CHAPTER -2

REVIEW OF LITERATURE

2.1 INTRODUCTION

The purpose of the present chapter is to focus on the literature on Content analysis. The growing maturity of librarianship is revealed in great deal by library and information science literature that is being published today. The journal literature in the field of librarianship have been viewed and analyzed by authors from various angels. The relevant data was collected from various sources like bibliographies books, journals, article, abstract, online articles, published time to time which was treated as a basis for the study.


2.2 DEFINITIONAL ANALYSIS

2.2.1 Content

1. The idea that is contained in a piece of writing, a speech or a film
2. The articles or parts contained in a magazine or book, with the number of the page they begin on.
3. The subjects or topics covered in a book or document
4. Something that is to be expressed through some medium, as speech, writing, or any of various arts.

“Content” means what a document contains this idea of what is contained in a document be it a book, a periodical or a newspaper. Three functions or angles of content:

1. Descriptive aspect
2. Counseling aspect
3. Inferential aspect (Kamalavijayan 2001).

Content may be anything including oral language and natural phenomena and that can be analyzed for descriptive or inferential purposes. (Penland, 1971)

### 2.2.2 Analysis

Analysis need assessment getting information to solve problems in the corporation, going out and seeking opinions’ on optimal actual, feeling causes & solution.

### 2.2.3 Content Analysis

Content analysis is a technique for systematically describing written, spoken or visual communication. It provides a quantitative (numerical) description. Many content analyses involve media - print (newspapers, magazines), television, video, movies, the Internet.

1. Content analysis is a research techniques for the objective, systematic and quantitative description of the manifest content of communication.(Berelson 1952).

2. Content analysis is any technique for making inferences by objectively & systematically identifying specified characteristics of message. (Holsti 1969.)

3. The technique known as content analysis is attempts to characterize the meaning in a given body of discourse a systematic & quantitative fashion. (Kaplan, 1943).

4. Content analysis is any research techniques for making references by systematically & objectively identifying specified characteristics within text (Stone 1966).

5. Content analysis & coding interchangeably to refer to the objectively, systematic & quantitative description of any symbolic behavior (Cartwright 1953).
6. Content analysis is a research method that used a set of procedures to make valid inferences from text compared with other data generating & analysis techniques. (Weber 1990)

7. Content analysis is classifies textual material by reducing it to more relevant manageable bits of data. (Gorman & Peter 2005).

8. Content analysis aims converting recorded raw phenomena into data which can be treated essentially in a scientific manner so that a system of knowledge may be built up (Festinger & Katz 1986).

9. Content analysis is a research technique for making replicable & valid inference from data to their context. (Barnoww 1986).

2.2.4 Journal:

Journals are the format primary medium of communication for researchers. The cycle of information consumption, transmission and production is complex. Journals are along cannot represent all phases of the cycle. Nevertheless the role of journals in information gathering, use and transmission. Journals scholarly or academic periodical offer published by an organization or society, collecting the articles written about a subject by and for researchers/academics in a field. Journals specialize in specific fields of study some journals are described as peer reviewed. (Singh, G.2007).

2.2.5 Annals Of Library & Information Studies

The journal Annals of the library & information studies is selected for the research. Annals of library & information studies are one of the leading quarterly journals in the field of library and information science. Published by National Institute of science communication & information resources (NISCAIR), New Delhi, India and do enjoy fair amount of popularity at global level.
2.2.6 Research

Research is a careful inquiry or examination to discover new information or relationship & to expand or verify the existing knowledge. Research is a scholarly investigation in search for truth for facts, for certificates.

2.3 BIBLIOMETRICS

Periodicals are the most preferred medium of latest information. Scholarly journals are used by the scientists and professional to share their ideas, thoughts, invention, and discoveries. Libraries are the source that generally identify, acquire and disseminate the information. But the exponential growth of periodicals varied demands of readers, ever increasing cost of the publication, and the shrinking resources of libraries have put constraints on libraries to subscribe the types of resources in judicious selection of journals and other periodicals for their users. (Kumar Manoj & Moorthy A L 2011).

The term bibliometrics were introduced by Pritchard, Nalimov and Mulchenko in 1969. Bibliometrics study is a simple statistic method of bibliography counting to evaluate and quantify the growth of a subject. Etymology bibliometrics is composed of two distant biblio means books & metrics means Science of matter. Origin of the subject bibliometrics can be traced as:

Statistical bibliography-Librametric-bibliometric (Kumar 2004).

The term “Librametry” suggested in 1948 by Indian library scientist Rangnathan S. R.In 1969, A Pritchard of England suggested the term “Biblumetrics” as a complex of mathematical & Statistical methods used a to analyze bibliographical characteristics of documents. Bibilometrics as a sub discipline in information science is first to have been applied by F.J. Cole and N.B. Eales in 1917. (Cole and Eales. 1977). Bibiometric has broad connotation and is “essentially concerned with the application of mathematical and statistical methods to books and other media of communication. (Simpson, 1988).
Bibilometric has become a standard tool of science policy & research management in the last decades. Now a days bibilometrics a rare truly interdisplinary research fields to extend the scientific fields. Bibilometrics, infometrics also deals with electronic media & thus includes topics such as statistical analysis of the text & hypertext systems, library circulations, information measures in electronic libraries models for information production processes and quantitative aspects of information retrieval (Glanzel W. 2003). ‘Alan Pritchard’ in 1969 has coined the term bibliometrics. For this term Dr. S R Rangnathan used another term ‘Librametry’ in 1948. (Kabir, 1999). Analysis of information generation its transfer and user studies are necessary to examine quantitative properties and behavior of recorded knowledge. Bibliometrics is the study of quantitative aspects of production, dissemination, and use of recorded information. Bibliometrics encompass a number of empirical methods, such as bibliographic coupling and co-citation analysis. Today, the fields of bibliometrics include all quantitative aspects and models of science communication, storage, dissemination, and retrieval of scientific information. The last definition integrates all presently existing orientations, such as applications to science policy, library science IR and knowledge organization in its broad context. The idea of using bibliometrics methods in connection with construction & maintenance of knowledge organization systems is not new, but only few actual construction attempts have been made. Bibliometrics methods have been successfully applied do examine the intellectual structure of several disciplines (Schneider & Borlund, 2004).

Bibliometrics is quantitative study of various aspect of document or literature of a subject and are used to identify the pattern of publication authorship, citation and secondary journal in the hope that such regularities can give an insight into the dynamic of the area under consideration (Devrajan, 2002). The bibliometrics is an application of statistical and mathematical methods to bibliographical studies. The word bibliometrics is derived from Latin & Greek words. Bibliometrics established itself as an emerging research
area of information science, but its usage and practice may be traced back even in the second decade of this century. The scope of bibliometrics includes studying the relationship within a literature or describing a literature. Typically these descriptions focus on consistent patterns, involving author, monographs, journals or subject/language. It is a quantitative science and divides its scope into basic categories: Descriptive bibliometrics and evaluative bibliometrics. Bibliometrics is a quantitative study of the literature on a topic & is used to identify pattern of publication, authorship and secondary journal coverage to get an insight into the growth of knowledge on that topic. Bibliometric has attained a sophistication & complexity and has national, international & interdisciplinary character and its practice can be traced back to the second decade of the 20th century. (Khparde V.S. 2011). Classifying and Counting Scientists, books papers and citation, an early statistical bibliographers set out to do, remain a fairly a extemporary activity as long as data continued to be examined outside a mathematical framework that would let them disclose meaningful patterns in the documentation process. The turning point occurred between the 1920s and the 1930s, when three basic bibliometric studies were published: Lotka ‘work on the distribution of scientific papers among authors; Bradford and Zipf used simple mathematical statements and graphical relation between sources and the items they produce in three areas: Authors producing papers, journals producing papers on a given subject, and texts producing words with a given frequency.

Three regularities occur in bibliometrics to which have been given the name ‘law’: Lotka’s Law of scientific Productivity (authors publishing in a certain discipline), Bradford’s law of Scattering (distribution of publications), and Zipf’s law of word Occurrence (ranking of word frequency). Lotka’s law dealt with author publishing and the number of papers published. It is regarded as one of the classical laws of bibliometrics.

The validity of Lotka’s law has been studied by a number of researchers who have applied most notable are the contribution of Pao and Nicholls, who found that the Lotka model fitted the Majority of the data sets studied. Both
have substantially confirmed the validity of the law, having tested it, respectively, against 48 and 70 datasets of empirical author productivity distribution. The authors felt necessary to establish a standard testing procedure for meaningful statistical comparison between different tests of Lotka’s law by defining the minimal requirements for each step involved in any validation process. They are:

i) Specification the Model
ii) Data collection
iii) Estimation the unknown parameters in the model equation, and
iv) Testing conformity of the observed data to the theoretical distribution by means of a goodness-of-fit test.

The laws of Bibliometrics:

i) Lotkas Law
ii) Bradford’s Law
iii) Zipf’s Law

2.3.1 Lotkas Law:

The Lotkas law distribution is based on the number (of authors) making n contributions is about 1/n2 of those making one and the proportion of all contributors that make single contributions about 60%.

\[
P (n) = \frac{K}{N^2}
\]

Where, p is the number of authors producing n papers and where k is constant characteristic of a particular subject area. (Pillai Sudhier K G.2013). Scientific productivity studies have been made from different angles. Impact of social change on scientific productivity, relationship of publication output on scientific recognition, identification of elites in different disciplines, occurrence of discoveries in different cultures etc. Lotkas investigated “the number of author making n contribution is about 1/n2 of those making one and proportion of all
contributors, that makes a single contribution, is about 60 percent. minimum productivity in this model in 1, the number of authors producing one single paper is denoted by n1, that of authors with maximum productivity in max=1, according as there is the first rank or Lotka's law is closely linked with another important law formulated by de solla price (De Solla price, 1963). Lotka’s study in terms of the period covered and the community of authors involved. It may reflect an underlying pattern in the behavior of those people who produce publication, whether those publication are books or journals articles. Lotkas's law states that the number of authors making contributions is about 1/n^2 of those making one, and the proportion of all contributors that make a single contribution, is about 60 percent. This means that out of all authors in a given field, 60% will have just one publication, and 15% will have two publications (1/2^2 times of 60) and 7% will have three publications (1/3^2 times of 60), and 4% will have four publications (1/4^2 times 60) and so on. According to lotkas’s law of scientific productivity, only six percent of the authors in a field will produce more than 10 articles. Lotkas’law when applied to large bodies of literature over a fairly long period of Time, can be accurate in general, but not statistically exact. The general form of lotkas’s law can be expressed as y=c/x^n, when y = percentage of authors= number of articles published by an author C= Constant and n= slope of the log-log plot.

2.3.2. Bradford’s Law

The Bradford distribution groups journals & articles to identify the number of periodicals relevant to a particular subject. Its computation is based on the total number of articles published by the journals in a particular subject area. Bradford’s law has been used as an argument about how to build collection, how to select journals to be indexed in bibliographies, how to measure the coverage of bibliographies, how to solve practical problems related to information seeking and retrieval, and by Bradford himself as an argument for new way to organize bibliographical word and scientific documentation. He described the pattern of scattering of literature in various periodicals. A constant is then computed for that subject area, which is based to determine the percentage of total coverage by
various numbers of journals in a field. (O. Conner 1981). Bradford’s law of bibliometrics study on the frequency of papers over journals Bradford found that “if scientific journals are arranged in order of decreasing productivity on a given subject, they may be divide into a nucleus of journals more particularly devoted to the subject and several groups of zones containing the same number and articles as the nucleus when the numbers of periodicals in the nucleus and the succeeding zones will be as 1: b: b^2. This law is used to identify core journals which was used in the research work and also used for find out the most productive year in their research (Patra & Chand, 2006).

2.3.3. Zipf’s Law

Zipf developed an extended empirical law of ranking of words and the frequency of its occurrence in a particular text. Zipf’s law has much potential for the descriptive evaluation of subject authority files and related aspects of indexing (O. Conner 1981).

There are many other laws of bibliometrics and its related family, which have been put forward by many researchers and librarians the world over. It will therefore, be worthwhile to highlight some of them as an accepted matter of fact, as follows:

2.3.4 Square Root Law Of Price States

Half of the scientific papers are contributed by the square root of the total number of scientific authors” Price, (Derek J de Solla, 1971) Price predicts that the number of elite in science is small compared to the total number of scientists. In his Square Root Law he Claims that any population of size N contains an effective elite of size √N. Or, in other words, "One-half of all scientific papers are contributed by a number of authors equal to the square root of the total number of scientific authors". (Sengupta, 1991).
2.3.5 Garfield Law of Concentration Argues

"A basic concentration of journals is the common core or nucleus of all fields." (Garfield, Eugene, 1971). Garfield, in his Law of Concentration, predicts: Bibliometrics, Informetrics, Scientometrics & Librametrics. Sengupta In his new bibliometric law, comments: "During phases of rapid and vigorous growth of knowledge in a scientific discipline, articles of interest to that discipline appear in increasing number in periodicals distant from that field.", mathematically this law stands in the following form: $F(x + y) = a + b \log (x + y)$ Where, $f(x + y)$ stands for the cumulative number of the references in the first $(x + y)$ most productive journals, 'x' indicates number of journals in the same discipline and 'y' stands for the journals of related discipline, while, $(y > x)$, and 'a' 'b' are parameters which stand for constants. Bibliometrics offers the library and information field much and a lot to come. The research work by Lotka, Bradford and Zipf, indeed, is valuable in helping librarians and researchers who assess patterns of authorship. Identify core collections and design better retrieval systems (Sengupta 1991). "During phases of rapid and vigorous growth of knowledge in a scientific discipline, articles of interest to that discipline appear in increasing number in periodicals distant from that field".

2.4 INFORMETRICS

The terms ‘Informetrics’ was introduced by Blackert, Siegal and Nacke in 1979 but gained popularity by launch of the International Informetrics conference in 1987. Tague-Sutcliffe’s (1992) definition: “Informetrics is the study of the quantitative aspects of information in any form, not just records or bibliographies, and in any social group, not just scientists”. Egghe (2005) the broad term comprising all the metrics studies related to information science including bibliometrics (bibliographies, libraries), scientometrics (science policy, citation analysis, research evaluation, webometrics (metrics of the web, the Internet or other social networks such as citation or collaboration.
2.5 SCIENTOMETRICS

Scientometric research is devoted to quantitative studies of science and technology – according to. Scientometrics applies the bibliometric techniques to science and examines the development of the sciences. Main areas of Scientometrics are individual scientific documents, authors, scientific institutions, academic journals and regional aspects of science (A.F.J. Van Raan, 1997). Scientometric technique tends to be time consuming because of the tediousness and difficulty in acquiring and teasing out a clean dataset for analysis as until recently, there have been to central repositories of bibliographies information. Scientometric is the science of measuring and analyzing science. In practices, scientometrics is often done using bibliometrics which is a measurement of the impact of publications (Vedavathi, 1983). The scientific measurement of the work of scientists, especially by way of analyzing their publications and the citations within them, scientometrics is the science of method scientific output similar to bibliometrics used by librarians and information scientists. Scientometric is the science of measuring and analyzing science. Scientometric research provides an understanding of the process and evolution of science and also its structure and dynamics (Leydesdorff, 1999).

2.6 WEBOMETRICS

Webometrics, the quantitative study of Web-based phenomena (defined more precisely later) was born in 1997 and was driven rapidly forward by a number of pioneering researchers and investigations. There were three main directions for early research: link impact evaluation, link relationship mapping and search engine results analysis (Almind and Ingwersen 1997). Webometrics is the study of Web-based content with primarily quantitative methods for social science research goals using techniques that are not specific to one field of study” (Thelwall 2009).
2.7 CYBERMETRICS

Cybermetrics is that branch of knowledge which employs mathematical and statistical techniques to quantify websites or their components and concepts that measures their growth, stability, propagation & use examines the authenticity of the content established laws governing these factors studies the efficiency of cyber information systems and products & assess the impact of cyber age on society (Sen B K 2004).

2.8 CITATION ANALYSIS

Citation analysis is very popular to identify core journals authors & other sources of information especially to determine the useful life at literature. Citation analysis is the examination of the frequency, patterns, and graphs of citations in articles and books. It uses citations in scholarly works to establish links to other works or other researchers. (Kabir 1993). Citation analysis is a technique of bibliometrics. It is an important research tool understanding the subject, which we analyze the structure and direction of the subject. It measures the utility of documents and relationship between in the subject and relationship between authors and their documents. It is a tool for identifying the core journals in a subject on counting the citation given at the end of each article from a group of primary journals. Afterword, a number of such studies were carried out citations in Dissertation/thesis, book, primary journals and reviewing journals (Doreswamy, 2001).

2.9 CONTENT ANALYSIS:

Content analysis is a process for systematically analyzing messages in any type of communication. It has been described as a technique which lies at the crossroads of qualitative & quantitative methods & a technique that allow a quantitative analysis of seemingly qualitative data (Nancy Kondracki & Wellman Nancy 2002). The analytical constructs may be derived from (1) existing theories
or practices; (2) the experience or knowledge of experts; and (3) previous research (Krippendorff, 2004, Mayring (2000), the author of a standard German-language text on qualitative content analysis, suggests using a model of communication to determine the focal point for the inferences. Conclusions can be drawn about the communicator, the message or text, the situation surrounding its creation--including the socio cultural background of the communication--and/or the effect of the message. Focuses on characterizing the communicator, draws inferences about academicians' conceptual models of libraries based on analyzing the metaphors they used when they referred to libraries in published letters to the editor and opinion articles. Nitecki (1993). Content analysis involves specialized procedures that, at least in quantitative content analysis, allow for replication. The findings of a good study using quantitative content analysis, on the authority of the researchers doing the content analysis for their acceptability. They can be subjected to independent tests and techniques for judging their validity and reliability. Indeed, the extent to which validity and reliability can be judged are significant issues in evaluating a research methodology and they are considered in subsequent sections in relation to both quantitative and qualitative content analysis.

Content analysis does not proceed in a linear fashion and is more complex and difficult than quantitative analysis because it is less standardized and formulaic (Polit & Beck 2004). There are no simple guidelines for data analysis: each inquiry is distinctive, and the results depend on the skills, insights, analytic abilities and style of the investigator (Hoskins & Mariano 2004). One challenge of content analysis is the fact that it is very flexible and there is no simple, ‘right’ way of doing it. Researchers must judge what variations are most appropriate for their particular problems (Weber 1990), and this makes the analysis process most challenging and interesting. An enormous amount of work is required during the process (Polit & Beck 2004). Content analysis is extremely well-suited to analyzing the multifaceted, sensitive phenomena characteristic of nursing. An advantage of the method is that large volumes of textual data and different textual sources can be dealt with and used in corroborating evidence. Especially in
nursing research, content analysis has been an important way of providing evidence for a phenomenon where the qualitative approach used to be the only way to do this, particularly for sensitive topics. The disadvantage of content analysis relates to research questions that are ambiguous or too extensive. In addition, excessive interpretation on the part of the researcher poses a threat to successful content analysis.

Content analysis is a systematic analysis & description of coding technique, book, journal, newspaper. (Satarkar & Dharmapurkar 2001). On the basis of above definition, it can be said that the Content analysis has the following characteristics:

i) It is quantitative statement.
ii) The content analysis is used by the means of communication
iii) The content analysis is used by the means of communication
iv) The content analysis is used for the generalization of facts
v) It is a purposeful and systematic arrangement
vi) It is used to measure the variables.
vii) It is an observation and measurement method.
viii) In this method the services for computer scan easily be obtained
ix) It is a simple and easy method
x) This method can also be used to analyze the cost.

2.10 SELECTION OF COMMUNICATION CONTENT AND SAMPLE

The next step would be to locate relevant communication content to answer the research question and to determine the time period to be covered. If the body of content is excessive, then a sample needs to be worked out. Though sampling in content analysis is not so much different from sampling in surveys, because of the unique nature of the source material used in this method, there developed some special sampling techniques for content analysis. Thus, depending upon the nature of the communication content – whether it is a new
item, editorial, short story or a TV serial – the sampling techniques differ. For instance, the use of constructed week and consecutive day sampling to control the bias of cyclical trends in news coverage (Riffe, 1993; Budd & Donohue, 1967), and the use of basic space unit approach (Danielson & Mullen, 1965) to take a sample from large volumes of newspaper content - are some of the examples. Useful advice on some of these sampling techniques in content analysis is discussed in Budd & Donohue (1967). The constructed week and consecutive day sampling and gave a detailed description of the steps involved. A typical description of samples in content analysis specifies a topic area and time period. (Murty (2001). Content analysis has its limitations. What it does not tell us is about causal connections between variables under study. For example, it is good at capturing the changing trends in the subject content of professional articles published in a journal (Loy, 1979). But it cannot answer why there were changes in the subject content. Further, though a popular research method both in the Social sciences and Mass communications, it is still used as a technique to supplement the findings of mainstream research designs research. Rightly argues that “content analysis remains an underutilized research method with great potential for studying beliefs, organizations, attitudes and human relations. The limited application and development of content analysis is due more to unfamiliarity with the method and to its historic isolation from main stream social science than to its inherent limitations”. (Woodrum 1984).

Content analysis is a systematic technique for categorizing words into content categories using special coding rules. In essence, it's a qualitative method of determining characteristics of interest based on grammatical structure, word content, and other fundamental characteristics of communication. The method has been used to analyze the content of presidents' letters and narrative disclosures as they relate to bankruptcy, good news vs. bad news, and deceit. Content analysis has been used to describe the content of stock analyst reports where financial and operating data is most often cited as indicating determinants of interest. It has also been used to analyze the drivers of analysts' reports and to show that characteristics of the chairman's statement are associated with company failure.
One researcher found that deceivers' written communication will contain higher levels of rhetoric, sentence sophistication, and self-reference. With regard to words related to self-reference, a deceiver tends to avoid using I or me. Instead, they might use us to steer clear of committing themselves to the things they are communicating. Given these embedded indicators of deception evidenced in written communication, explore the use of content analysis as an indicator of financial fraud.

2.11 SIX STEPS OF CONTENT ANALYSIS

Content analysis commonly contains six steps these are following:

i) **Design:**
A conceptual phase during which analysis their context, what they wish to know and one unable to observe directly.

ii) **Utilizing:**
The phase of defining & ultimately identifying units of analysis in the Volume of available data.

iii) **Sampling :**
The process of drawing representative samples is not indigenous to Content analysis there is the need: To undo the statistical bias and to Insure that the often conditional hierarchy of chosen sampling units.

iv) **Coding :**
This step replicates an elementary notion of meaning & can be Accomplished either by explicit instructions to trained human coders or By computer coding.

v) **Drawing Inference:**
It is important phase in content analysis. It applies the stable knowledge about now the variable accounts of coded data are related to the phenomena the researchers want to know about.

vi) **Validation:**
Validation of content analysis result is limited by the intention of the Technique. (Barnoww, 1989).
2.12 PURPOSE OF CONTENT ANALYSIS

Content denotes what is contained and content analysis is the analysis of what is contained in a message. Broadly content analysis may be seen as a method where the content of the message forms the basis for drawing inferences and conclusions about the content (Nachmias 1976). Content analysis falls in the interface of observation and document analysis. It is defined as a method of observation in the sense that instead of asking people to respond to questions. It takes the communications that people have produced and asks quotations of communications (Kerlinger 1973) According to Berelson (1952) content analysis is a research technique for the objective, systematic, and quantitative description of the manifest content of communication. Holsti (1968) say that it is any technique for making inference by systematically and objectively identifying specified characteristics of messages. It is a research methodology that utilizes a set of procedures to make valid inferences from text (Weber 1985).

A careful examination of the definitions of the method show emphasis placed on aspects such as system, objectivity, quantification, context and validity - with reference to the inference drawn from the communication content about the sender, the message or the receiver of the message. Thus, content analysis is all about making valid replicable and objective inference about the message on the basis of explicit rules. The material for the content analysis can be letters, diaries, newspaper content, folk songs, short stories, and messages of radio, Television, documents, texts or any symbols.

2.13 CONTENT ANALYSIS AS A RESEARCH TOOL

Content analysis is the reduction of data into categories. It is a research tool used to determine the presence of certain words or concepts within text or set of texts. Quantified analyze the presence, meaning and relationship of such words and concepts and then make inference about the message within the text, writers the audience and even the culture and time of which these are a part. To conduct a content analysis on any such text, the text is coded or broken down into
manageable categories on a variety of levels: word, word sentence, phrase, theme and then examined using one of content analysis basic method, conceptual analysis or relational analysis. This will help us to reduce the data into manageable categories on information. This will amiable to further statistical process. Content analysis consists of analyzing the content of documentary materials such as books, Magazines, newspapers and the content of all other verbal materials which can be either spoken or printed. Content analysis prior to 1940s was mostly quantitative analysis of documentary materials concerning certain characteristics that can be identifies and counted. Content analysis is mostly qualitative analysis concerning the general import or message of the existing documents. The difference is somewhat like that between a casual interview and depth interviewing. Content analysis is measurement through proportion. Content analysis measures pervasiveness and that is sometimes an index of the intensity of the force. The analysis of content is a central activity whenever one is concerned with the study of the nature of the verbal materials. A review of research in any area, for instance, involves the analysis of the contents of research articles that have been published. The analysis may be at a relatively simple level or may be a subtle one. It is a simple level when pursue on the basis of certain characteristics of the document or verbal materials that can be identifies and counted. It is at subtle level when researches make a study of the attitude. (Kothari 2009).

Content analysis research themes indicate that Kassajian’s original themes served as a framework for expanded topical domains overtime. The current framework has been enriched by socio cultural and disciplinary changes such as the emergence of new themes, data sources, qualitative methods, disciplinary self-reflexiveness and renewed interest in quantitative examination. (Michael Mulvey M, 2004).
2.14 CONTENT ANALYSIS IN LIBRARY & INFORMATION SCIENCE

Content analysis is a highly flexible research method that has been widely used in library and information science (LIS) studies with varying research goals and objectives. The research method is applied in qualitative, quantitative, and sometimes mixed modes of research frameworks and employs a wide range of analytical techniques to generate findings and put them into context. (White Marilyn 2006). Content analysis has been extended to analyze different types of data (e.g. reference interviews, problem statements in published article, job advertisements, etc) in both qualitative and quantitative researches.

2.15 JOURNAL STUDIES ON CONTENT ANALYSIS

Content analysis aims to identify topics that are being addressed in the institutional repository (IR) literature, and to determine what the role of the librarian will be in IR projects. A thorough search was conducted to identify literature that has been published about IRs. A conceptual content analysis was conducted on the literature using eight category coding steps and a multi coder process including a review of inter coder agreement. The analysis of the 30 articles revealed that concepts found in the IR literature can be grouped into five major themes – definition, implementation, management, outcomes, and librarian's role. The analysis also indicated that there is only a limited discussion of the librarian's role particularly with regard to the relationship with self archiving authors, which is a key characteristic of IRs. The contribution by identifying what is missing in the literature and by offering recommendations about the role of librarians in the IR environment. (Suzie Allard & Thura R. Mack 2005). The content analysis is definitely a case of information analysis therefore the term content analysis and information analysis are used as synonyms. The paper is the outcome of the content analysis of 33 issues of DESSIDOC bulletin of information technology (DBIT) published thematic issues on different areas of
IT, library management and information marketing and the contents of journal are analyzed in this study. (Tigga Usha P. & Lihitkar Shalini 2005). It involved determining the articles’ countries of origin, sectors represented, and focus and frequency of the topics covered. It was found that the majority of articles were from Asian countries, with Turkey providing the greatest number of contributions. There were also many papers from the Middle East, Africa, South America, USA, Eastern and Western Europe, and Australia. It covered a very wide range of topics and while the quality varied, there has been a appreciable improvement in the research and reporting since the journal’s inception. Some of the papers, presenting non-Western perspectives, are particularly illuminating. Overall, a greater concern for teaching and learning than the technology. Some conclusions were drawn on the achievements of TOJDE and some possible future directions for the journal (Colin Latchem (2009). The purpose of the study is overview and summarizes all articles published in the UNLV Gaming research & Review Journal (GRRJ) from 1994 to 2008, in order to understand the gaming research trends. A content Analysis performed on a total of 129 articles in 24 issues of GRRJ. The paper suggests thematic content analysis and the trend of the research in order to better understand the scope of gaming research area. (Eunjin Kwon, Ki-Joon Back, 2009).

Content analysis of papers published in the journal of sustainable tourism, the only journal exclusively devoted to sustainable tourism research over the past 15 years (1993-2007). The findings present the journals contribution to theoretical debates, methodological sophistication and practical implications in sustainable tourism research are also discussed. (Lu Jiaying & Nepal Sanjay K. (2009).

The Indian institutes of technology are identified as premier institutes of higher education and research in technology in India. It was observed from the study that all the library portals study that all the library portals of Indian institutes of technology are different from one another in many respects. (Kannappanavar Vijaykumar M & Mestri Mamata (2009). Content analysis provides an overview of the contents and design of the online English newspapers
in India. The study used websites content analysis to assess the contents and design of these newspapers & also shows that online English newspapers in India have a common pattern of contents, coverage and design. (Haneefa Mohamed & Nellikka Shyma (2010). The development of a content analysis model the four researchers found to be very useful to both research students and their supervisors in the quality assessment of students research projects. The studies contributes useful knowledge and skills that can be used in the assessment of open and distance learning students through research work & assess quality of their own research work. (Kangui Caleb, Bukaliya Richard, Musika Farirai (2011).

The analyzed the origin and data collection methodologies of research articles published in three information system journals between 2005 and 2007. A coding sheet was utilized to collect the relevant data for content analysis. A variety of statistical packages were used to analyze quantitative data while coding was the most popular method for analyzing qualitative data. (Davies Karen 2012 It identify the types of research papers/articles, current trends in the choice of subjects, being included in the library and information science (LIS) journal literature published from UK & USA. To find out the impact of information & communication technology ICT on LIS subject fields. It shows that subjects discussed in the articles in various LIS journals clearly reflect the prevailing trends in the journal studied shows that the area of information storage and retrieval is the most popular area of research followed by bibliometrics, scientometrics & Informatics & webometrics & information seeking behavior. (Kaur Walia Paramjeet & Kaur Manpreet (2012).

This study aimed to investigate how face book is used by academic libraries to communicate with users, and vice versa through learning posts, comments, like and others. Content analysis was conducted to survey 10 face book profiles of academic libraries in Taiwan. The study provide insights for making informed decisions in adopting face book as a part of library services and in evaluating the value and role of social networking sites form both librarians & users perspectives. (MingHsin Phoebe Chiu & Yi-Ying Lin 2012). Content analysis is used to study seeks to describe and analyze journal research
publications in the top 10 library and information science journals from 2007-08. The paper presents a statistical descriptive analysis of authorship patterns (geographical distribution and affiliation) and keywords. It displays through content analysis of keywords and abstracts extracted from 10 leading information science journals in 2007-08, using Zins (2007) classification scheme of information science. The main result suggests the tendency of authors towards collaboration in authorship. North American and European authors— from the core discipline of librarianship and information science—can are considered as leaders in the top 10 LIS journals. (Noa Aharony 2012). Content analysis of articles published in International journal on Marin Navigation and safety of sea Transportation (TransNav). A Content analysis was conducted for a 5 year period from 2007-2012. The analyses were found that the authors from Poland made the most contribution to the journal. Finally it was concluded that writing for publication is substantial task for researchers and academicians to make contribution to science to get reputation and promotion to be recognized in the academic community and to develop them. In this regard it is wondered about articles published in TransNav journal and related study has been done to reveal author’s score country and institution ranks. (Fiskin R& Nas S.(2013).

Content analysis of journal content leads to the identification of research practices and identifies the challenges that researchers face. The main purpose is to investigate the input and output factors relating to published articles including question on authors and articles content, such as the various methodological approaches. In conclusion content analysis has revealed current research practices as published in the SAJEMS and has attempted to shed some light on the nature of research in the economic and management fields. (Jordon Yolanda, Wiese Melanie & Amade Karim (2013). Content analysis of original research articles published in health communication and journal of health communication from 2000 to 2009. The authors coded 776 articles using categories that identified health topics, theory, population characteristics and method used in each study. Results are discussed in terms of their implications for expanding health communication research to be reflective of issues salient to
public health within the United States and around the world. (Nazoine Samantha; Pace Kristin & Jessica Rusell (2013).

Quantitative content analysis was considered as a method of studying the content of communication in order to assess the standard and utility value of the content of farm magazine. The content analysis is quantitative or qualitative content analysis was studies in terms of trend in the coverage of content and format of presentation. (Sailaja Archana T.2013). Content analysis of papers submitted to the journal communication in information literacy form the year’s 2007-2013. The purpose was to investigate and report on the overall quality characteristics of a statistically significant sample of papers submitted to a single topic open access library & information science journal. The findings suggest a possible deterioration in some of the skill that is required of LIS authors relative to the preparation of scholarly papers. (Hollister Christopher 2014). Content analysis examining websites of special collections libraries and archives supporting large scale digitization initiatives to determine the kinds of information & functionalities available to online users. The result demonstrate success in highlighting digitized materials on the resultant websites, but show a lack of consistency in the use of item level & aggregate level metadata, suggesting inconsistency in the definition of large scale digitization. (Loeb Amanda L.2014).

2.16 STEPS IN CONTENT ANALYSIS

Content analysis has come to be a sort of 'umbrella term' referring to an almost boundless set of quite diverse research approaches and techniques, broadly, it can refer to methods for studying and/or retrieving meaningful information from documents (Tipaldo 2014) In a more focused way, content analysis refers to a family of techniques for studying the "mute evidence" of texts and artifacts. There are 5 types of texts in content analysis:

i. Written text, such as books and papers

ii. Oral text, such as speech and theatrical performance
iii. Iconic text such as drawings, paintings, and icons
iv. Audio-visual text, such as TV programs, movies, and videos
v. Hypertexts, which are texts found on the Internet

Content analysis can also be described as studying traces, which are documents from past times, and artifacts, which are non-linguistic documents. (Hoddler 1994).

2.17 DIFFERENT CATEGORIES OF CONTENT ANALYSIS

2.17.1 Quantitative Analysis

Quantitative content analysis can prove to be more powerful method than survey and interviews because of its unobtrusive nature and its lack of reliance on subjective perceptions. The method to investigate a communicative situation that no longer exists cannot be accessed. Quantitative approaches enable a broader investigation or texts over an extended period of time. Content analysis as a research technique for making replicable and valid inferences from texts in the contexts of their use. Texts can be broadly classified to include printed matter, images maps, art, sounds, sings or symbols. (Boettger Ryan 2010).

Quantitative content analysis can be reduced to four essential steps. The first step is to identify representative samples of the communication they wish to study, second step involves creating a protocol for identifying and categorizing the target variables, third step is data analyzed either to describe the target variable and fourth step is discussed in the next subsections objectivity, reliability, reliability, and systematic coherence. (Rourke Liam, 2002). The purpose of content analysis from simple description to inferential hypothesis testing. The context of educational research, whereas most early studies employing content analysis relied on simple frequency counts of objective variables, recent studies more often aim at using content analysis to gain insights into complex social and psychological variables. Such studies are much more
difficult to carry out than the simple frequency studies and often depend on a high level of sophistication. (Borg & Gall 1989).

Content analysis used as a more general term for methodologies that code text into categories and then counts the frequencies of occurrences within each category. The broader definition retains the idea that content analysis is quantitative, but leaves open for discussion when strive for objectivity.(Arnols S.J.1994).

2.17.2 Coding

In quantitative content analysis the coding scheme is determined a priori, that is, before coding begins. A coding scheme operationalizes concepts that may in themselves be amorphous. It establishes categories that are relevant and valid. Relevant means that they allow for testing the hypotheses. Validity refers to "the extent to which a measuring procedure represents the intended, and only the intended, concept" (Neuendorf, 2002). Validity can be assessed in several ways. Face validity, which is common in content analysis, refers to the extent to which a measure "gets at" the essential aspects of the concept being measured. Face validity is inherently subjective. To determine face validity, researchers assess as objectively as possible the correspondence between what they measure and how they measure it. One way of corroborating face validity is to have judges work backwards from the measure to determine the concept being measured (Neuendorf, 2002) Other means of assessment are criterion validity, which relies on assessing the correspondence between the code and criteria, such as concurrent or predictive behavior or norms of behavior; content validity, which looks at the completeness of representation of the concept; and construct validity, which refers to "the extent to which a measure is related to other measures (constructs) in a way consistent with hypotheses derived from theory" (Neuendorf, 2002) Construct validity is more difficult to assess than criterion or content validity but is a worthy objective.
2.17.3 Analyzing the Coded Data

After the coding, which in itself is analytical, the researcher undertakes several additional steps. These steps, too, are done within the framework of the hypotheses or research questions. First, summarizes the findings identified during the coding, formulating and restating them so that they can be understood easily and are applicable to his hypotheses or research questions. Second, identifies and articulates the patterns and relationships among findings so that it can test hypotheses or answer his research questions. Finally, relates these more involved findings to those in other situations or other studies. The last step allows putting Findings into perspective. In the analysis, the content analysis chooses from among a variety of statistical approaches or techniques for presenting and testing findings. The range in complexity and demands for different scales of measurement for the variables. The approach selects takes into consideration not only the questions is addressing but also the nature of the data and may include tabulations; cross-tabulations, associations, and correlations; multivariate techniques, such as multiple regression analysis; factor analysis and multidimensional scaling; images, portrayals, semantic nodes, and profiles; contingencies and contingency analysis; and clustering. Often, decisions about using these techniques are made in the planning phase of the project since they influence and build on decisions that, of necessity, must occur earlier in the project, such as establishing the level of measurement for a particular variable. The output of these techniques can be presented, in most cases, both in tabular and graphic form. Not all of these techniques are used in the LIS content analysis studies. Tabulations, cross-tabulations, associations, and correlations are common (Schoch & White, 1997; White, 1998). use clustering techniques to develop a typology of innovators in a study of the content of publishers' Web sites and use it to profile publishers along a spectrum from traditionalist to innovator. (Stansbury, 2002).
2.18 QUALITATIVE CONTENT ANALYSIS

Content analysis is a widely used qualitative research technique. Rather than being a single method, current applications of content analysis show three distinct approaches: conventional, directed, or summative. All three approaches are used to interpret meaning from the content of text data and, hence, adhere to the naturalistic paradigm. The major differences among the approaches are coding schemes, origins of codes, and threats to trustworthiness. In conventional content analysis, coding categories are derived directly from the text data. With a directed approach, analysis starts with a theory or relevant research findings as guidance for initial codes. A summative content analysis involves counting and comparisons, usually of keywords or content, followed by the interpretation of the underlying context. The authors delineate analytic procedures specific to each approach and techniques addressing trustworthiness with hypothetical examples drawn from the area of end-of-life care. Hsiu-Fang Hsieh Sarah E. Shannon (2005).

Qualitative Content Analysis is to start from the methodological basis of Quantitative Content Analysis but to conceptualize the process of assigning categories to text passages as a qualitative-interpretive act, content-analytical rules. The Qualitative Content Analysis is a mixed methods approach: assignment of categories to text as qualitative step, working through many text passages and analysis of frequencies of categories as quantitative step. (Mayring Philipp (2014). Qualitative content analysis as describes in published literature shows conflicting opinions and unsolved issues regarding meaning and use of concepts, procedures and interpretation.

2.18.1 Common Research Criteria for Qualitative and Quantitative Approaches

The best way to escape methodological arbitrariness would be formulating obligatory quality criteria valuable for quantitative as well as qualitative (as well as mixed method) research. Some efforts have been made
already in the direction of defining common obliging research criteria. a unified approach following a logic of inference in qualitative and quantitative approaches, but did not work out concrete criteria. (King, Keohane & Verba 1994) The Keystone of Science Project and the National Research Council formulated criteria for qualitative projects referring to common steps of analysis significant questions that can be investigated empirically (Gauch, 2003). It Provide coherent and explicit chain of reasoning, Replicate and generalize across studies Disclose research to encourage professional scrutiny and critique, But this advice remained unspecific as well, because it did not provide clear methodological procedures. The Cochrane Qualitative Research Methods Group has listed possibilities of qualitative studies to add evidence-based reviews (Informing, enhancing, extending and supplementing reviews), but leave the quantitative experimental gold standard. (Noyes, Popey, Pearson, Hannes & Booth, 2008). The American Educational Research Association AERA (2006) has formulated standards for reporting on empirical social science research in its publications, especially for qualitative projects: clear description of procedures, presentation of evidence, reasoning of interpretations and critical verification, but it does not define procedures. On such conceptions, a valid and fruitful understanding of scientific work could be built up, which overcomes the problematic dichotomization of the qualitative versus the quantitative approach.

2.18.2 Procedures: Qualitative Content Analysis

Proponents of qualitative and quantitative content analysis often emphasize their differences, yet many similarities exist as well. Noting four common elements, who covers both variants in his text, points out "the proponents of both approaches:

1. Sample text, in the sense of selecting what is relevant;
2. Unitize text, in the sense of distinguishing words or propositions and using quotes or examples;
3. Contextualize what they are reading in light of what they know about the circumstances surrounding the text; and
4. Have specific research questions in mind” (Krippendorf, 2004.)

The two types of content analysis along several dimensions. In contrast with quantitative content analysis, qualitative content analysis flows from a humanistic, not a positivistic, tradition. It is inductive. Qualitative content analysis may yield testable hypotheses but that is not its immediate purpose. Replacing the hypotheses are foreshadowing questions, that is, open questions that guide the research and influence the data that are gathered. In qualitative content analysis, however, the text plays a slightly different role in that, as the researcher reads through the data and scrutinizes them closely to identify concepts and patterns, some patterns and concepts may emerge that were not foreshadowed but that are, nevertheless, important aspects to consider. In that case, the researcher may legitimately alter interests and research questions to pursue these new patterns. For example, in Hahn's study of the author and editor as early adopters of electronic journals, initially had three open, foreshadowing research questions, based, to some extent, on diffusion theory (Rogers, 1995): "1) How do authors and editors working closely with an electronic journal perceive electronic journals; 2) What is the decision process that authors are using to decide to publish in an electronic journal; 3) How do social factors influence the adoption decision?" (Hahn, 1999). As coding and analysis evolved, “4) what key relations between the scientific community and the publishing system are affected by electronic publishing, Krippendorff refers to this iterative process of "recontextualizing, reinterpreting, and redefining the research until some kind of satisfactory interpretation is reached" as a hermeneutic loop. This procedure may actually occur in quantitative content analysis studies but only at the development phase of the research design; the development phase is adherence to the practices specified earlier (Boeije, 2002).

Qualitative content analysis has developed approaches similar to validity and reliability for assessing the rigor of the coding and analysis process. Qualitative content analysis focuses on creating a picture of a given phenomenon
that is always embedded within a particular context, not on describing reality objectively. Lincoln and Guba (1985) describe four criteria used to assess the degree to which a qualitative study will have "truth value," that is, "confidence in the 'truth' of the findings of a particular inquiry" (Guba & Lincoln, 1981) credibility, transferability, dependability, and conformability. Credibility, the equivalent of internal validity, calls for identifying all important factors in the research question and accurately and completely describing the ways in which these factors are reflected in the data gathered. Transferability, or external validity, is essentially a judgment about the applicability of findings from one context to another. Generally a qualitative researcher tries to situate findings within a relevant theoretical paradigm, understanding that findings sensible within it can be applied to other, comparable contexts with greater confidence. Similarly, usually tries to collect data on a single factor or question aspects from multiple sources with the understanding that findings based on multiple data sources can be transferred with greater confidence. Collecting, analyzing, and cross-checking a variety of data on a single factor or aspect of a question from multiple sources, and perhaps perspectives, termed triangulation and is a way to heighten a qualitative study's credibility and conformability (Buchwald 2000).

2.18.3 Qualitative Content Analysis as Mixed Methods Approach

The central idea of Qualitative Content Analysis is to start from the methodological basis of Quantitative Content Analysis but to conceptualize the process of assigning categories to text passages as a qualitative-interpretive act, content-analytical rules the Qualitative Content Analysis is a mixed methods approach: assignment of categories to text as qualitative step, working through many text passages and analysis of frequencies of categories as quantitative step. Furthermore, formulate strict content-analytical rules for the whole process and for the specific steps of analysis. In this respect, our approach is dedicated to the common research criteria approach formulated above. But the Qualitative Content Analysis itself is to be understood as a data analysis technique within a rule guided
research process, and this research process is bound to common (qualitative and quantitative) research standards.

2.19 CONTENT ANALYSIS OF COMMUNICATION

A carefully prepared and reproducible plan for collection & quantification of elements of communication (Busha & Harton, 1980). Stimulated by the rapidly increasing volume of material produced by the mass media developed content of communication. (Sellize & Dharmapurikar 1967). Content analysis also used in personal communication. The addition of personal communications, consumer generated and employee generated verbal protocols as new data sources. Nonetheless expansion of the source is rooted in early conceptualizations of “Content” by Berelson, Kerlenger, Holsti and Lasswell, which Kassarjian summarizes as “the communications that people have produced (Kassarjian, 1977). The broadening of the concept of “verbal and symbolic behavior “encoded in written and spoken language. It includes analysis of language in real life communication. Content analysis of verbal data is also called “protocol analysis” and “discourse analysis”, terms that are used interchangeably even though they are not identical. (Michael Mulvey S.2004). Content analysis was considered as a method of studying the content of communication in order to assess the standard and utility value of the content of farm magazine. Content analysis is quantitative and qualitative in nature. (Archna T. & Sailaja A.2013).

2.20 CONTENT ANALYSIS IN SUPPLY CHAIN MANAGEMENT

Content analysis in supply chain management is crucial tools for assessing and developing the knowledge base within a research field. Supply chain management (SCM) are often considerably less stringently presented than other empirical research. Reliability of the research and traceability of the arguments and conclusions call for more transparent and systematic procedures. A descriptive evaluation of the literature body is followed by a content analysis on the basis of a
specific pattern of analytic categories derived from a typical research process. The findings and subsequent methodological discussions aim at providing practical guidance for SCM.

### 2.21 CONVENTIONAL CONTENT ANALYSIS

Conventional content analysis is generally used with a study design whose aim is to describe a phenomenon, in this case the emotional reactions of hospice patients. This type of design is usually appropriate when existing theory or research literature on a phenomenon is limited. Researchers avoid using preconceived categories (Kondracki & Wellman, 2002), instead allowing the categories and names for categories to flow from the data. Researchers immerse themselves in the data to allow new insights to emerge (Kondracki & Wellman, 2002), also described as inductive category development (Mayring, 2000). Many qualitative methods share this initial approach to study design and analysis. If data are collected primarily through interviews, open-ended questions will be used. Data are read word by word to derive codes (Miles & Huberman, 1994) by first highlighting the exact words from the text that appear to capture key thoughts or concepts. Next, the researcher approaches the text by making notes of his or her first impressions, thoughts, and initial analysis. As this process continues, labels for codes emerge that are reflective of more than one key thought. These often come directly from the text and are then become the initial coding scheme. Codes then are sorted into categories based on how different codes are related and linked. These emergent categories are used to organize and group codes into meaningful clusters (Coffey & Atkinson, 1996; Patton, 2002). Ideally, the numbers of clusters are between 10 and 15 to keep clusters broad enough to sort a large number of codes (Morse & Field, 1995).
2.22 DIRECTED CONTENT ANALYSIS

Content analysis using a directed approach is guided by a more structured process than in a conventional approach (Hickey & Kipping, 1996). Using existing theory or prior research, researchers begin by identifying key concepts or variables as initial coding categories (Potter & Levine-Donnerstein, 1999), operational definitions for each category are determined using the theory. Kubler-Ross’s (1969) five stages of grief served as an initial framework to identify emotional stages of terminally ill patients. If data are collected primarily through interviews, an open-ended question might be used, followed by targeted questions about the predetermined categories. After an open-ended question, used probes specifically to explore participants’ experiences of denial, anger, bargaining, depression, and acceptance. Coding can begin with one of two strategies, depending on the research question. If the goal of the research is to identify and categorize all instances of a particular phenomenon, such as emotional reactions, then it might be helpful to read the transcript and highlight all text that on first impression appears to represent an emotional reaction. The next step in analysis would be to code all highlighted passages using the predetermined codes. Any text that could not be categorized with the initial coding scheme would be given a new code.

2.23 SUMMATIVE CONTENT ANALYSIS

Typically, a study using a summative approach to qualitative content analysis starts with identifying and quantifying certain words or content in text with the purpose of understanding the contextual use of the words or content. This quantification is an attempt not to infer meaning but, rather, to explore usage. Analyzing for the appearance of a particular word or content in textual material is referred to as manifest content analysis (Potter & Levine-Donnerstein, 1999). If the analysis stopped at this point, the analysis would be quantitative, focusing on counting the frequency of specific words or content (Kondracki & Wellman, 2002). A summative approach to qualitative content analysis goes beyond word counts to include latent content analysis. Latent content analysis refers to the
process of interpretation. In this analysis, the focus is on discovering underlying meanings of the words or the content (Babbie, 1992; Catanzaro, 1988; Morse & Field, 1995). In Researcher Z’s study, the initial part of the analysis technique, to count the frequency of death, die, and dying is more accurately viewed as a quantitative approach. However, alternative terms for death and to examine the contexts within which direct versus euphemistic terms were used. Summative approach to qualitative content analysis. Using content analysis from this approach in studies that analyze manuscript types in a particular journal or specific content in textbooks.

2.24 THEMATIC CONTENT ANALYSIS

Thematic analysis is a method for identifying, analyzing, and reporting patterns (themes) within data. It minimally organizes and describes data set in detail. However, it also often goes further than this, and interprets various aspects of the research topic (Boyatzis, 1998). The range of different possible thematic analyses will further be highlighted in relation to a number of decisions regarding it as a method. Thematic analysis is widely used, but there is no clear agreement about what thematic analysis is and how you go about doing it. It can be seen as a very poorly „branded“ method, in that it does not appear to exist as a „named analysis in the same way that other methods do, narrative analysis, grounded theory). In this sense, it is often not explicitly claimed as the method of analysis, when, in actuality, argue that a lot of analysis is essentially thematic - but is either claimed as something else (such as discourse analysis, or even content analysis (Meehan, Vermeer, & Windsor, 2000)) or not identified as any particular method at all – for example, data were “subjected to qualitative analysis for commonly recurring themes” (Braun & Wilkinson, 2003 ). If we do not know how people went about analyzing their data, or what assumptions informed their analysis, it is difficult to evaluate their research, and to compare and/or synthesize it with other studies on that topic, and it can impede other researchers carrying out related projects in the future (Attride-Stirling, 2001). For these reasons alone, clarity around process and practice of method is vital.
2.25 SOFTWARE FOR CONTENT ANALYSIS

Software for content analysis divides, according to its intended function, into three major categories. The first set of programs performs dictionary-based content analysis. They have the ‘basic handful’ of text analysis functions, involving word counting, sorting, and simple statistical tests. The basic handfulls are described in the next section. The second set contains development environments. These programs are designed to partially automate the construction of dictionaries, grammars, and other text analysis tools, rather than being analyzers themselves. Development environments are more similar to high-level text-specific programming languages than to freestanding content analysis packages. The third category contains annotation aids. While an annotation aid can often perform some automatic content analysis, it is intended more as an electronic version of the set of marginal notes, cross-references and notepad jottings that generate when analyzing a set of texts by hand.

2.26 MEDIA CONTENT ANALYSIS

Media content analysis – an overview Media content analysis is a specialized sub-set of content analysis, a well-established research methodology. (Neuendorf 2002) describes content analysis as “the primary message centered methodology “and cites studies such as (Riffe and Freitag 1997) and Yale and Gilly (1988) which “reported that in the field of mass communication research, content analysis has been the fastest-growing technique over the past 20 years or so” (Neuendorf, 2002.) . Riffe and Freitag (1997) found that the number of content analyses published in Journalism & Mass Communication Quarterly increased. Content analysis is used to study a broad range of ‘texts’ from transcripts of interviews and discussions in clinical and social research to the narrative and form of films, TV programs and the editorial and advertising content of newspapers and magazines. Media content analysis was introduced as a systematic method to study mass media by Harold Lasswell (1927), initially to study propaganda. Media content analysis became increasingly popular as a research methodology during
the 1920s and 1930s for investigating the rapidly expanding communication content of movies. Content analysis method is used for qualitative and quantitative analysis of health related topics covered in several communication media. A research method or a measurement technique that involves the systematic study of the content of communication messages. (Stackas & Hocking 1992). Content analysis research such as selecting and defining content categories, defining the unit of analysis, deciding on a system of enumeration and carrying out analysis. (Holsti 1969).

2.27 METHODS OF CONTENT ANALYSIS

There are some methods of content analysis:

i) Conceptual Content Analysis:

In conceptual analysis, a concept is chosen for examination and the analysis involves quantifying and tallying its presence. It is also known as thematic analysis. The focus here is on looking at the occurrence of selected items within a text or texts although the terms may be implicit as well as explicit. While explicit terms obviously are easy to identify, coding of implicit terms and deciding their level of implication is complicated by need of base judgment on somewhat subjective system. Coding implicit terms usually involves the use of either a specialized dictionary or contextual translation rule. Sometimes both tools are used.

ii) Relational Content Analysis

Relational analysis begins with the act of identifying concepts present in a given text or set of texts. However relational analysis seeks to go beyond presence by exploring the relationship between the concepts identified. It also termed as Semantic Analysis. The focus of relational analysis is to look for semantic or meaningful relationship. Individual concepts in and of themselves are viewed as having no inherent meaning. Rather meaning is a product of relationship among concepts in a text.
2.28 UTILITY OF CONTENT ANALYSIS

There are so many uses for content analysis in various fields. Here we consider the educational Purposes and historical research purposes.

a. Making Qualitative Studies Objectives

Social phenomena are qualitative in nature. Analysis helps in making qualitative studies objective and scientific. In content analysis qualitative facts are classified, codified and made worthy of tabulation. Tables, graphs and charts help in making qualitative Phenomena qualitative and numerical.

b. To Discover the Level of Difficulty of Presentation in Text Book Or In Other Publication

This is often used in text book analysis. We are analyzing the data for discovering the difficulty level of data presentation. This may lead to text book revision. Here we are critically analyzing the content of the text book. (Article.gratuits.com).

2.29 PRACTICAL APPLICATION OF CONTENT ANALYSIS

Content analysis can be a powerful tool for determining authorship. For instance, one technique for determining authorship is to compile a list of suspected authors, examine their prior writings, and correlate the frequency of nouns or function words to help build a case for the probability of each person's authorship of the data of interest. Content analysis is also useful for examining trends and patterns in documents. (Stemler and Bebell 1998) conducted a content analysis of school mission statements to make some inferences about what schools hold as their primary reasons for existence. Content analysis provides an empirical basis for monitoring shifts in public opinion. Data collected from the mission statements project in the late 1990s can be objectively compared to data collected at some point in the future to determine if policy changes related to
standards-based reform have manifested themselves in school mission statements. (Stemler Steve 2001).

**2.30 CONTENT ANALYSIS MEASUREMENT TECHNIQUES**

Content analysis is a summarizing, quantitative analysis of messages that relies on the scientific method (including attention to objectivity inter subjectivity, a priori design, reliability and hypothesis testing) and it is not limited as to the types of variables that may be measured or the context in which these messages are created or presented (Neundorf 2002). Measurement techniques:

i) Validity: The extent to which a measuring procedure represents the intended and only the intended concept.

ii) Accuracy: The extent to which a measuring procedure is free of bias (nonrandom error)

iii) Precision: The fineness of distinction made between categories or levels of a measure

iv) Reliability: The extent to which a measuring procedure yields the same results on repeated trials.

**2.31 TYPES OF CONTENT ANALYSIS**

There are two general categories of content analysis: conceptual analysis and relational analysis.

**2.31.1 Conceptual Analysis**

Conceptual analysis can be thought of as establishing the existence and frequency of concepts most often represented by words or phrases in a text. For instance, a hunch that favorite poet often writes about hunger. With conceptual analysis one can determine how many times words such as hunger, hungry, famished, or starving appear in a volume of poems.
2.31.2 Relational Analysis

Relational analysis goes one step further by examining the relationships among concepts in a text. Returning to the hunger example, with relational analysis, one could identify what other words or phrases hunger or famished appear next to and then determine what different meanings emerge as a result of these groupings.

2.32 RELIABILITY AND VALIDITY OF CONTENT ANALYSIS

The conducting content analysis need to demonstrate the reliability of their data collects using those parameters to permit replicable and valid inference to be drawn from findings. Reliability in content analysis involves two separate issues, it is necessary to attest that the coded data set produces from the analysis is reliable. (Milne & Adler 1999). Three types of reliability for content analysis: stability, reproducibility and accuracy. (Krippendorf 1980). There are three methods to increase reliability in recording and analyzing data, first, selecting disclosure categories from well grounded relevant literature, and clearly defining them; second establishing a reliable coding instrument with well specified decision categories and decision rules. Third, training coders and showing that decisions made on a pilot sample have reached an acceptable level. (Gurthrie J. 2006).

2.33 ADVANTAGES OF CONTENT ANALYSIS

Content analysis offers several advantages to researchers who consider using it. In particular, content analysis:

1. Looks directly at communication via texts or transcripts, and hence gets at the central aspect of social interaction
2. Can allow for both quantitative and qualitative operations
3. Can provides valuable historical/cultural insights over time through analysis of texts
4. Allows closeness to text which can alternate between specific categories and relationships and also statistically analyzes the coded form of the text can be used to interpret texts for purposes such as the development of expert systems (since knowledge and rules can both be coded in terms of explicit statements about the relationships among concepts).

5. An unobtrusive means of analyzing interactions

6. Provides insight into complex models of human thought and language use

2.34 DISADVANTAGES OF CONTENT ANALYSIS

Content analysis suffers from several disadvantages, both theoretical and procedural. In particular, content analysis:

1. Can be extremely time consuming

2. Is subject to increased error, particularly when relational analysis is used to attain a higher level of interpretation

3. Is often devoid of theoretical base, or attempts to liberally to draw meaningful inferences about the relationships and impacts implied in a study

4. Is inherently reductive, particularly when dealing with complex texts

5. Tends too often to simply consist of word counts

6. Often disregards the context that produced the text, as well as the state of things after the text is produced

7. Can be difficult to automate or computerize.
2.35 USES OF CONTENT ANALYSIS

Content analysis is currently used in a dizzying array of fields, ranging from marketing and media studies, to literature and rhetoric, ethnography and cultural studies, gender and age issues, sociology and political science, psychology and cognitive science, and many other fields of inquiry. Additionally, content analysis reflects a close relationship with socio- and psycholinguistics, and is playing an integral role in the development of artificial intelligence. The following list offers more possibilities for the uses of content analysis (Berelson 1952):

- Reveal international differences in communication content
- Detect the existence of propaganda
- Identify the intentions, focus or communication trends of an individual, group or institution
- Describe attitudinal and behavioral responses to communications
- Determine psychological or emotional state of persons or groups.

2.36 STRENGTHS AND LIMITATIONS OF CONTENT ANALYSIS

Content analysis has much strength, including the abilities to use retrospective data and to track changes over time, and its lower costs compared with other types of research. Content analysis method can be used to track messages over time, to assess changes or detect trends. Subsequent content analysis on the same subject can be useful for building a database. The content analysis is dependent on techniques, chosen, equipment and personnel costs and the size of the study, which make comparisons valid only on a case by case basis. It is relatively inexpensive to perform additional analyses to clarify findings or further explore areas of interest. Content analysis can identify relationships and correlations between variables; it cannot explain relationship how came to exit. Content analysis can be a very labor intensive project, particularly as the amount of material to be studied increase or the coding scheme becomes more complex.
2.37 A NOTE ON TYPE OF CONTENT ANALYSIS DATA

Content analysis often yields frequencies of response by category and coding content analysis data unit. Frequencies help compare elements in the content universe and are easily depicted with graphs. If intensity ratings are used, descriptive statistics, such as the mean, median, standard deviation, percentiles, and inter quartile range, can also be used. It may be helpful to present frequency results and intensity results separately, especially if a subset of categories or respondents is of special interest. (Erduran Sibel 2015).

2.38 USE OF COMPUTER FOR CONTENT ANALYSIS

Recent developments in the use of electronic computers for social science research have made it easy to analyze the manifest content of communications. Apply statistical tests on them, & properly store or retrieve them when required. (Singh 2001). The computer has revolutionized content analysis. It is laborious because it involves the meaning of large quantitative of materials, not to mention the preliminary works of defining units & so on (Kerlinger 1979).

2.39 WEB BASED CONTENT ANALYSIS

The phrase "web content analysis" is in fact ambiguous. It can be interpreted in two different senses, the second of which subsumes the first: 1) the application of traditional CA techniques, narrowly construed, to the web [web [content analysis] and 2) the analysis of web content, broadly construed, using various (traditional and non-traditional) techniques 3 [[web content] analysis]. Both of these senses are represented in the web analysis literature. The proposing an expanded Web Content Analysis (WebCA) paradigm in which insights from paradigms such as discourse analysis and social network analysis are operational and implemented within a general content analytic framework. (Susan C. Herring, 2004).
The Web is a complex and rich mixture of old and new technologies. Therefore, it provides many opportunities and challenges for researchers who apply content analysis to Web based content. In particular, the complexity of new features such as mixed multiple media (text, graphics, animation, video and audio etc), interactivity, decentralized and hyperlinked structures, and its continuously evolving nature provide challenges to the development of valid descriptive categories, recording and sampling frames for the method. (Kim Jasna Kuljis, 2010).

2.40 CLASSICAL CONTENT ANALYSIS

Content analysis has been widely used and well defined in traditional social sciences. Since 1960s, content analysis has been extended continuously and applied to other areas, e.g. anthropology, history, library and information studies, Linguistics, management, political science, psychology, and sociology. In this process, researchers from different domains adapted content analysis to their unique research question and goals. Thus content analysis has become a broadening of text aspects to include syntactic, syntagmatic, and pragmatic aspects of text, although not always within the same study,(White & March 2006). In today’s digital era Content analysis is usually considered a flexible research method with the potential to incorporate both quantitative and qualitative approaches, conducted both manually and with computer assistance which can be applied to many question indifferent domains.

2.41 RELATIVE GROWTH RATE

The relative growth rate and doubling time model examine the growth rate of papers published and weight age has been given to the scientists of engineering science. The relative growth rate is increased in the number of publications or pages per unit of time. A specified period of interval can be calculated from the following equations. Relative growth rates (RGR) is a measure to study the increase in number of articles per unit of articles, per unit of
time (Mahapatra, 1985). The mean Relative growth rate of articles over a specific period of interval is calculated mathematically as:

$$R (p) = \log_e 2P - \log_e 1P \cdot 2^T - 1^T$$

Here $R (p) = \text{Relative growth rate of articles over the specified period of time.}$

$\log_e 1P = \log \text{of initial number of articles.}$

$\log_e 2P = \log \text{of final number of articles.}$

$2^T-1^T = \text{the unit differences between the initial time and final times.}$

### 2.42 DOUBLING TIME

From the calculation, it is found that there is a direct equivalence existing between the relative growth rates and doubling time. If the number of publication/pages of a subject double during a given period, then the difference between the logarithm of the numbers at the beginning and at the end of the period must be number 2. If one uses a natural logarithm, this difference has a value of 0.693. The corresponding doubling time for publications and pages can be calculated by using the following formula. (Aswathy S & Gopikuttan A 2015). Doubling time (Dt) is directly related to relative growth rate (RGR). It is the time required for articles/pages to become double of the existing amount. Further, if the number of articles in subject doubles during a given period then the differences between the logarithms of numbers at the beginning and at the end of this period must be the logarithm of the number 2 (Mahapatra, 1985). If Napier logarithm is used the value of $\log 2$ is 0.693. So the corresponding doubling time is calculated mathematically as:

$$Dt(p) = \log 2 \cdot R(P) = 0.693/R (p).$$

### 2.43 PRODUCTIVITY PATTERN

The measurement of visible scientist the measure of productivity in science and technological is important not only for science and technological studies but also for policy development it is indicates of research activity in the developing world are unavailable as have seen one can use the selfsame
measurements techniques typically employed for developed countries, but there
are serious doubt about the validity of indicators based on standard
bibliographical data based when used in the developing country context.(Shrum,1997). The improvement in the productivity is the key issue and
good management have been recognized by the Botswana government as being
improvement those ingredients in economic growth and development.

2.44 AUTHORS PRODUCTIVITY

Author’s productivity considering all the authors productivity means
publication of authors. In recent year several from a analytical & productive
model have been presented in the literature describing the number of publication
of individuals authors considered here as mean of authors productivity. This
means that author productivity is measured in term of published out in the form of
research articles, Patents (Gupta, 1996).

2.45 AFFILIATION OF FIRST AUTHOR

It is considered the affiliation of first author because affiliation of first
authors can impact on their publication. one can observe the potentiality of the
author on their affiliation organization, heather that organization is important or
not.

2.46 DOMAIN WISE DISTRIBUTION OF AUTHORS

It is consist of specialization of authors have distribute with the help of
their area or field of specialization (White, 2001).

2.47 YEAR WISE DISTRIBUTION OF AUTHOR

Year wise distribution of author given an idea about scattering and
increasing the number of publication per year can be considered on the major
expansion of the subject. How many articles are published in a particular year,
and in which year that maximum number of articles published which is of the total published articles, and the lowest number of articles were published in particular year which is total published or articles. (Sahoo, 2001).

2.48 AUTHORSHIP PATTERN

The need for practitioners to connect with and contribute to research is widely acknowledged by researchers globally in librarianship and information science other discipline. A view to identify the extent of research conducted by individuals in collaboration with each other, the number of authors mentioned in the papers was counted and analyzed (Sudhier & Ravi, 2012). The distribution of the citation according to the number of authors, in the particular discipline that means authorship pattern (Doreswamy, 2001). The authorship pattern, one of the prime aspects of content analysis mainly deals with kind of authors, nature and degree of collaboration among them and collaborative trends of authors (Subramanyam, 1983). Single author contribute maximum number of articles, large number of articles by single authors means that there are no well-established research groups in the area the subject is a new and emerging one (Chen & Chen, 2005). There have been few studied of the impact of conference in LIS and only a small number of those have studied conference authorship (Nicolsons, 2002). More number of publication, more number of collaborators, more number of years of active research of scientist and the factors that what is published and where it is published and how quickly it is published through which a scientist can gain priority, visibility and recognition. If scientist is a renewed personality in his field if specialization will naturally attract more number of collaborators. (Kodemani, 2005). Scientists are trying to write jointly than the single author, joint author and more than two authors are authorship patterns. The authorship pattern is analyzed to determine the percentage of single and multiple authors. The authorship pattern has analyzed to determine the percentage of single and multiple authors with a view to identifying the extent of individual and collaborative research. The number of authors named in the author statement are counted and analyzed. Authorship studies also descriptive
bibliometric studies focused on authorship patterns. They describe author characteristics and authorship of articles and degree of collaboration of a specific group of authors. The starting point in an authorship study was to select a group of publications. This selection of publications forms the unit of analysis based on a research group. Co-authorship means an article having more than author. Co-authorship analysis started more than four decades age with. They provide relatively reliable data on scientific output, co-authorship networks are the object of an increasing number of papers most of which focus on the publication pattern of natural sciences in western countries, provided that collaboration is not confused with co-authors of knowledge diffusion present several advantages.

2.49 AUTHOR PRODUCTIVITY

Lotka’s law gives rise to these patterns is far from being fully understood. Lotka’s law suggested a formula to measure author productivity. To what extent author productivity conforms, the author productivity considering all the authors, and also the first author only. According to Lotka’s law, number of articles (Y) produced is inversely proportional to number of authors [f(y)] producing them. Lotka’s law is; equation 1 where f(y) stands for the authors producing Y articles A and x constants.

2.50 PROFILE INSTITUTION

Teaching, research, faculty, students, alumni, awards and infrastructures are the most higher learning complex process for ranking academic institutions. Information may be difficult to get, qualitative and quantitative data may be difficult to combine, or there may be decay in gathering information, because research output is an important component of the activities of institutions of higher education and research. In the form of published papers, it is already captured effectively by the several database that index publications. (Basu, 2014).
2.51 COLLABORATION

The degree of collaboration among authors is the ratio number of collaborative publications to the total number of publications published in a discipline during certain period of time. The degree of collaboration in respect of a discipline is the ratio of multi authored papers published during a year and the total number of papers published during the year. When two or more authors jointly produce a publication, the act is operationally termed as collaboration. It is used synonymously in this work as co-authorship or multi authorship. In words it can be explained as, when two or more authors jointly produce a publication, first author of the publication is called core author and another author is called as co-author or collaborator. Collaboration in research is said to have taken place when two or more persons work together on a scientific problem or projects & efforts both physical & intellectual. Collaboration is only space sharing and it is often based on the goodwill or special interests of a small number of individuals (Mahaffy, 2008). Research in empirical form of investigation. It is can be difficult to build successful relationship between the two sides of research partnership. Each side of this divide may seem to have different priorities from the other, or may not understand why the other is motivated to pursue their interest in the particular way that they do. In recognition of this it is worth looking at some of the issues that inhibit practitioner researcher collaboration in order to suggest ways of resolving those (Joint, 2005). The reasons for growth in collaboration are many. One is the increasing specialization within disciplines such that multiple partners are often needed to tackle complex research problems. Another is economics given the need to amortize expensive laboratory equipment, computers, data and other resources across multiple researchers and projects. Collaboration authorship has been increasingly steadily and ever more rapidly since the beginning of the century. He noted that more than 80% of all papers published in 1900 has a single author, and predicted that at the then current rate, the single author paper would be extinct by 190 (Price, 1963). The pioneering work of De Solla Price and Beaver and Rosen a large number of scholars have stressed different forms and roles of scientific collaboration in different scientific fields.
The investigation found that collaborative researches are at micro level (individuals), mesa level (institutional), and macro level (countries) (Glanzel, 2002; Kreschmer, 2004). There is a good correlation between the productivities and the amount of collaboration of the authors. The most prolific man is also by for the most collaborating, and there of the four next most pro-life are among the next most frequently collaborating a strong relationship between collaboration and productivity. Many researchers’ especially senior researchers, collaborate not so much to increase their own productivity as to mentor graduate students and postdoctoral researchers. While much such collaboration is likely to hence productivity of all parties the other are likely to be drag on the productivity of the more experienced researchers. (Bozeman & Lee, 2005).

2.52 JOURNAL PRODUCTIVITY

Productivity the principal quarterly journal of the Annals of library and information studies it disseminates information on concept, techniques and data on productivity and its growth in India and elsewhere. The aim of this journal is disseminating knowledge on techniques and methods of productivity improvement through effective management of all types of resources. The journal is published in different from like books, journals, conference proceedings, thesis etc.the information regarding the form was collected from the source data and tabulated to find out the most dominant from of literature.

2.53 GEOGRAPHICAL DISTRIBUTION

Geographical distribution .of publications provide information of the range of countries active in the field and their relative contribution.
2.54 RANKING OF AUTHORS

The authors who are highly cited in documents, that document is most important to keep in the library for that purpose, author ranking is essential for the librarian as well as researchers.

2.55 PUBLICATION PATTERNS

The word publication means the act of publishing and it also means any writing of which copies are published, and any website. Among publications are books, and periodicals the latter including magazines, scholarly journals, and newspapers. Publication is needed to increment their knowledge. Common man cannot understand the foreign language. therefor, faculties of languages write in their regional languages. Publication patterns mean the information resources for effective and efficient use, it is necessary that characteristics of in information sources are studied. Publication pattern of journal and information generators of the authors. The term publication reflects on total publication outlets, journal publication outlet etc.

2.56 DESIGNATION WISE PRODUCTIVITY

The designation wise productivity Librarian was found at top followed by assistant librarian and lecturer.

2.57 KEYWORDS IN THE ARTICLE

It was observed that the author cannot use all the keywords pertinent to the article in the title. But it will be useful if authors supply all important keywords apart from those used in the title. It’s particularly useful in providing subject index to the article. In order to quickly prepare subject index and to provide all possible approaches to the user, authors should choose key terms from the standard subject heading or thesauri. (Balarama, 1967).
2.58 BIBLIOGRAPHICAL CITATIONS AND THEIR PRESENTATION

In the field of research fundamentals or applied, new developments and innovations are generally the result of existing knowledge in that particular area. This clearly indicates that existing knowledge facilitates the formulation of new thoughts or helps lead to new developments. Therefore, necessary that in all articles wherein already recorded information has been used, the references to those should be given mainly to show the association of ideas between his and past literature. Citation of recorded information is also necessary for the following reasons:

i) To provide a list of relevant documents on the subject concerned for further study

ii) To show the authenticity of any statement that has been made in the text

iii) To acknowledge the sources consulted and to show that listed items have been used as source documents. Therefore necessary that citations should be communicated clearly. (Balara, 1967).

2.59 CORRELATION COEFFICIENT

Webster's Online Dictionary defines correlation as a reciprocal relation between two or more things; a statistic representing how closely two variables co-vary; it can vary from −1 (perfect negative correlation) through 0 (no correlation) to +1 (perfect positive correlation).

2.59.1 Types of Correlation Coefficients

There are two main types of correlation coefficients: Pearson's product moment correlation coefficient and Spearman's rank correlation coefficient. The correct usage of correlation coefficient type depends on the types of variables being studied. The focus on these two correlation types; other types
are based on these and are often used when multiple variables are being considered.

2.59.2 Pearson’s Product Moment Correlation Coefficient

Pearson’s product moment correlation coefficient is denoted as \( \rho \) for a population parameter and as \( r \) for a sample statistic. It is used when both variables being studied are normally distributed. This coefficient is affected by extreme values, which may exaggerate or dampen the strength of relationship, and is therefore inappropriate when either or both variables are not normally distributed. For a correlation between variables \( x \) and \( y \), the formula for calculating the sample Pearson's correlation coefficient is given:

\[
r = \frac{\sum_{i=1}^{n} (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n} (x_i - \bar{x})^2 \sum_{i=1}^{n} (y_i - \bar{y})^2}}
\]

Where \( x_i \) and \( y_i \) are the values of \( x \) and \( y \) for individual.

In summary, correlation coefficients are used to assess the strength and direction of the linear relationships between pairs of variables. When both variables are normally distributed use Pearson's correlation coefficient, otherwise use Spearman's correlation coefficient. Spearman's correlation coefficient is more robust to outliers than is Pearson's correlation coefficient. Correlation coefficients do not communicate information about whether one variable moves in response to another. There is no attempt to establish one variable as dependent and the other as independent. Thus, relationships identified using correlation coefficients should be interpreted for what they are: associations, not causal relationships. Correlation must not be used to assess agreement between methods. Agreement between methods should be assessed using Bland-Altman plots. The methods of analyzing the relationship between two quantitative variables. The calculation and interpretation of the sample product moment correlation coefficient and the linear regression equation are discussed and illustrated. Common misuses of the techniques are considered. Tests and confidence intervals for the population parameters are described, and failures of the underlying assumptions are highlighted. (Kothari, 2009).
2.60 CONCLUSION

The review of literature shows that vast amount of literature was available in Content analysis; Bibliometrics. The present study will be useful to the Librarian and researchers.

The chapter will be followed by chapter no. 3: ANNALS OF LIBRARY AND INFORMATION STUDIES.
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