monitored by this exclusive department or group. Just as through suitable incentive bonus schemes, encouragement is given to all the BSP collective to excel in productions, quality etc., similar efforts can be implemented in KM field as well.
- Benefits accruing to the company out of posted knowledge pieces should be tried to be quantified, well publicized and a suitable way sharing the same with the collective should also be devised.
- In such a large organization as BSP, where, compared to the % of knowledge work force, the labour intensive work force is huge, the intensity of KM implementation as such gets very much retarded and hence sustained efforts are all the more very essential.
- Even then, as many departments have knowledge work-force, their sustained interest and active participation can benefit both KM and the plant as a whole.

6.6. Conclusions:

Through the study, it is found that the awareness of the BSP collective about KM is at excellent level and the sample that involved three levels of the employees indicate that there is no significant difference between the levels in understanding and implications of the topic, that is, Knowledge Management.
The study has revealed five major areas that positively contribute to the success of KM implementation. From the hypotheses testing we get these areas where BSP can turn the tables by paying more attention so that ultimately through enhanced success of KM, the collective can carve a niche for itself in the steel industry fraternity.

For other sister plants of SAIL to emulate BSP, the results obtained through this study would go a long way and bring their performance levels also at par with BSP.