Chapter 1

Introduction
CHAPTER 1

INTRODUCTION

1.1 Introduction

Engineering and Technical Education is a pre-requisite for sustaining the complex structure of modern civilization and for the achievement of socio-economic goals of any nation. The main benefits of technical education to the students can be summarized as gaining confidence in decision making, reading theory to practice, increased jobs opportunities, realization of responsibility, opportunities to work with modern equipment and on problems of current importance. Hence, there is a great need for high quality technical education to produce technically skilled manpower in India.

The quality of educational system in any society is a measure of its development and competitiveness vis-à-vis other contemporary societies. In the present age of knowledge explosion, where new technologies are being developed at rapid pace, their assimilation with the existing knowledge, development of infrastructure, importing education and training to cater to the growing requirement for the qualified and trained man power for the operationalization of technologies, are the responsibility of the engineering education system. As different levels of competencies are required to perform different jobs, there are separate educational institutions to import education and training at different levels.

Engineering education in India is broadly structured into three levels: at the initial level Industrial Training Institutes (ITI s) offer certificate course; then polytechnics offer diploma courses and finally engineering colleges (Government, Private Management and Regional engineering college) and IIT s offer graduate
(BE/B.Tech), post graduate (M.Tech/ ME) degree courses, and they also offer Ph.D. programmes.

1.2 Technical Education in India

Engineering education in India began with the establishment of the Government colleges of engineering (survey school) at Gundy (Tamil Nadu) in 1794, which was followed by the Thomson Engineering college at Roorkee (U.P) in 1847 and B.E. college, Howrah (West Bengal) in 1856. In the next 90 years not much progress was made.

In 1947, there were only around 38 engineering colleges with a total intake of 1850 students. After Independence, there has been tremendous growth in the field of engineering education. Many new colleges were established in the country with the Government assistance as well as with private initiatives initially in the south and then in other parts of the country. In the year 2006 there were 1478 engineering colleges in the country offering Bachelors Degree, Master Degrees and Ph.D. programmes in various engineering and technological disciplines.

![Growth of Technical Institution in India](image)

**Fig.1 Growth of Technical Institution in India**
Figure 1 shows the statistics about the growth of technical institutions since 1980. During 1980-1981 there were 157 engineering institutions in India. The number increased to 663 during 1999-2000, and in the year 2000-2001, it was 880 institutions. There were 1346 engineering colleges in 2004-2005, and the number increased to 1478 engineering institutions during the year 2006-07, providing technical education at the graduate, post graduate level in the country.4

1.3 Technical Education in Karnataka

Technical education in Karnataka state has been steadily growing since independence and there has been the remarkable increase in the number of institutions imparting technical education. Karnataka is considered as one of the most progressive state in India and especially, a pioneer in the field of technical education because of the foresightedness of Dewan Sir M.Visveshvaraiah. In Karnataka state during the academic year 2006-07 there were 127 engineering colleges including 6 government, 12 aided and 109 private colleges offering bachelor degree, master degree and Ph.D. programmes in various engineering and technological disciplines with intake around 42,105 students per year.

1.4 Role of Teachers in Engineering Colleges

The teachers of technical institutions play a vital role in technical teaching in engineering education. Their role in education is more significant. The teacher should have the potential in such a way to spread the technical knowledge, to give general information and to have control over the students 5.

Teaching is the complex activity involving many variables and teachers have a number of responsibilities apart from their main task of teaching in the classroom they have to perform multidimensional role as an engineer, a teacher: activity including diagnosing students with learning difficulties, a guide: supervising research activities and co-ordinator.
Engineering teacher essentially need practice in two professions: Engineering and Teaching. Teachers should have the ability to stimulate and inspire the students to the soul of any academic institutions. The engineering faculty has different specialized functions, which vary from institution to institution. To perform the teaching effectively at engineering college, teachers require a variety of information. The provision of the right information at the right time is vitally important if teachers are to effectively teach their students.

The increase in the quantity of information related to engineering and technology is being phenomenal. Additionally the quality of information communication and generation has improved and is available in various forms and formats. As underlying premise of this study engineering teaching faculty must deal effectively and efficiently with these mentioned factors, quality and form of information in order to productively instruct their students.

The standard and reputation of engineering college is evaluated on the performance of the academic community of that institution. The performance here means the quality and number of research projects undertaken and information generated in the form of publication of articles, textbooks, monographs, submission of papers to seminars and conferences and research guidance leading to Ph.D. Thus the faculty members play a key role in building the image of the engineering college.

The engineering faculty, who is contributing much in this modern electronic and technological world, is the focus of the study. The study is primarily aimed at evaluating the performance of a teacher in the form of information generation, communication against cadre, service and gender. Further the study concentrates on the impact of helpful factors on information generation, communication by teachers. Such other factors Viz., barriers on information communication, library use, reading habits, etc., are also studied here.
1.5 **Information Generation and Communication**

Information is an important national resource. It is an indispensable raw material for right decision making from the government level to the personal level. It is in fact a vital ingredient for the socio-economic and cultural development of any nation. It is a well-accepted generalization that a country, which is rich in information, is rich in the field of socio-economic spheres.

Information has been described as the fifth need of human beings ranked after air, water, food and shelter. Knowingly or unknowingly, intentionally or unintentionally, consciously or unconsciously, all of us most of the time of our life and work are concerned with information- generation, recording, processing, repackaging, transfer, receiving, use and its application. The information that is generated is communicated through various channels- formal and informal, published in various formats-print, non-print and machine readable, reported in multiplicity of languages and published from different countries of the world. The role of information in education, research and development, decision-making and recreation is fully acknowledged and the role of libraries in providing access to information is well documented.

1.6 **Role of Libraries in Engineering College**

Library is regarded as ‘Nerve centre of knowledge’, the centre of intellectual life and the heart and soul of the academic institution. This means that discoveries are actually made in the library and subsequently tested in the laboratory. It occupies an important place in the modern education system and maintains the expensive educational resources of the academic institutions. It is the responsibility of the staff of engineering and technical libraries to provide right information at the right time to right user to save the time of the user.
The libraries are primarily responsible for the selection and collection of material appropriate for libraries, preservation and organization of the collection and dissemination of the material or the information, which it contains.

Libraries- centre of learning are playing an important role in sustaining and satisfying the information requirements of parent Institutions. For the efficient, effective and scientific development of information resources and services, the libraries need to be designed and developed systematically based on the inputs from studies on existing resources and services, and the studies on users of engineering college libraries.

1.7 Statement of the Problem

The research problem conceived under the title “INFORMATION GENERATION, COMMUNICATION AND USE OF LIBRARY BY TEACHING FACULTY OF ENGINEERING COLLEGES IN KARNATAKA: A STUDY”.

1.8 Need for the Study

The teachers at all levels of education are vital ingredient of the education system. Engineering college academicians are not only the teachers but also engineers and scientists. Teaching in engineering college is such a profession where the teacher is expected to keep his knowledge updated every day and is also expected to generate and communicate new facts that he found in his study and research. The study is primarily aimed at understanding the information generating and communication behaviour of engineering college teachers of Karnataka.

The study concentrates on finding out the information sources, agencies and channels of communication used by the teachers of engineering college for
collecting information required and to communicate the results of his/ her research findings.

So far no systematic attempt is made to know these aspects of engineering college teachers of Karnataka. Therefore, it is time now to know and develop better understanding of the engineering college teachers information requirements, and their information generating and communication patterns and type of barriers encounter, and influence of both domestic as well as the official factors for the information generation. It is believed the knowledge of it will have an immense value for planning and development of effective information system of engineering college libraries.

1.9 Scope and Limitation of the Study

There were about 127 engineering colleges in Karnataka state at the time of survey including University colleges, Deemed Universities such as Karnataka Regional Engineering College and Manipal Institute of Technology, Government Colleges, Aided Colleges and Private Self Financing Colleges; this study is confined to the faculty working in 45 engineering colleges in Karnataka, which were established prior to 1995. Since those institutions might have developed better library facilities and equipped with better infrastructure in the respective institutions.

It refers to the teachers in different categories such as Lecturers, Assistant Professors, and Professors working in engineering colleges in Karnataka.

The study excludes 05 evening engineering colleges and Indian Institute of Science, Bangalore.

A total 750 faculties under different categories have been considered for this study drawn from 45 engineering colleges.
1.10 Objectives of the Study

The main objectives of this study are:

1. To trace the growth and development of engineering education in Karnataka;

2. To present an overview of the libraries of the engineering institutions in Karnataka;

3. To find out the frequency of use of information sources by engineering faculty;

4. To identify the extent of usefulness of information sources among engineering faculty for information generation;

5. To find out the reason for information generation among the engineering faculty;

6. To examine the sources of inspiration for information generation among the engineering faculty;

7. To examine the influence of helpful factors such as healthy atmosphere, encouragement, financial assistance and recognition of work etc., on information generation among engineering faculty;

8. To study the influence of domestic factors such as family and personal problems etc., in obstructing the process of information generation among the engineering faculty;

9. To study influence of academic and official factors viz., headship, chairman ship, teaching activity, research guidance etc., in obstructing the information generation among the teaching faculty of engineering colleges;
10. To identify the various sources of information, the faculties make use for collecting required information for teaching and research activity;

11. To identify the communication pattern used by engineering faculty for information communication;

12. To find out the various communication barriers encountered by engineering faculty in communicating information;

13. To identify the frequency of communication with colleagues of own and other institutions by engineering faculty;

14. To identify the awareness of various library services among the engineering faculty; and

15. To identify the Time spent in reading materials at various places for information generation and communication by engineering faculty.

1.11 Hypothesis

Based on the above-mentioned objectives the following hypotheses have been drafted for this work.

1. There is a positive correlation among Professors, Assistant Professors, and Lecturers regarding the frequency of information sources.

2. There is a positive correlation among Professors, Assistant Professors, and Lecturers regarding the usefulness of information sources.

3. There is a positive reason for information generation among Professors, Assistant Professors, and Lecturers.
4. With respect to inspiration of information generation cadres are independent attributes.
5. The engineering faculty unequally uses all the information sources.
6. All the helpful factors for information generation the cadres are independent attributes.
7. All the unhelpful factors such as domestic factors, academic and official factors have the different impact on information generation.
8. There is a positive correlation among the teaching faculties regarding the use of communication pattern.
9. All the communication barriers encountered by the engineering faculty, the cadres are independent attributes.
10. There is a positive correlation among engineering faculties regarding the frequency of communication with peoples.
11. All the access tools used for locating reading materials among engineering faculties are alike.
12. The frequency of visit to library is unequal among the engineering faculties.
13. There is an unequal use of library services among the engineering faculties.

1.12 Research Design and Methodology

The choice of a method is based on the nature, scope and objectives of the research. Keeping in view the objective of the study, an effort has been made to evolve a suitable methodology for the research. The principal tool for data collection in the study is a ‘survey research’ with a well-designed questionnaire. Additional information was collected from various sources from published and unpublished documents.
1.12.1 Materials

1.12.1.1 Literature Survey

As a first step, retrospective literature search was undertaken in the area of User Studies and Library Use Studies. LISA on CD was searched with key words USE, INFORMATION GENERATION, INFORMATION GATHERING, USE OF LIBRARY, INFORMATION SEEKING BEHAVIOUR, INFORMATION COMMUNICATION, COMMUNICATION PATTERN, ENGINEERING TEACHERS, TECHNICAL EDUCATION and their combinations. Abstracts of the articles retrieved after literature search were downloaded. Libraries of Documentation Research and Training Center, Bangalore, Karnataka University, Dharwad, and University of Mysore, Mysore, Kuvempu University, Shankarghatta were visited and primary literature related to research topic were collected. Information related to technical education in India and Karnataka and related statistics were collected from various sources available at B.M.S Engineering College, R.V. Engineering College, Jayachamarajendra College of Engineering, Mysore and Regional Engineering College, Surathkal. Other bibliographic databases on CD-ROM, namely PSYCLIT, ABI-INFORM, Sociofile and DISSERTATION ABSTRACTS were also searched and relevant abstracts were downloaded. In addition, technical encyclopedia, Hand Book of Technical Education, Visvesvaraya Technological University, Annual Report, AICTE Reports, CET Bulletins and Gazetteers were referred, which were available at AICTE Regional Office, Bangalore, Directorate of Technical Education Office, Bangalore and Visvesvaraya Technological University, Belgaum. Sufficient amount of information was also downloaded from Internet.
1.12.1.2 Framing the Questionnaire

Two sets of questionnaire were designed for collecting data related to the Information Generation, communication and use of Engineering College Libraries by engineering faculties and attitude of Teachers and Librarians towards the generation and communication of Information.

In order to enhance the validity and reliability of the questionnaire, experts in the field of Library Science, Psychology and Statistics were consulted and were requested to review the questionnaire critically. Questionnaire was revised based on the suggestions.

1.12.1.3 Pilot Study

To test the relevance of questions in the questionnaire, pilot study was undertaken for a small group of Teachers in Bapuji Institute of Engineering and Technology, University B.D.T Engineering College, Davangere. Valuable suggestions made by Teachers were incorporated into the questionnaire and questionnaire was finalized.

1.12.1.4 Selection of Sample

At the time of the Survey (2006-2007), there were 127 Engineering Colleges in Karnataka State. These 127 Colleges include 122 colleges coming under the jurisdiction of Visvesvaraya Technological University, Belgaum and Deemed Universities like, Regional Engineering College, Suratkal, Manipal Institute of Technology, Manipal and Vishveshwaraih University College of Engineering, Bangalore and U.B.D.T. College of Engineering, Davanagere.
Table – 1.1: Region wise break-up of engineering colleges

<table>
<thead>
<tr>
<th>Regions</th>
<th>No. of colleges</th>
<th>No. of Colleges Selected for study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gulbarga</td>
<td>10</td>
<td>06</td>
</tr>
<tr>
<td>Belgaum</td>
<td>13</td>
<td>09</td>
</tr>
<tr>
<td>Bangalore</td>
<td>71</td>
<td>16</td>
</tr>
<tr>
<td>Mysore</td>
<td>28</td>
<td>10</td>
</tr>
<tr>
<td>Deemed Universities &amp; UBDTE / UVCE</td>
<td>05</td>
<td>04</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>127</td>
<td>45</td>
</tr>
</tbody>
</table>

Of the 127 Engineering Colleges in Karnataka State, 45 Colleges (35.43%) established prior to 1995 were selected for the study from four regions (Table–1.1). List of colleges covered in the study is given in Annexure –1

1.12.2 Methodology

1.12.2.1 Data Collection

The researcher personally visited all the Engineering Colleges under study. Teachers’ and Librarians’ questionnaire were distributed in the concerned departments and libraries. Researcher stayed for one or two days in each college, explained the importance of the research work being undertaken to get the response.

Simple random sampling technique was applied to obtain representative sample. The consolidated statement of sample size and response received is given in the table 1.2.
Table – 1.2: Consolidated statement of sample size and response received

<table>
<thead>
<tr>
<th>Category of Respondents</th>
<th>No. of Questionnaire Distributed</th>
<th>No. of Response Received</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>1000</td>
<td>750</td>
<td>75.00</td>
</tr>
<tr>
<td>Librarians</td>
<td>45</td>
<td>45</td>
<td>100.00</td>
</tr>
</tbody>
</table>

1.12.3 Analysis and Interpretation

The data collected from teachers are analyzed using likert type scale. The ranks may be assigned score values in the reverse order. That is, if six items/stimuli are to be ranked, first rank is assigned score of 6; the second rank of 5 and the sixth rank a score of 1 in order to study the relative importance given to the attributes. For each attribute, the rank values may be multiplied by the corresponding frequencies (number of respondents) and summed up. The total scores indicate the comparative ranking of attributes.

1.12.4 Statistical Tests Used

1.12.4.1 Central Tendency

The central tendency (or statistical) tells us the point about which items have a tendency to cluster. Mean is the most common measure of central tendency and may be defined as the value which we get by dividing the total of the values of various given items in a series by the total number of items. We can work it out as under.

\[
\text{Mean (or } \bar{X}) = \frac{\sum X_i}{n} = \frac{X_1 + X_2 + X_3 + \ldots + X_n}{n}
\]
Where $\overline{X}$ = The symbol we use for the Mean (pronounced X bar)
$\sum$ = Symbol for summation
$X_i$ = Value of the $i^{th}$ item X, $i=1,2,3\ldots\ldots n$
n = Total number of items.

1.12.4.2 Kendall’s Coefficient of Concordance

It is an important non-parametric measure of relationship. It is used for determining the degree of association among more than two sets of ranked data of N objects or individuals. Kendall’s Coefficient of Concordance symbolized by letter $w$ is given by the formula:

$$W = \frac{S}{1/12K^2 (N^3-N)}$$

If $W = 1$ Perfect agreement exists between sets of ranks.
If $W = 0$ Perfect disagreement exists between sets of ranks.

The steps involved in this test are;

i) All the objects, N should be ranked by K set of judges.

ii) For each object determine the sum of ranks ($R_j$) assigned by all the K (Set of rankings)

iii) Determine $\overline{R}_j$ and then obtain the value of $S$ as under:

$$\overline{R}_j = \frac{R_j}{N} \quad \text{where} \quad S = \sum (R_j - \overline{R}_j)^2$$

Worked out the value of $w$ using the formula

$$W = \frac{S}{1/12K^2 (N^3-N)}$$
Where \( W = \text{Coefficient of Concordance} \);

\[ S = \text{Sum of squared deviations from the mean } R_j; \]

\[ K = \text{Number of Sets of ranking i.e., the number of judges; and} \]

\[ N = \text{Number of objects ranked}. \]

The method for judging whether the calculated value of \( W \) is significantly different from zero depends on the size of \( N \) as stated below:

i) If \( N \) is 7 or smaller, critical value of \( S \) associated with \( W \)'s significance at 5% and 1% levels. If an observed \( S \) is equal to or greater than that shown in the table for a particular level of significance, then \( H_0 \) (i.e., \( K \) sets of rankings are independent) may be rejected at the level of significance. If an observed value of \( S \) is less than table value, then \( H_0 \) (i.e., \( K \) sets of rankings are independent) Null hypothesis may be accepted at the level of significance.

ii) If \( N \) is larger than 7, the significance of \( W \) is tested by converting its value into chi-square with the help of the following formula:

\[ \chi^2 = K(N-1)W \text{ with d.f.}= (N-1) \text{ for judging } W \text{'s significance at a given level in the usual way of using } \chi^2 \text{ values}. \]

The degree of freedom (d.f) is always equal to \((n-1)\). If calculated value is greater than the critical value at degree of freedom \((n-1)\). Then \( \chi^2 \) is significant. In such case, we have to reject the null hypothesis. If the calculated \( \chi^2 \) value is smaller than critical value at d.f. \((n-1)\). Then \( \chi^2 \) values is statistically non-significant and we have to accept the null hypothesis.\(^8\)

1.12.4.3 **Analysis of Variance (ANOVA) Technique**

This Technique is used when multiple sample cases are involved. Using this technique, one can draw inferences about whether the samples have drawn from population having the same mean. Therefore, one quite often utilizes the
ANOVA technique and through it investigates the differences among the means of all the populations simultaneously.

One-way (or single factor) ANOVA: Under the one-way ANOVA, we consider only one factor and then observe that the reason for said factor to be important is that several possible types of samples can occur within that factor. We then determine if there are differences with in that factor. The technique involves the following steps:

i) Obtain the mean of each sample i.e. obtain

\[ \bar{X}_1, \bar{X}_2, \bar{X}_3, \ldots, \bar{X}_k \]

When there are \( k \) samples.

ii) Work out the mean of the sample means as follows:

\[ \bar{X} = \frac{\bar{X}_1 + \bar{X}_2 + \bar{X}_3 + \ldots + \bar{X}_k}{\text{No. of sample (}k\text{)}} \]

iii) Take the deviations of the sample means from the mean of sample means and calculate the square of such deviations which may be multiplied by the number of items in the corresponding sample, and then obtain their total. This is known as the sum of squares for variance between the samples (or SS between). Symbolically, this can be written:

\[ \text{SS between} = n_1(\bar{X}_1 - \bar{X})^2 + n_2(\bar{X}_2 - \bar{X})^2 + \ldots \ldots n_k(\bar{X}_k - \bar{X})^2 \]

iv) Divide the result of the (iii) step by the degrees of freedom between the samples to obtain variance or mean square (MS) between samples.

\[ \text{MS between} = \frac{\text{SS between}}{(k-1)} \]

Where (k-1) represents degrees of freedom (d.f.) between samples.
v) Obtain the deviations of the values of the sample items for all the samples from corresponding means of the samples and calculate the squares of such deviations and then obtain their total. This total is known as the sum of squares for variance within samples (or SS within).

\[ \text{SS within samples} = \sum (X_{1i} - \bar{X}_1)^2 + \sum (X_{2i} - \bar{X}_2)^2 + \sum (X_{3i} - \bar{X}_3)^2 + \ldots + \sum (X_{ki} - \bar{X}_k)^2 \]

vi) Divide the result of (v) step by the degrees of freedom within samples to obtain the variance or mean square (MS) within samples. Symbolically, this can be written

\[ \text{MS within} = \frac{\text{SS within}}{(n-k)} \]

Where \((n-k)\) represents degrees of freedom within samples,

\(n\) = total number of items in all the samples i.e., \(n_1 + n_2 + \ldots + n_k\)

\(k\) = number of samples.

vii) The sum of squares of deviations for total variance can also be worked out by adding the squares of deviations when the deviations for the individual items in all the samples have taken from the mean of the sample means. This can be written

\[ \text{SS for total variance} = \sum (X_{ij} - \bar{X})^2 \quad i=1,2,3\ldots \]

\[ j=1,2,3\ldots \]

This total should be equal to the total of the result of the (iii) and (v)

\[ \text{SS for total variance} = \text{SS between} + \text{SS within} \]

The degrees of freedom for total variance will be equal to the numbers of items in samples minus one i.e., \((n - 1)\). The degrees of freedom for between and within must add up to the degrees of freedom for total variance i.e.,
(n -1)= (k -1) + ( n - k )

This fact explains the additive property of the ANOVA technique.

vii) Finally, F- ratio may be worked out as under:

\[ F\text{-}\text{ratio}= \frac{\text{MS between}}{\text{MS within}} \]

This ratio used to judge whether the difference among several sample means is significant or is just a matter of sampling fluctuations. For this purpose we look into the table, giving the values of F for given degrees of freedom at different levels of significance. If the worked out value of F, as stated above, less than the table value of F, the difference is taken as insignificant i.e., due to chance and the null hypothesis of no difference between sample means stands. In case the calculated value of F happens to be either equal or more than its table value, the difference is considered as significant (which means the samples could not have come from the same universe) and accordingly the conclusion may be drawn.

Analysis of Variance Table for one-way ANOVA:

(There are k samples having in all n items)

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares (SS)</th>
<th>Degrees of freedom (d.f.)</th>
<th>Mean square (MS)</th>
<th>F - ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between samples</td>
<td>SS between</td>
<td>(k-1)</td>
<td>( \frac{SS \text{ between}}{(k-1)} )</td>
<td>( \frac{MS \text{ between}}{MS \text{ within}} )</td>
</tr>
<tr>
<td>With in sample</td>
<td>SS within</td>
<td>(n-k)</td>
<td>( \frac{SS \text{ within}}{(n-k)} )</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>SS for total variance</td>
<td>(n-1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table - 1.3: Analysis of variance table for one-way ANOVA
1.12.4.4 Coding Method

This is based on important property of F-ratio that its value does not change if all the n items values are either multiplied or divided by a common figure. Through this method big figures are reduced in magnitude by division or subtraction and computation work is simplified without any disturbance on the F-ratio

1.13 Chapterisation

The present study has been organised in seven chapters.

Chapter: 1 Gives the introduction, need for the study, statement of the research title, scope and limitations of the study, objectives, hypothesis, methodology adopted in the data collection, describes the research design and various statistical tools and techniques such as Likert-type scale, one way ANOVA, Kendall’s Coefficient of Concordance, etc, have been discussed.

Chapter: 2 Presents the review of literature. Here an attempt made to collect all the relevant literature pertaining to the topic through browsing the LISA database, visiting different libraries, and browsing through Internet. And all those related literature searched are revived and listed in this chapter.

Chapter: 3 Traces the growth and development of engineering and technical education in India with special reference to Karnataka

Chapter: 4 Deals with the information generation and communication systems, promoting agencies and barriers of information communication, the influencing factors on information generation and communications etc are discussed.
Chapter 5 Presents the analysis and interpretation of data collected from the engineering college libraries in Karnataka state.

Chapter 6 Discuss the results of the analysis and interpretation of the data collected through questionnaire on information generation, communication and use of library from teaching faculty in Karnataka.

Chapter 7 Highlights the findings of the study, suggestions and conclusion.
Chapter 1

References:


