CHAPTER - 3

RESEARCH METHODOLOGY AND HYPOTHESIS

3.1 Outline of the research:

The study comprises of four phases.

1) Observation: of knowledge sharing culture in academic institutes since research demands accurate observation and description. The main question at this stage was whether collaborative knowledge sharing takes place in academic institutes?

2) Field Research: The second phase of research is field research which consisted of two parts.

   i) The first part is to assess collaborative knowledge sharing culture in academic institutes. This part of the research gave answers to questions such as: How is work culture correlated to knowledge sharing? What is the response for on-line discussion forums? How does work culture facilitate knowledge sharing? What is the role of IT in collaborative knowledge sharing?

   ii) The second part is to define a collaborative knowledge sharing strategy. The final stage of this research was implemented recommendation to enhance organizational learning in an academic institute based on field research, desk research and the research questions.

3) Desk Research: The field research has been synchronized with the desk research to find information regarding knowledge sharing and organizational learning. The focus is to enhance organizational learning through collaborative knowledge sharing.
4) Implemented recommendation: The reason for doing research is mainly to find the evidence to inform practices which enhance organizational learning in an academic institute. The final stage of this research was implemented recommendation to enhance organizational learning in an academic institute based on field research, desk research and the research questions. Formation of Community Of Practice namely IT Forum for knowledge sharing and development is an implemented recommendation of the research.

3.2 Type Of Research:
Type of research: Descriptive and empirical research.

The research is descriptive and empirical in nature because the primary data was collected using the survey method through fact finding techniques such as questionnaire and interview. The main purpose of this research is to obtain information concerning the current status of the phenomena to describe "what exists" with respect to variables or conditions in a situation. Descriptive research involves hypothesis formulation and testing. The empirical research relies on experience or observation alone, often without due record for system and theory.

3.3 The Research Process:
The research process represents the sequence of activities undertaken in any research project. Figure 3.1 gives an overview of the research process and it's components: Problem definition, questionnaire design and development, data collection, data analysis and interpretation, presentation of findings and implemented recommendation. At the end of the research process the outcome is reached.
Problem statement

Knowledge sharing is widely acknowledged as indispensable for the socio-economic growth in the light of rapid advancements in information technology across the world. Many current day applications of knowledge sharing are happening on the corporate sector. So, it is necessary to assess and enhance knowledge sharing culture in academic institutions which are non corporate structures and instrumental in achievement of objectives of socio-economic development of any nation. It is observed that in the academic institutions, knowledge sharing does not take place. Therefore the researcher defined the following problem statement: Effective knowledge sharing does not take place in academic institutes. So, it is necessary to assess the existing culture pertaining to knowledge sharing and develop collaborative knowledge sharing strategy to enhance organizational learning in the academic institutions. Hence the main problem is to assess and suggest the ways and means to enhance collaborative knowledge sharing culture in academic institutions. Therefore with this problem statement in mind the researcher, decided to formulate the following objectives.
Objectives of Research:
Objective-1: To identify and study the various performance indicators of 
collaborative knowledge sharing culture in an academic 
organization.

Explanation: There are various indicators which assess the collaborative 
knowledge sharing culture like work culture, employee motivation, information technology, recognition, high trust, 
support from top management, group dynamics, Interaction, job 
satisfaction and willingness to share knowledge in an academic 
institution. The researcher has selected the following five key 
performance indicators on the basis of pilot survey results and 
expert opinions.

a. Work Culture: Indicates whether the academic organization 
encourages effective Knowledge Sharing.
b. Interaction: Indicates whether the faculty interacts at various 
levels.
c. Willingness to share knowledge: Indicates whether the 
faculty is willing to share knowledge in an academic 
organization.
d. Recognition: Indicates whether the effective Knowledge 
Sharing is recognized and rewarded in an academic 
organization.
e. Information Technology (IT): Whether the academic 
organization uses IT tools towards Collaborative Knowledge 
Sharing.

Objective 2 - To analyze how useful and to what extent the Faculty 
Development Programs (FDP’S) are helping the faculty.

Explanation: The FDP’s are conducted for development of faculty members. 
Such faculty development programmes are being conducted at 
institute level; inter institute level, state level and national level.
Unless and until the culture of enhancing of knowledge on the part of faculty member is inculcated, further sharing with colleagues and students is not possible. So the objective to analyze how useful and to what extent the FDP’s are helping the faculty is formulated.

Objective 3- Pilot Deployment of Collaborative Knowledge sharing strategy through formation of an online IT forum for Knowledge Sharing and Development and studying its impact.

Explanation: During a syllabus revision meeting under faculty of Management of University Of Pune, the Dean invited the concerned faculty members teaching various subjects in different MCA institutes for revising the syllabus of the course. During this meeting, a need was expressed by faculty members to have a professional forum for development of IT teachers keeping in view that enhancing quality of syllabus by introducing contemporary or latest subjects is not the only solution to maintain the quality of education. However enhancing knowledge especially on the part of IT faculty is inevitable. As a result, the researcher with the support of the Dean, Faculty of Management initiated the formation of IT forum for knowledge sharing and development on 18th February 2008. The objective will help to study the impact of the pilot deployment of collaborative knowledge sharing strategy through formation of online forum for knowledge sharing and development.

Objective 4: To propose collaborative knowledge sharing strategy to enhance organizational learning with specific reference to IT education under Management faculty of University Of Pune.

Explanation: There could be various strategies to enhance organizational learning in non corporate structures like academic institutions. This objective will help to explore the key practices of
collaborative knowledge sharing to enhance organizational learning in academic institutes.

3.4 Questionnaire design and development:
A questionnaire is a pre-defined set of questions assembled in predetermined order. The five steps in the design and development of questionnaire are as follows:
Investigation phase
Formulation of questionnaire
Pilot survey
Development of final questionnaire
Determination of sample size/sampling

Investigation Phase:
In the process of collecting information, the Directors of Management institutes offering IT education at post graduation level under University Of Pune and experts in knowledge management were approached either through questionnaire or one to one discussion for getting their views on the issues of collaborative knowledge sharing. The discussions lead to the identification of performance indicators and defining strategy for collaborative knowledge sharing for academic institutes.

Formulation of questionnaire
There are two parts of the questionnaire.
i) **Part A:** This questionnaire focuses on the specific assessment of performance indicators of collaborative knowledge sharing in an academic organization by measuring their effectiveness.

Performance indicators of collaborative knowledge sharing:
a. **Work Culture:** Indicates whether the academic organization encourages effective Knowledge Sharing. (4 Questions)
b. **Interaction:** Indicates whether the faculty interacts at various levels. (4 Questions)
c. Willingness to share knowledge: Indicates whether the faculty is willing to share knowledge in an academic organization.(4 Questions)
d. Recognition: Indicates whether the effective Knowledge Sharing is recognized and rewarded in an academic organization.(4 Questions)
e. Information Technology (IT): Whether the academic organization uses IT tools towards Collaborative Knowledge Sharing.(4 Questions)

ii) Part B:
Part B is divided into three sections which focus on practices for collaborative knowledge sharing to enhance organizational learning.

I. Faculty Development Program: where faculty development programs promote knowledge sharing and improve quality of teaching (2 questions)

II. Communities Of Practice: whether communities of practice(informal or formal groups of people with similar and responsibilities and / or interests facilitate collaborative knowledge of sharing (9 questions)

III. Industry Institute interaction: Whether both the educational institutions and the IT Industry can mutually benefit through closer cooperation and collaboration. (6 questions)

Scaling method: The Scaling method used in the design of questionnaire is Likert five-point scale. This method helps to measure attitude towards a concept or idea. It allows the respondent to agree, disagree or indicate the degree of agreement.

Pilot Survey:
During the pilot survey, the feedback from the following questions helped the researcher to modify and design initial questionnaire and design the new questionnaire towards achieving the objectives.
How well people understood the questions?
Whether people have difficulties in answering certain questions?
Whether people find some questions ambiguous or vague?
Whether people can follow the instructions to answer the different types of questions?
How long it takes people to complete it- is this the reasonable time?

**Development of complete questionnaire:**
Once the questions have been tested, they were integrated into a clear straightforward questionnaire that provided clear instructions on how it should be completed.

**Sampling:**
The population of the study are faculty members of 25 institutes which were established before the academic year 2007 and offering MCA and MCM which are post graduate IT courses under Faculty of Management. The survey was conducted in the academic institutes which come under the jurisdiction of University of Pune covering the geographic areas of Pune, Nashik, Ahmednagar and Baramati.

The number of academic institutes covered under each geographic area is represented in Table 3.1.

<table>
<thead>
<tr>
<th>Geographical Area</th>
<th>Number of institutes</th>
</tr>
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<tbody>
<tr>
<td>Pune</td>
<td>18</td>
</tr>
<tr>
<td>Nashik</td>
<td>4</td>
</tr>
<tr>
<td>Ahmednagar</td>
<td>2</td>
</tr>
<tr>
<td>Baramati</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>25</strong></td>
</tr>
</tbody>
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**Table 3.1: Number of institutes under each geographical area**

**3.5 Data Collection:**
The researcher has collected the data using the survey method. This survey helped the researcher in following ways:
The study yielded a great deal of rich information about such things as organizational needs, problems, employee perceptions and attitudes.

The survey method provided a wide and inclusive coverage of people or events, so that the results are likely to be representative of the wider population. The generalized conclusions can be drawn.

Data is more accurate, since most respondents are frank and honest when they are anonymous.

Most information received from questionnaires lead to effective quantitative analysis.

Respondents may take time in thinking about the appropriate response.

Faculty members won't face time pressures as the questionnaire is initially given to them and later collected according to their convenience.

Management tends to be receptive to the questionnaire approach

Since the study comprises of assessment of collaborative knowledge sharing culture in an academic institute, it is required that the management of the academic institutes need to be receptive.

The researcher has used the combination of primary data and secondary data in order to collect the data and test the hypothesis and draw relevant conclusions.

**Primary data:**
The researcher approached the faculty members and Directors of institutes offering Master Of Computer Applications (MCA) and Master Of Computer Management (MCM) courses under management faculty of University Of Pune either through questionnaire or one to one discussion for getting their expert views on the issues of collaborative knowledge sharing. There were 25
IT institutes under University Of Pune which were established before the academic year 2007 with the student intake of 1500 and there are 250 faculty members. The data was directly collected from 201 respondents of 25 institutes from Pune, Nashik, Ahmednagar and Baramati. The data was then codified by assigning unique numerical values to the variables and entered in the SPSS for Windows version 13.0 for qualitative data analysis.

**Secondary data**

The literature review in the chosen area of study was done from various reference books, journal and news papers, articles and research publications, internet and Industry resources.

Research typically calls for early exploration to learn if the past can contribute to the present study. Information from secondary sources helped to decide what further research needs to be done and formed a source of hypothesis.

### 3.6 Hypothesis:

**H1. Willingness to share knowledge is highly dependent on work culture**

The essential key elements of knowledge sharing are climate of trust and openness in the work environment where continuous learning and experimentation are well supported. It is often seen that heavy workload leads to poor knowledge sharing amongst the faculty members in an academic institute. So, the faculty members need to be highly motivated to learn and have the opportunity for sharing at the work place. The learning process in an academic institution is always exponential, if the work environment is open to new ideas and creativity. So, the researcher formulated the hypothesis to study the correlation between the willingness to share knowledge in the academic institutes and the work culture.

**H2. Online discussion forums are receiving lowest participation rate.**

Number of studies from various countries conducted in the last few years found that the same phenomenon that discussion forum feature in a web
portal received the lowest participative rate. The researcher has coordinated a paper presentation contest online through e-mail for faculty members teaching MCA course under University Of Pune in the year 2006 and found that online participation rate was lowest. The researcher felt that the faculty members were reluctant to exploit the IT tools for knowledge sharing in academic institutes in spite of having access to the latest and best forms of IT infrastructure. Hence this hypothesis was important in the light of the study towards the specific assessment of performance indicators of collaborative knowledge sharing in an academic organization.

H3. Effective work culture facilitates knowledge sharing amongst the faculty through regular interactions by means of review meetings and workshops.

Effective work culture creates a context for social interaction about knowledge amongst the faculty members in academic institutes. Effective work culture is open to new ideas and promotes creativity and Best practices in internal methods are regularly reviewed and shared throughout the organization. This hypothesis is formed to examine in which way, the work culture strongly influences human interaction.

H4. Industry-institute interaction is vital for knowledge sharing and development.

A close collaboration between technical institutes and industry is very essential for sustained development of economy. The stronger industry institute interaction will provide a curriculum relevant to national development and needed research activity.

A major responsibility of the academic institutes is to provide trained manpower to meet the needs of the industry. The updating of the curriculum needs to be constant feature with the advancements and development in that field. Industry need to play its effective role as they are the one to utilize the products (students) of the academic institutes. This hypothesis was framed to
reflect the importance of industry institute interaction for knowledge sharing and development.

H5. Faculty members are highly motivated to learn and support collaborative knowledge sharing if their efforts are symbolically recognized and appreciated.

There is a need to develop systems that can recognize and reward the efforts of the employees for team work and knowledge sharing. Recognition is the acknowledgement of individual contributions and it is visible. The academic institute should symbolically recognize (through news letter or website) faculty members who support and put their efforts towards collaborative knowledge sharing. To align rewards and recognition to support appropriate behaviours, there is also a need to monitor and record knowledge sharing positively in the performance appraisal of the faculty. Similarly negative behaviour towards knowledge sharing should be discouraged. So, the researcher attempted to find the relation between knowledge sharing and recognition and rewards.

H6. There is no interaction of faculty even at intra institute level (Group of institutes under the same management)

The purpose of intra institute interaction is to increase information dissemination, integration and to improve horizontal and vertical communication and collaboration of the academic organization as a whole. Such interaction can be facilitated through Intranet. A network which is located inside the organization using Internet and Web protocols and intended for exclusive use by organizational members is called Intranet. The Intranet is accessible only by those who are authorized. A number of collaboration tools such as electronic mail, chat facilities, conferencing software, or groupware (such as, Lotus Notes) can be loaded on Intranets. Individuals within the organization can use them to perform tasks with their colleagues in cost effective ways providing compression of time and space among each other. So, the researcher formulated the hypothesis to study the level of interaction that exists among group of institutes under the same management.
H7. Information technology facilitates collaborative knowledge sharing through various tools.

‘Explicit’ knowledge is visible in the sense that can be expressed through communication forms for dissemination. But ‘tacit’ knowledge is one that cannot be expressed. Knowledge starts off in tacit form and can be transferred to other individuals in this form. So, knowledge needs to be transformed into an explicit form to be stored and later retrieved. There are tremendous difficulties in these transformations especially in capturing knowledge accurately and then representing it in understandable form. Information technology provides tools, which can solve most of these issues. IT enhances communication across boundaries and time zones.

To protect the intellectual property of the academic institute, IT security and firewall protection procedures need to be in place. Further effective cataloguing and archiving procedures are required to be in place for document management. So, the researcher formed this hypothesis to assess the IT tools in academic institutes to facilitate collaborative knowledge sharing.

H8. Faculty Development Programs help to promote knowledge sharing and improve quality of teaching.

There is continuous need for faculty development programmes to enhance the skills of faculty members in developing contemporary and comprehensive courses in their subject area of expertise. Faculty development programs involve active participation of faculty members from various institutes to share and learn ideas and experience. So, the hypothesis was formulated to find to what extent the faculty members are really gaining new knowledge by attending any FDP and to what extent the knowledge is being gained and applied to their respective job.
Data Analysis and interpretation:
The questionnaires filled by the respondents were collected. The data was edited for any inconsistency or, incomplete responses. The next stage was codification of data. All the variables were identified and codified by assigning unique numerical value, to each variable. Data was then presented in tabular/graphical format where ever appropriate. Data was then analyzed using apt quantitative statistical tools. To validate the hypothesis, non parametric test Spearmen’s rank co-relation coefficient was applied.

Data analysis was carried out using Statistical Package for Social Sciences (SPSS) for Windows version 13.0.

The detailed analysis and interpretations results are given in the separate chapter.