Chapter – 4
Research Design

This chapter presents research design comprising objectives of the study, research questions and hypotheses. This chapter also elaborates about type of research and sampling plan, data collection methods and instrument and tools of analysis employed in this study. Finally the chapter scheme is presented.

4.1 Objectives of the Study

- To study the KM climate prevailing in Self-Financing Engineering Colleges.

- To ascertain the KM practices in relation to training, performance appraisal and Career Planning and Development of the faculty members of the select colleges.

- To analyze the concepts of Knowledge Management Process Capability with particular reference to the engineering colleges and their relevance to their performance.

- To identify the impact of KM practices and its relationship with organizational factors.

- To suggest ways and means how best the faculty in engineering colleges can be taken care of so that they can in turn contribute to their academic growth.

4.2 Research questions

What is the scenario of knowledge management in self-financing colleges?

What is the relationship between knowledge management and human resource functions in self-financing colleges?

Is there any association between organizational factors and knowledge management practices in self-financing colleges?
How the various factors of knowledge management are interrelated to one and another?

4.3 Research hypotheses

1. There is no significant association between factors of Knowledge Management Practices and Knowledge Management Climate.

2. The factors of Knowledge Management Practices, Knowledge Management Climate do not have an effect on the factor of Knowledge Management Outcomes.

3. The factors of Knowledge Management Practices, Knowledge Management Climate, and Knowledge Management Outcomes do not affect Organizational Effectiveness.

4. There is no significant relationship between Intent and Outcomes of Knowledge Management practices.

4.4 Research Type

This is an exploratory research. This study explores the contributing factors towards a more knowledge oriented approach in the engineering colleges. It also depicts the characteristics of self-finance engineering colleges and its faculty and the state of affairs with particular reference to Knowledge management practices.

4.5 Sampling Plan

A multistage sampling technique is employed in this study. Purposive sampling has been employed in selection of colleges during the first stage and random sampling has been used in the second stage to select faculty members in those institutions.
4.6 Data Collection

Both primary and secondary data collection techniques have been used in this study. Primary data was collected using a well structured questionnaire while secondary data has been collected from various journals, magazines, books and websites. The researcher visited 71 colleges. A total of 610 questionnaires were circulated to the college Principals, Deans, Head of Departments and Directors. Due to non-response of the same the sample size was reduced to [610-57] 553. Further due to partial/ineligible filling the sample was further reduced to [553-46] 507 which is the final sample size for the study.

4.7 Pilot Study

By employing a convenience sampling technique, data were collected from 50 respondents. Their understanding and interpretations of the questionnaire were recorded and suitable modifications were carried out. The questionnaire was divided into appropriate selected variables.

4.8 Reliability of questionnaire

Reliability refers to the similarity of results provided by independent but comparable measures of the same object, knowledge management elements, or construct. A similar definition, noting the amount of agreement between independent attempts to measure the same theoretical concept, was proposed. In essence, it is a method
that describes the degree to which knowledge management observations or measures are consistent or stable or accurate and precise. Reliability was assessed based on Cronbach Alpha as presented in table below:

**TABLE 4.1**

**CRONBACH ALPHA TABLE**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Items</th>
<th>Range</th>
<th>Factors</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for KM</td>
<td>13</td>
<td>1-5</td>
<td>4</td>
<td>.863</td>
</tr>
<tr>
<td>Objectives of KM Practices</td>
<td>10</td>
<td>1-5</td>
<td>3</td>
<td>.899</td>
</tr>
<tr>
<td>Performance Appraisal System</td>
<td>13</td>
<td>1-5</td>
<td>3</td>
<td>.885</td>
</tr>
<tr>
<td>Career Planning and Development</td>
<td>07</td>
<td>1-5</td>
<td>3</td>
<td>.970</td>
</tr>
<tr>
<td>Training and Development</td>
<td>14</td>
<td>1-5</td>
<td>3</td>
<td>.988</td>
</tr>
<tr>
<td>Job Rotation</td>
<td>08</td>
<td>1-5</td>
<td>3</td>
<td>.814</td>
</tr>
<tr>
<td>Teacher Welfare and Reward System</td>
<td>12</td>
<td>1-5</td>
<td>3</td>
<td>.854</td>
</tr>
<tr>
<td>Other practices</td>
<td>07</td>
<td>1-5</td>
<td>2</td>
<td>.932</td>
</tr>
<tr>
<td>Problems and Difficulties in implementing KM practices</td>
<td>12</td>
<td>1-5</td>
<td>2</td>
<td>.883</td>
</tr>
<tr>
<td>Suggestion for effective implementation of KM practices</td>
<td>11</td>
<td>1-5</td>
<td>3</td>
<td>.812</td>
</tr>
<tr>
<td>KM Climate Survey</td>
<td>21</td>
<td>1-5</td>
<td>5</td>
<td>.793</td>
</tr>
<tr>
<td>KM Outcomes</td>
<td>14</td>
<td>1-5</td>
<td>2</td>
<td>.825</td>
</tr>
<tr>
<td>Variable</td>
<td>Items</td>
<td>Range</td>
<td>Factors</td>
<td>Alpha</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-------</td>
<td>-------</td>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>Organisational Effectiveness of College</td>
<td>12</td>
<td>1-5</td>
<td>2</td>
<td>.945</td>
</tr>
<tr>
<td>Knowledge Management Process Capability</td>
<td>26</td>
<td>1-5</td>
<td>4</td>
<td>.810</td>
</tr>
</tbody>
</table>

For each variable the number of items, range, number of factors and alpha value are given above. For all variables the alpha values are above 0.75, which indicates that the instrument is highly reliable in terms of its items, range and factors.

4.9 Scope and Limitations

This study is confined to Principals, Deans, HODs and Directors working in self-financing engineering colleges in and around Chennai including Kancheepuram and Tiruvallur districts. The study does not focus on students or management of self-financing engineering colleges. Department wise grouping and analysis were not carried out because the focus of the study was faculty members in general. Similarly a district wise analysis is not done on account of affiliation, employment criteria remaining the same.

4.10 Data Analysis

All data analysis was conducted using SPSS V-15. Sample means, standard deviation and N are presented in the analysis chapter for all the variables of the study. The data were screened in order to obtain the variance between various factors of knowledge management.
practices. Factor analysis, cluster analysis, Karl Pearson’s co-efficient of correlation, t-test have been employed.

1. Factor analysis by principal component method is used to identify the factors of knowledge management and organisational effectiveness of the colleges.

2. One sample t-test is applied to identify the nature of responses about the knowledge management practices and significant differences among the various factors of Knowledge Management.

3. K-Means cluster analysis is exploited to classify the colleges based on the factors of Knowledge Management.

4. Discriminant analysis is brought to bear upon the problem of identifying the importance of groups of factors.

5. Karlpearson’s co-efficient of correlation is brought into the context to explore the parametric relationship among the various factors of Knowledge Management practices and consequences.

4.11 CHAPTER SCHEME

Chapter I – Knowledge Orientation

This chapter gives a brief introduction about Knowledge and Knowledge Management, its relevance and importance in the context of self-financing engineering colleges.

Chapter II – KM-A Conceptual Framework

This chapter elaborately summarizes the conceptual framework of knowledge management and profile of self-financing engineering colleges.
Chapter III – Literature Review

This chapter describes the earlier research on KM, and its various factors and impact of knowledge management practices. This also identifies the research gaps.

Chapter IV – Research Design

This chapter describes the research design, sampling plan, objectives and hypotheses of the study. This also highlights on the tools of analysis as well as scope and limitations.

Chapter V – Data Analysis and Interpretation

This chapter elaborates factor analyses which reduce the study to predominant factors, demographic analysis on the professional skill and knowledge and correlation which establishes relationship among the factors of KM. Cluster analysis classifies the heterogeneous group of teachers on the basis of perception, establishes the relationship between personal variables and the KM practices among the self financing engineering college teachers’ , explains the association among the different groups of college teachers and depicts the model of KM of self financing engineering college teachers.

Chapter VI – Results

This chapter discusses the related findings and the conclusion is drawn. Further suggestions are given to make self-financing engineering colleges more knowledge intensive and directions for future research are also deliberated.