Chapter 4

Research Methodology
4.1 Prologue
The thrust area of this research work is to develop a model for the Strategic Information System that can help the PSPCL distribution network to streamline its operations. The distribution network of PSPCL is very wide and has got number of applications. The distribution network has different hierarchies in the present set up. So as to make a relevant model same hierarchies are chosen for the sampling process. With the help of stratified random sampling technique utmost care has been taken to choose the sample that best represents the universe. The PSPCL is having following hierarchies

- Director
- THE Chief Engineer’s (CE)
- THE Superintendent Engineer’s (SE)
- Senior Executive Engineer (XEN)
- Assistant Executive Engineers and Sub- Divisional Officers (SDO)

The manpower and the functionality of PSPCL is spread across Punjab. So firstly same strata’s are chosen which are there in PSPCL’s distribution network. After that with the help of Stratified Random Sampling, a sample of 331 respondents is chosen across the state which best represents the population.

4.2 Universe of the Study

The entire middle level to top level management of PSPCL comprised the universe of the study

4.3 Sampling
Using the same strata’s that are present in PSPCL’s hierarchy level, the stratified random sampling is done. The sample of the study is like this

<table>
<thead>
<tr>
<th>Designation</th>
<th>Population</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Director</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>II Chief Engineers</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>III Superintendent Engineers</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>IV Senior Executive Engineer</td>
<td>178</td>
<td>100</td>
</tr>
<tr>
<td>V Assistant Executive Engineers &amp; Sub- Divisional Officers</td>
<td>491</td>
<td>200</td>
</tr>
</tbody>
</table>

3.1 Sampling

4.4 Questionnaire Design-
The primary data has been collected by administering the questionnaire to the participating respondents. Respondents were asked to give rating on the five point scale by choosing the most appropriate option they think. Partially structured discussions were also held with the respondents. Some of the respondents were also interviewed to have the insights of the organization and how they perceive the concept of Strategic Information Systems. The design of the questionnaire was based on the extensive literature study and in depth discussions with the employees of PSPCL. As PSPCL has got vast array of operations, it was very much important to know the functionalities of each and every operation. To accomplish this task, in depth organizational literature was studied, field visits were done, interviews were conducted, discussions were held with the
technical staff as well as with the managerial and IT staff. The questionnaire was refined through pre-testing. The pre-testing was done by getting the initial response from the prominent academicians and practitioners and then the questionnaire was tested on 50 sampled respondents from PSPCL. The various suggestions were incorporated to make a final questionnaire for the study.

4.5 Testing of questionnaire-

The questionnaire has been tested on the following criterion

1. Reliability- After incorporating all the suggestions from the academicians, practitioners and employees of PSPCL, the reliability of the questionnaire was checked by Cronbach’s Alpha test. Cronbach’s Alpha reliability of the scale taking all the variables together was 0.842. This indicates the goodness of the scale.

2. Content Validity- The content validity of the questionnaire was established by the following measures-

   a. The detailed discussions with the academicians, practitioners and the technical and managerial staff of PSCL.

   b. Pre-testing- Fifty respondents from the organization were test administered using the questionnaire.

After incorporating various suggestions the feedback was taken from the respondents includes the following

1. The content of the questionnaire found to be relevant

2. It was found that the topic under consideration is highly relevant.
3. Questionnaire and the area of focus was highly appreciated by the management and IT wing of PSPCL

4. The amalgamation of the strategic factors with the technical factors was highly appreciated.

5. The identification and formation of various sub-systems for each and every strategic activity of the distribution network was well received.

**4.6 Data Analysis Techniques**

After collecting the data, the analysis is done with the help of SPSS package. The analysis is done by the following the steps

1. Firstly the five point scale were given weights and accordingly interpreted

2. The next step was to know the important factors for that, factor analysis is applied in which firstly total variance and then rotated component matrix was calculated.

3. After finding the important factors cluster analysis was applied to know the responses in clusters

4. After this step, Perceptual Mapping Using Discriminant Analysis is applied in which two main applications were highlighted. Firstly the Standardised Canonical Discriminant Function Coefficients and Functions at Group Centroids. With the help of this test it was possible to accurately gauge the responses given by different strata’s.

5. To know the importance given to various applications that can be performed by the specialized sub systems, the Friedman Test was applied.

6. Then with the Average and Standard Deviation tests the last part of analysis is done in which the phases, models, tools and methods were designed.