4.1 INTRODUCTION

An attempt has been made in this chapter to provide detailed outlines of research design and methodology used to address the statement of the problems and answers to the research questions of the study. Research design and procedures incorporated in the study includes information pertaining to the research methodology, population, sample, instrumentation, data collection and analysis.

4.2 RESEARCH DESIGN AND PROCEDURES

Research in Library and Information Science has undergone a sea of changes reflecting the trends in the Internet era with more bent of research and commitment to logic, scientific enquiry and quantification of library activities. Library surveys are becoming less purely descriptive and more analytical in nature, involving the designing, modifying, re-defining and developing research knowledge in the light of the objectives of the study.

The Internet and Library has become two sides of a same coin as both deal with information content, management and dissemination. Internet has brought a new academic and research culture of understanding and co-operation providing a great boon to the Library and Information Centers in meeting the timely information by click of a mouse (Jange and Others, 2003). Thus, Internet has been a valuable information source, helping the libraries in building nascent information of reference value and services. As Internet has become omnipresent in library for extending the quality based services and implementing library activities and services, the research study has been undertaken to study the use of the Internet as an information source by engineering community and its impact on libraries of Regional Engineering Colleges in India.
A comprehensive review of literature pertaining to the Internet as an information source has provided an insight to design the objectives of the study with clear vision to proceed with the research work.

Survey method has been employed to study the use of Internet as an Information Source by Engineering Faculty and Research Scholars of Regional Engineering Colleges in India. The questionnaire is used in the quantitative phase derived from systematic content analysis of information obtained from related literature. Majority of questions developed, were scaled questions to determine the use of Internet as an information source for engineering faculty and research scholars and to evaluate whether specific learner characteristics affect the use of Internet. The nature of the research study, keeping in view the population to be covered, their characteristics and the technology employed, has necessitated a multi-methodological strategy to collect and analyze the data by using survey research methods which includes Questionnaire, Interview and Observation, as a means to elicit information pertaining to this study.

A questionnaire designed specifically for this study, based on the extensive and intensive study of related literature, were pre tested with a specific group of faculty and research scholars of Rural Engineering College, Bhalki, to increase the validity and reliability of the survey instrument. As the population to be covered was drawn from all parts of India, the questionnaire was selected. Interview method was also felt necessary, as the faculty of Regional Engineering Colleges, especially senior faculty (i.e. Professors and Associate Professors) had expressed their inability to fill the questionnaire, due to the paucity of time.
A schematic design depicting the overall design for this research work is shown below.

Descriptive Study about the Use of Internet as an Information Source

Collected Literature Review on Internet

Objectives of the study

Quantitative study – focus groups

Professors, Assoc. Professors, Lecturers, Research Scholars

Librarians

Designed Questionnaire along with Interview/Observation tools

Pre tested Tools

Re-designed Research Tools and collected

- Findings
- Conclusions
- Technological Model for Internet setup

Figure 1: Schematic Design of Research Study
The investigator felt that, Questionnaire/Interview tools adopted might reveal the results of socially desired answers concealing the actual facts, and was further tempted to adopt Observation tool to cross check the authenticity of information so filled/obtained through the questionnaire/Interview method. The questionnaire was designed in two phases: First Phase meant for Users (Teaching faculty and Research scholars), Second for Librarians.

The research tools employed intended to elicit information from the engineering faculty and research scholars in order to identify the optimum utilization of Internet facilities and services, search strategy adopted, level of satisfaction and problems encountered, and its impact on libraries and Information centers, so as to develop technological model with recommendations and suggestions for optimum utilization of Internet and compile a web resource directory in the field of engineering sciences.

4.3 POPULATION AND SAMPLING

4.3.1 Population

The research population for the study consists of Engineering faculty, Research Scholars and Librarians of Regional Engineering Colleges (REC) in India. A total of seventeen Regional Engineering Colleges in India are available on the principle that each state should consist of one Regional Engineering College with a motto to meet academic and research pursuit of society. Out of seventeen, a total of 12 Regional Engineering Colleges in India were covered for the study from all the corners of India representing south, north, east and west regions of India. A total of 850 questionnaires and Interview Schedule were distributed to the faculty and research scholars with a total feedback of 665 questionnaires and a response rate of 78.24% vide Table 1. Similarly, a total of 17 questionnaires were distributed to the Librarians of Regional
Engineering Colleges in India, out of which ten were duly obtained with a feedback of 58.82%.

**Table 1**
Sample of Study Population

<table>
<thead>
<tr>
<th>RECs (National Institutes of Technology)</th>
<th>DESIGNATION</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Professor</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>REC Surathkal</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>REC Durgapur</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>REC Calicut</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>REC Warangal</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>REC Jamshedpur</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>REC Nagpur</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>REC Surat</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>REC Jaipur</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>REC Kurukshetra</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>REC Rourkela</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>REC Jalandhar</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>REC Bhopal</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>113</strong></td>
<td><strong>101</strong></td>
</tr>
</tbody>
</table>

**4.3.2 Sampling Tool**

A Stratified Sampling technique has been employed to elicit information from Teaching faculty and Research Scholars of Regional Engineering Colleges in India in order to increase the efficiency of sampling on the basis of departments and user strata. At least, a Professor, Assistant Professor and Lecturer from each department of a Regional Engineering College are covered in the sample on a random basis. On an average, 25% of total faculty and 28% of total Research scholars of each National Institute of Technology have been covered for this research study. For a total population of 75,000; the desired sample to be covered
is 382 only (Krejcie and Morgan, 1970). Thus, a sample of 665 respondents from total population is representation for the research work.

4.4 DATA COLLECTION AND ANALYSIS

The data so collected has been carefully scrutinized and variables for each question have been identified and tagged using Statistical Package for Social Science SPSS (10 version). A total of 665 cases altogether collected from faculty and research scholars from twelve Regional Engineering Colleges from India has been statistically incorporated and fed into the SPSS worksheet and the missing values have been taken care.

4.4.1 Major Independent and Depend Variables

The research study encompasses independent variables mainly Designation, Age, Qualification, Teaching and Research Experience and Formal Training of respondents. For the convenience of the study, the research work is sub divided into four facets viz., Use of Internet, Level of Satisfaction, Search Strategy and Impact of Internet on Information Centers.

The major dependent Variable Use of Internet (UOI) has been derived by the following indicators

- How often do you use the Computers;
- From where you have access to Internet facilities;
- How long have you been using Internet;
- Purpose of using Internet; and
- How frequently the Internet services are being used.

Similarly the Level of Satisfaction (LOS) includes the indicators as under
Problems encountered while surfing the net;
Extent of problems for the various Internet services;
Satisfaction level with the current state of Internet to support academic and research activity; and
Rating of Internet features as a source of Information.

For these variables i.e. Use of Internet (UOI) and Level of Satisfaction (LOS), Rensis Likert's method of summed ratings has been used for analyzing and reporting questionnaire responses. Statistical inference for the facets - Use of Internet (UOI) and Level of Satisfaction (LOS) has been taken into account as dependent variables with respect to comparison of different variables i.e. Designation, Age, Qualification, Teaching and Research Experience and Formal Training of respondents. To test the hypothesis of the study, Chi-Square Test, F-Test, Bi-variate and Partial correlation Analysis and Regression were computed. The calculated statistical values, if greater than table value at 0.05 level of significance, was considered as significant, thus rejecting the null hypothesis and vice versa.

4.4.2 Data Transformation

For the variable Age, under 30 Years – Code 1, 31-40 Years – Code 2, and 41 and above – Code 3 have been further recoded by taking the mid values 27, 35 and 50 years respectively. Similarly for variable Teaching and Research Experience and frequency of using Internet, between 1-5 years – Code 1; 6-10 years – Code 2; and 11 and above – Code 3 have been recoded further by taking its mid values assuming Code 1= 3; 2=8; and 3=13 years respectively.

The indicator about the access to Internet facility from Home, Department, Computer Center, Library and Private Browsing Center were coded 1, 2,3,4,5 respectively. This have been further given scoring based on the
impact of Use of Internet as under; Home – Score 5; Department – Score 4; Computer Center – 3; Library – Score 2; and Private Browsing Center – 1. Thus, it has been recoded by assigning maximum score for access to Internet from Home as 1 – 5; Department as 2-4; Computer Center as 3 -3; Library as 4-2; and Private Browsing Center as 5-1. Similarly, the indicator indicating the extent of problems encountered while surfing the Internet bearing the score 1 - Not at All; 2 - To a Little Extent; 3- To Some Extent; 4 - To a Greater Extent and 5 - To Full Extent has been recoded in a reverse order 5,4,3,2 and 1 keeping in view the extent of problems encountered in surfing the net.

4.4.3 Data Computation

Total samples of 665 cases were fed in the computer with the help of SPSS software. Twenty cases have been excluded for the computation of two dependent variables Use of Internet (UOI) and Level of Satisfaction (LOS), as these cases were reported not using the Internet for their academic and research work. Thus the new variables by grouping the scores of relevant indicators were developed namely, UOI and LOS.

4.4.4 Data Tabulation

After the Data transformation and data computation, data tabulation has been carried out and reclassified for UOI and LOS. The statistical tests employed for data tabulation includes the following:

- The Score analysis and descriptive statistics for the variables Use of Internet (UOI) and Level of Satisfaction (LOS) has been computed.

- Chi-Square Test is applied to see if there is any significant difference for the variables - Use of Internet (UOI) and Level of Satisfaction (LOS)
with respect to different variables designation, Age, Qualification, Teaching and Research Experience and Formal Training of respondents.

- F-Test is applied to see whether there were significant differences/variations.

- Bi-variate correlation for UOI and LOS has been computed using Pearson’s Correlation Co-efficient.

- Partial Correlation Co-efficient for UOI has been calculated based on the controlling variables LOS, Age and Experience.

- Chi-Square Test for UOI and LOS through Cross Tabulation has been computed for the variables viz. Age, Designation, Qualification, Teaching and Research Experience and Formal Training of respondents.

- Regression Analysis of UOI with reference to LOS, Age and Experience is calculated to determine the multiple effects of one variable over the other.

4.5 CONCLUSION

A recent trend in Library and Information science research is to develop research design models, heralding the methodologies adopted for carrying out the research study right from identification of the problem to data analysis, interpretations, findings and recommendations in order to improve the quality of the work. This will provide crystal insight into the research steps adopted for the study, acting as a basic step towards the quantitative and qualitative research.
REFERENCES


