CONTENT AND CITATION ANALYSIS OF MASTER THESES IN LIBRARY AND INFORMATION TECHNOLOGY FOR COLLECTION DEVELOPMENT IN FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIA

BY

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MTech/SICT/2018/9212

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MINNA

JANUARY, 2023

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A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOL, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF TECHNOLOGY IN SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION, DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

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ABSTRACT

This study carried out the analyses of contents and citations of 30 copies of Masters of Technology theses produced in the Department of Library and Information Technology (LIT), Federal University of Technology, Minna between 2016 to 2019. The study aimed to achieve four objectives and four research questions and subtitles of questions therein. To achieve this, content and bibliographic details were extracted manually with M.Tech Theses Research Content worksheet (M.Tech TRCW) developed by the researcher. The bibliographic details and contents extracted were presented using tables, frequency counts and percentages. The study revealed that the theses were organised with compliance to standard format of research presentations. The study also showed that journals were the highly cited publications (60%), Reports/Reviews (13%), Books (11%), Links/Blogs (11%) while conference proceedings had 5%. The citation behavior of researchers were positive (3708) out of 4072 citations. The study discovered that most highly cited articles are not available in the collection of the library. Hypothesis tested showed that there is a weak associative relationship between location of mentioning and citation functions in M.Tech theses in Library and Information Technology. The research recommended that library managers adopt the findings of this study to facilitate the availability of necessary resources for Library and Information Technology research. It also recommended that research supervisors ensure the necessary research component and organization of research are maintained in Library and Information Technology research in Federal University of Technology, Minna.

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<div align="center">**CHAPTER ONE**</div>

1.0   INTRODUCTION

1.1   Background to the Study

The word research was derived from an old French word "recerchier" which means to search and search. Literally, this means to search for something. This definition does not create for improvement in current definition of research and appears inexhaustive in definition and voids the sense that research creates room for improvement (Kabir, 2016). The logic of gathering information and checking data alone in which the same word considered as research cannot be considered as research, but according to Naidoo (2011), is at best known as data collection. The author attributed many ways of acquiring knowledge includes through tradition, experience, intuition and scientifically approaches. According to the author, research is any diligent and meticulous enquiry into a particular nature, trend or phenomenon towards increasing an existing stock of knowledge and evolve new knowledge, having it's several characteristics which define its approaches, relevance, conceptions, methodologies, theoretical orientations and its ethical frameworks.

Research is an academic activity which leads to new discoveries and knowledge in a given field of study. Research is an important component of university education and it is treated with uttermost strictness so that universities can achieve their research goals. Research has been described in its general sense by UNESCO Statistical Yearbook (2019) as any creative systematic activity undertaken in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this knowledge to devise new applications. In its technical sense, Meriam-Webster online Dictionary 11th ed. (2014) defines research as 'a studious enquiry or examination,

especially investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts or practical application of such new or revised theories or laws.'

Research types include fundamental research, applied research and experimental development leading to new devices, products, services and procedures. Research is therefore necessary if change and innovation are needed to improve the situation or condition in which human beings live. Research is characterized by a methodological arrangement which Creswell (2008) refers to as 'a process or steps used to collect and analyse information to increase our understanding of a topic or issue'. The steps, according to the author include pose a question, collect data to answer the question and present an answer to the question. So, research can be classified according to methodology as descriptive, inferential, experimental and non-experimental, quantitative and qualitative research. In addition to the methodological format, research also shows contextual structure and bibliographic characteristics. The contextual manifestation of research can be found in the disciplines covered, research methodologies used, research instruments created or adopted, data analysis method employed, data presentation approach employed, research findings, discussion, conclusion and recommendation. The bibliographic characteristics of research shows the sources consulted, used or read while carrying out the research. Whether it is professional or academic research these basic characteristics define scientific research.

Universities award degrees to deserving students on completing course work and research work in fulfillment of the requirements for the award. The research component of the requirements particularly at the postgraduate levels of Master and PhD take a prominent space. While the degree of Master may be awarded on the basis of one - third

($^1/_3$) research and two - third ($^2/_3$) coursework, master degree by research share the component on the basis of two – third ($^2/_3$) research and one - third ($^1/_3$) coursework while at the PhD level, research work accounts for the totality of the component. The degree of master is awarded with thesis in partial fulfillment of the requirements at Federal University of Technology, Minna. Theses present original research results and the process of production is strictly guided by provisions of the awarding institution under the guidance of research supervisors. Theses are a form of grey literature, they are not readily available like books, journals and conference proceedings. Universities place theses on restricted access because they are the treasure throve and research memory and very relevant in building repositories.

The contents of recently completed theses may take some time before they reach the public as a result of the publication policy of the awarding institutions. Theses contain extensive bibliographies which were cited in support of ideas, theories, concepts, methods, data analysis and discussion of findings expressed in the research work. Authorities are acknowledged through citations. Theses find their way into the academic publications in form of periodicals, books or monographs. Borthakur (2015) opines that theses and dissertations are borne out of expedient and meticulous collection of data, analysis of data, interpretation of the collected data and then ultimately coming to a conclusion as a solution to the initial problem identified.

Library Information Technology is a new field of study and research which came into existence as a result of the domineering influx of information and communication in all the spheres of human endeavor. It was coined from the fusion of Library and Information Science with Technology in Information Technology. The field of study and research was established in Federal University of Technology, Minna Department

of Library Information Technology in 2001. BTech, MTech and PhD in Library and Information Technology are run in the Department. At the undergraduate level, research project is prescribed for the award of BTech degree while thesis is prescribed for MTech and PhD degrees in Library and Information Technology. The requirement for the award of MTech in Library and Information Technology is one-third of thesis and two-third of coursework. The Department has produced a number of MTech graduates who have completed their studies and produced their theses. These theses are the subject of this study. The format prescribed for MTech thesis at Federal University of Technology, Minna are Abstract, Introduction, Review of Related Literature, Research Methods, Results and Discussion, Conclusion and Recommendations, References and other appendix matters. The contents of each section are also suggested.

Content analysis is a systematic method of analysing texts and other forms of documents for a certain pattern and trends. Krippendorf (2013) defined content analysis as a research technique for possibly making valid inferences from texts, citations and other meaningful matter to the context of their use. Contents analysed may come from a wide variety of sources, such as books, manuscripts, theses and dissertations, drawings, photographs, recorded conversations, videotape events, electronic mailing messages and online forums. Content analysis of scholarly research outputs is important because it provides an index of the extent to which research scholarship reflects the purpose, interest and value of the given discipline. Analysing the content of MTech theses of Library Information Technology enables the researcher to index the scientific content with a view to understanding the research practice and trend in this new field.

Citation analysis is a method of studying the bibliographic references consulted in the course of carrying out a research. Researchers append a list of references called citations

to their completed report providing their bibliographic details. Citations are an integral part of research work which clearly shows the list of references consulted towards prior publication. Thelwall (2010) posits that research work could not stand alone, it is rather fixed in the existing literature of the subject. Citation analysis provides a bibliographic insight about cited work such as the author(s), title of the document cited, imprint, form of material, age. It helps to describe the characteristics of resources cited while conducting a research work. Analysing citations contained in MTech theses in Library and Information Technology helps to throw light on the citation pattern in these theses and identify predominant patterns as trends. Citation analysis is employed to highlight the frequency of the various attributes of literature cited such as subject, authorship, geographical area focused, age, to mention a few.

Citation content analysis is a term that describes citation content. It is used to study the citation within the full text of a research work rather than its simple cumulative frequency as in citation analysis. It is used to describe the citing behavior of researchers. The analysis of citation content in the body of a researcher throws light on citation mention, citation location, citation function, citation style, citation length in some cases and citation disposition. These indexes describe citation content (Ding *et.al.,* 2014) and define how, why and when researchers cite. Citations within the body of research work plays an important role and try to substantiate and develop a relationship between the citing and cited work. (Eclevia and Janio, 2016). Citation styles are prescribed by higher degree awarding institutions. Citations play very important roles within the body of research and where they are mentioned. Citations need to be properly placed in the various locations as evidence of compliance.

Collection development as a term which encompasses a number of activities associated with the development of the library collection, involving the determination and coordination of selection policy, appraisals of information needs of users and intending users, collection use studies, collection evaluation, identification of collection needs, selection of materials, planning for resources sharing, collection maintenance as well as weeding (Glossary of American Library Association).Collection analysis has been regarded as an important part of collection development. It is considered generally as a core mission of the library which invariably is the appraisal and evaluation of library collections to ensure that it is achieving its objectives in meeting the needs of the users and academic mission of the institution (Henry *et al.,* 2008).

The term collection development entails proactive processes of the library profession in which the library staff acquires a variety of useful information materials to meet the expectation and demand of its patrons. The phrase collection development according Sanjay (2016) encompasses range of activities connected to the procedures and policies of identifying, selection, acquisition, management and possibly evaluation of library collection. These policies and procedures involve the constitution of selection team which has the users, the library staff and subject experts in the fold. This is not the final post or an end itself, because the term collection development is a dynamic and progressive activities which tends to continuously look into the need, up to date and balance collection fit to meet the information need of the users. It is the process of planning a stock acquisition of resources not simply to remedy the immediate needs but to build a proper, coherent and reliable collection that will meet the objectives of the services.

Collection development has undergone considerable and manipulative change with progress in field of librarianship as opined by Sanjay (2016). "Collection development

policy, Selection policy and Acquisition policy" are terms involved and which forms the nucleus of collection development. These policies represent the hierarchy of the process involved on building up of a library stock of resources. The second which is the selection policy involves decision making as to which information materials will be acquired into the library. The third policy, which is the acquisition provide guide to bring in the various information materials, that is implementing selection policy and collection development plans. Therefore, collection development is a combined function which altogether form and shape the holdings of a library. Another important aspect of collection development is the weeding policy. With the advancement of knowledge and explosion of information creation, new ideas and thought are coming up and some earlier useful ideas are becoming out of date and not useful. Weeding policy is an indispensable constitute of collection development policy. Weeding means removing certain materials which are not useful or have outstayed its life serviceable use. Materials removed from the library may be completely discarded or kept in reserve places. Weeding policy addresses the issues of what materials to be removed, how to remove and the outcome of the removed materials.

Collection development to the context of the current study is a systematic and dynamic process of building library resources to bring to fulfilment the teaching, learning and research needs of its identified users. Kaur and Guar (2017) defined collection development as a process of examining and analysing content and citation in various kind of materials (theses inclusive) towards meeting the academic and research needs of researchers in an identified faculty or disciplines. Collection development tends to meet the information needs of researchers and policy target users in a timely and economical manner.

1.2   Statement of the Research Problem

The evaluation of collection is an important activity of collection development because librarians can know the current status of their collections in terms of strength, usage, weakness through conducting of content and citation analysis of research and publication including theses. Content and citation analysis has come to improve collection development through qualitative and quantitative analysis of contents of different kinds of literature that finds its way into the libraries including theses. However, the information needs of Library and Information Technology researchers who are faculty members and research students have not been investigated. The finding that only one out of the eleven highly cited journals in BTech research projects in Library and Information Technology was available in the Library (Abifarin, *et al.*, 2017) is instructive. Armed with the details of ten cited journals and five textbooks extracted from MTech theses the researcher conducted a preliminary investigation scanning the Cardex, Serial Catalogue and browsed OPAC and Library shelves but found only one journal title and one textbook available in the Library. This shows that the Library may not have all the literature needed to support research in Library and Information Technology at the Master degree level. The study is designed to help resolve the problem through the application of the findings of this study.

1.3   Aim and Objectives of the Study

The aim of the study is to determine the role of cited references in the research contents of MTech theses in Library and Information Technology and profile them for collection development in Federal University of Technology Library, Minna, Niger State. The specific objectives are to:

1. Describe the research contents of M.Tech theses in Library and Information Technology at Federal University of Technology, Minna;

2. Identify the bibliometric characteristics of cited references in M.Tech theses in Library and Information Technology at Federal University of Technology, Minna;

3. Determine the roles of in-text citations in the research contents of M.Tech theses in Library and Information Technology at Federal University of Technology, Minna;

4. Determine the state of availability of cited references in MTech theses in Library and Information Technology available at Federal University of Technology Library, Minna for collection development.

1.4   Research Questions

The following research questions guided the study:

1. What are the research contents of M.Tech theses in Library and in Technology at Federal University of Technology Minna?

2. What are the bibliometric characteristics of cited references in M.Tech theses in Library and information Technology at Federal University of Technology Minna?

3. What are the roles of in-text citations in the research contents of M.Tech theses in Library and Information Technology at Federal University of Technology Minna?

4. What is the state of availability of cited references in MTech theses in Library and Information Technology at Federal University of Technology Library Minna?

1.5   Research Hypothesis

This hypothesis guided the study:

HO: There is no significant associative relationship between location of mentioning and citation function in M.Tech theses in Library and Information Technology at Federal University of Technology, Minna.

1.6   Significance of the Study

The study is significant for the field of Library and Information Technology, Department of Library and Information Technology, MTech researchers and Federal University of Technology Library, Minna. Library and Information Technology is relatively new having just been recently established in 2001 as a field of study and research. With the establishment of the Department of Library and Information Technology in Federal University of Technology, Minna, in the year 2001, the field is growing and a critical mass of knowledge is being generated through research and publication by students and staff respectively.

The number of MTech theses in Library and Information Technology is growing by the year and there is need to appraise the quantity and quality of their contribution to knowledge. Thesis literature in Library and Information Technology have not enjoyed extensive study as it is the case with those of other disciplines like Library and Information Science, Engineering, Agriculture which have been around for a while and widespread across the country. The research will throw light on the contributions of MTech students to the growth and development of the discipline. The bibliometric characteristics of cited references will highlight features necessary for their identification for collection development. Determining the roles of in-text citation in the research contents of MTech theses will highlight the importance and quality attached to the cited references further identifying them for collection development. Most modern practitioners in the field of library and information science relies on bibliometric information because such information is very useful in bibliographic

evaluation, database management, curriculum development and collection development. This research will enable information technologists determine trends and development of any discipline, new divisions, fusion and fission and as such meet and satisfy the information needs of their users to an extent.

Libraries and information organisation such as research institutions, publishing houses, editors and academics will employ the outcome of this study for the evaluation of different periods of any discipline, conduct comparative studies of recent and past publications, revealing their lifespan, its current value or obsolescence among other benefits. Summarily, the findings of the study will enable librarians and library policy makers when deciding policies that guide towards achieving the aim and objectives of libraries, towards planning and execution cost effectiveness in the face of harsh economic situations as well as weeding and will be very useful in collection development and providing literature support for Library and Information Technology research at the Master degree level.

1.7 Scope of the Study

The study covered the citation and content analyses of Master of Technology theses in Library and Information Technology available at Federal University of Technology Library, Minna, Niger State. The theses covered the year 2016 to 2019. The citations and references in the M.Tech theses available were analysed.

1.8 Operational Definition of Terms

i. **Citation Analysis** is the process of counting and analysing bibliographic information about the citation patterns of a specific literature mostly published.

ii. **Citation is an a**cknowledgement given to a published and or unpublished literature.

iii. **Content Analysis** is a method which employs systematic and rigorous approach to analyse document generated or obtained while undergoing a research.

iv. **Improved Collection Development** is the process of evaluation of traditional collection development through the use of content and citation analysis to improve both collection (information materials) and reference services.

v. **Library Information Technology** is a field of study from the fusion of library and information science with information technology in order to manage explosion of information to meet the modern trend of information profession

vi. **Master's Degree is** an advance degree awarded by universities at the end and completion of a graduate study in a given discipline.

vii. **Thesis is a** research document submitted partially for the award and at the end of master's degree program.

CHAPTER TWO

2.0   **LITERATURE REVIEW**

2.1   Conceptual Framework

The figure below shows the analysis of contents of Master Degree Theses which facilitates collection development.
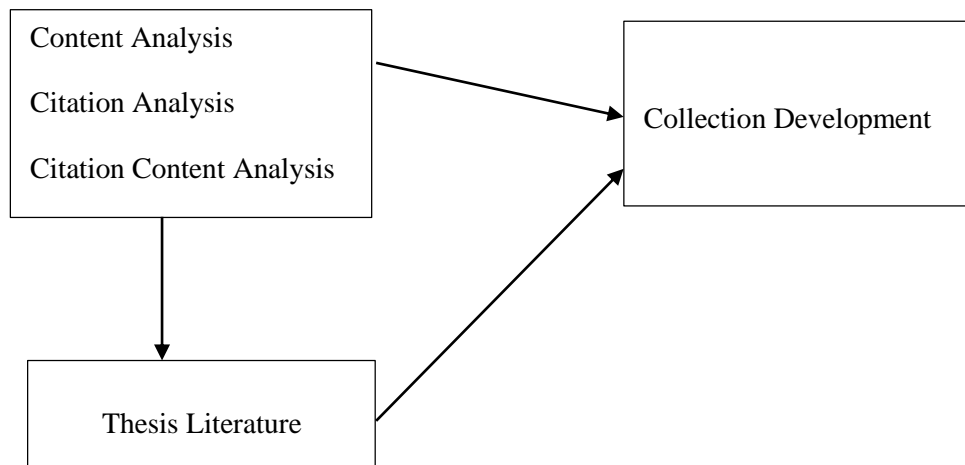
Figure 2.1: Content and Citation Analysis Framework

Source: The Researcher (2021)

From the above conceptual framework, it is expected that Library and Information Technology Thesis are borne out of expedient and meticulous collection of data, analysis of data ultimately coming to a conclusion as a solution to problem earlier identified. The processes in compliance to a prescribed formats and standard of research are characterized by a contextual approach like Introduction, Literature Review, Methods, Results, Discussion, Conclusion and Recommendations.

The contents of the theses are studied to ascertain if they are up to standard and prescribed formats of authentic research. The study of the contents of these theses for a certain pattern called content analysis. Theses as documents contains bibliographies

which were cited in support of concepts, ideals, approaches employed in the course of conducting research. These authorities are acknowledged through citing which helps to describe the characteristics of document cited and citation content analysis is used to describe the citing behavior of researchers in LIT which shape who researchers cite, why they cite and where they cite.

Collection development is a term which involves the activity of the development of the information needs of users. The evaluation of collections will help Librarians know the status of their collections in terms of strength, use and value by analyzing them for a certain pattern which will tremendously improve library collections.

Therefore, the adoption of these bibliometric approaches will no doubt aid collection development in libraries.

2.2   Conceptual Review

2.2.1   Content analysis

Krippendorff (2013) defined content analysis as a research technique for possibly making valid inferences from texts, citations and other meaningful matter to the contexts of their use. Contents analysis includes both quantitative and qualitative analyses of a data, as opined by Wilson (2011). Quantification according to the author, often occurs by developing a codebook and assigning categorical or continuing numberings to variables of interest, such as type of methodology employed or number of times in article has been cited. Qualitative data may include searching text for emergent themes or concepts, and making inferences about the patterns that emerge (Wilson, 2011). Contents analysis of scholarly research outputs is believed to be important because they provide an index of the extent to which published and

unpublished scholarship reflects the purpose, interests and values of any given discipline. The contents to be analysed according to Wilson (2011) can come from a wide variety of sources such as Books, Theses, Manuscripts, Drawings, Photographs, Recorded conversations, Videotaped Events, Electronic mailing messages, Online forums among others.

Content analysis has metamorphosed into several variants recently comprising of conversational analysis, discourse analysis, textual analysis among others. Notwithstanding the varying methodologies and kinds of issues addressed by these approaches, most scholars posit that they are similar in their reliance on communicative media as a source of primary data for analysis.

The term content analysis has been extensively utilised and properly defined in some traditional aspects of sciences. Zhang *et al.* (2013) asserted that content analysis was used first in the 17th country by the Church mission systematical to exemplify content of early newspapers, but then upgraded by sociologist Max Weber to study press coverage of political issues in Germany in 1910. From then onwards, scholars started to develop the theoretical ground laying for content analysis and were applied to disciplines such as mass communication. Contents analysis going forward has been applied to other field of studies such as history, library and information science, anthropology, linguistics, political science, psychology and then sociology. With this widespread process, scholars from diverse disciplines began infusing content analysis to answer research questions and goals, thereby the process becoming a broadening of textual aspects to include syntactic and semantic aspects of text, which are at times not always within the same study according to White and Marsh (2006). It is not a surprise that due to the era of digitisation; content analysis has been considered an easy research method with the chances to move along quantitative and qualitative approaches that can

be carried out both manually and through the aid of the computer. White and Marsh (2006) summarised content analysis four main features as dynamics, resources, structures and operationalisation.

Dynamics of content analysis (objective and systematic approaches)

Earlier researchers' defined content analysis as systematic, replete methods for loading data found in communication of any type (Buaer, 2010). The author further defined content analysis as any method for making inferences and pointing by objectively and systematically identifying specified characteristics of messages. "Systematic" here points to at least two thoughts: systematic process of sampling of messages and systematic structure of sampled messages. According to Krippendorf (2004), "objectives" states that the analysis should make replicable, repeatable and valid inferences from texts to the contexts of their use. Therefore, content analysis in this regard appears not to be a subjective interpretation of others work but an incorporation and merging of both quantitative and qualitative analysis methods.

Resource: (contextual or message based content analysis)

In Social Science Literature, content analysis is based on textual matters. The ultimate goal of content analysis is to indicate specified features within text and to make specific inferences from text to other properties and states of its sources. Though, in this 21st century, the issue of content analysis has been expanded to different kind of resources such as web links, images hyperlinks, cyber links and so on beside traditional text according to White and Marsh (2006), as an example, provided framework of audiovisual content analysis of images.

Structure: (Syntax and semantics content analysis)

Content analysis majors on both syntactic and semantic units as a method composing of both quantitative and qualitative components. Syntactic components refer to how symbolic data are organized, structured and presented such as features, images, linguistics indicators, word frequencies, while semantic shows what is presented, that is meanings and what they represent e.g. valuations, themes among others. White and Marsh (2006) added that both syntactic and semantic structures are called "analytical constructs or rules of inference" which can be quantified and qualified. It is based on these two structures that can be analysed that is the implicit meaning (content) contained in the explicit presentation (messages) can be interpreted and understood.

Operationalization: coding in content analysis

Constructing a systematic classification of message-based units for content analysis in which loading plays the central role earlier studied such as White and Marsh (2006) proposed that the terms content analysis and coding be used interchangeably to emphasize the aims and systematic evaluation of any symbolic behavior. White and Marsh (2006) posited that coding constitutes the body of content analysis and includes

1) Establishing coding scheme that test hypothesis

2) Coding data

(3) Checking for reliability of coding

4) Adjusting coding process if need be.

5) Analysing coded data and

6) Application of statistical test(s).

Among all these are the steps of establishing an appropriate coding scheme that operationalise and qualifies the intangible concepts and implicit conations, a scheme that is valid and consistent, that assessment can be achieved with a scheme that is clearly defined, understandable and mutually categories each aspects of data and the reliability of research result and conclusion is highly expected and incorporated as an appropriate coding scheme. Though, constructing such a coherent scheme is a complex and qualitative process that involves painstaking efforts, careful, repetitive reading of the original messages, constant modifying and re-modifying of the scheme.

2.2.2 Citation analysis

The acknowledgement one document receives from another is known as citation. It is used to illustrate a link between different process of documents thereby creating a relationship between two or more pieces of document, the citing and cited (Clarke and Oppenheim, 2010). This relationship between different documents provides both a network of connections of related works and access to original facts. Early citation behavior focused more on the citations practices of academics to measure productivity in Clarke and Oppenheim (2010) and to demonstrate scientific contributions. This serves as an indicator of scientific influence or as an evidence of communication between scholars.

The normal view of citation is based on the fact that homage is always paid to a pioneer scientific breakthrough, that is acknowledging co- authors whose works were used by citing them according to the normative theory but then authors should not cite blindly or preferentially, citation should produce a real account of the original author's message (Small, 2004).

The main purpose of embarking on a research is to find a solution to a given problems and for the advancement of a given specialty. It is the quest to find a solution to a problem in any given society that necessitates research which tries to provide answers to identified questions through the application of scientific procedures (Borthakur, 2015). Progressively, towards finding solutions to a given problems or contribute towards advancement of knowledge, the researcher gathers data, analyses the data, test the data and interpret the data and ultimately reaches a conclusion as the solution to the problems.

In order to communicate the results borne out of the research to others for the benefit of the society, the researcher prepares a report that involves the systematic and sequential manner in which the problem was solved; to which includes background of the study, the problems itself, methods and techniques involved, the analysis of data was taken care of for clear comprehension and its results and recommendations. After all these meticulous stages, then the researcher comes up with a report known as "thesis or dissertation".

Citation simply means the numerical listing of references to literature that were already published. It is the list of works consulted in the course of carrying out research or in a scholarly communication. It is the act of mentioning a work and clearly providing a source or the origin. According to Thelwall (2010) research works could not stand alone, it is rather fixed in the existing literature of the subject. According to Abifarin, *et al.* (2017) Citation or bibliographic references are a list of research works used prior to a research and used to properly and adequately acknowledge the creators and authors of those researches utilized while carrying out that research. Nicolaisen (2007) stated that citations expressly state a connection or a relationship between two pieces of documents, in which one cites and the other one being cited. Typically, citations serve

as an important tool for evaluating research quality, performance, productivity and acceptability among peers.

Yusuf and Shekarua (2017) argue that citations provide bibliographic insight about a work such as the author, the authorship pattern, title of the document cited, imprints and formats of the material cited. Citations can be seen as the bibliographic details of works used and appended to an already published and unpublished article, rooted intellectually in the body of the work with the sole aim of making references and to acknowledge the efforts of others through the topic in discussion.

Aina (2006) gave this reason why citations are important in research activities, the author stated that it is because authors contribute to existing knowledge and demonstrate that they are very active and relevant in their fields of study. The study of references and citations shows the source of articles mostly used and valued widespread.

According to Clarke and Oppenheim (2006) who identified the different ways one abuses citations to include citing friends, not citing real sources, citing widely to attract some interests, carelessness and plagiarism. The author further mentioned problems such as not citing at all, biased citing, self-citing, "Hello effects and Mathew effects'' which provide disproportionate credit for a well-known scholar, by also acknowledging an author because that author is well known even though a less known co-author is more deserving of credit. Research has it that most authors have been found to cite only a third of the documents that they have actually come across Clarke and Oppenheim (2010) identified different bibliographic behaviors of authors as a weaknesses of citation analysis, stating that all materials consulted may be cited by an author while another may feel to "cite the ones considers most important". Other criticism of citation

includes scholars being more likely to cite what is readily available. In spite of these criticisms, authors believed with strong argument that citations are good indicator of quality research. Psychologists that were found to be eminent based on certain criteria enjoy high number of acknowledgements. Citation counts are good indicator of quality research and have found to be a strong correlate with quality and research excellence (Clarke and Oppenheim, 2010).

The impact and usage of sources can be estimated by the amount of citations contained in articles in form of journals, theses, books, monographs, blogspot, and conference proceedings. All these documents have within them greater number of bibliographic details because researchers and students thoroughly and exhaustively review them most especially during theses or dissertations writing (Vallmitjana and Sabate, 2018). Therefore, the analysis and study of the reference lists contained in theses are accepted and has formed a norm in appraising resources use by counting and establishing bibliographic details of sources of information and further published them by scholars. The appraisal of theses forms a good line of action for the evaluation of sources utilization and other categories of literature which shows the research focus, authorship base or pattern, and other measurable facts. Furthermore, it is regarded (citation analysis) as the best approach of identifying the sources of information carriers consulted by researchers in a given discipline and therefore shedding more light on the process of written communication (Borthakur, 2015).

Citation earlier defined as the list of bibliographic information enshrined within the content and the end of a document (Abifarin *et al.,* 2017) must have a reason why it is being listed. The reasons are among the following:

   i.   Originators of works given or paid homage

ii.   Give credit to similar or related works

iii.   Techniques, methods, tools, equipment, sequence identified.

iv.   Provision of a background reading of an article is one of the reasons why people cite.

v.   Gives room for the correction and proofreading of one's own articles or publication.

vi.   A previous similar work of others can be corrected.

vii.   Alert towards future works

viii.   To substantiate the claims of predecessors.

ix.   To highlight a shortcoming of a disseminated or a quite unknown work.

x.   Discuss facts, ideas and concepts of an original publication.

xi.   To reject priority claims of others across fields.

xii.   To disagree with the idea of others.

xiii.   Identify an original publication describing a self-titled or nominative term.

Clarke and Oppenheim (2010) states that it is not possible that all cited sources are accurate, conscientious and consistent. Therefore, citations may be omitted erroneously and through the motivation of not to cite at all intentionally which will always negate the assumption of the normal school of citation or what citation is intended.

Scientific publications and literature are important for publicising research results, with similarity and relationships established between different studies critical in driving future research. The basic element connecting research previously, presently and in further researches is the citation which scientists use in spreading knowledge and the same use by academic scholars and reviewers to elaborate or scrutinize literatures across fields. Additionally, citations are often used to study research impacts (Abifarin *et al.,* 2017).

Citation analysis means the study of reference and bibliographic patterns found in an academic and scientific literature. Citation analysis can be defined as the application of statistical methods to examine the acknowledgement found in a publication such as books, journal articles and monographs and unpublished sources such as theses, dissertations in order to ascertain a method of use (Zhao and Strotman, 2015).

Aina (2004) defines citation analysis as an analysis of bibliographic information attached to the reference list at the end of a document that is usually achieved through referencing and counts. Citation analysis definition by Abifarin *et al.* (2017) includes citation of a document implies the use of that document by the citing author; citation of a document reflects the quality of the document; citations are made to the best work; and all citations are equal. This corroborated the position of Hoffmann and Doucette (2012), which defines citation analysis as a kind of study that deals with recording and synthesizing bibliographic data contained in the reference lists of a certain number of publications in order to describe the formats of materials consulted, frequency of use, their longevity and local holdings. Citation analysis, according to Yusuf and Shekarua (2017) encompasses the critical examination and analysis of the pattern, graphs of citation. Similarly, it is the evaluation of cited information resources (literatures or scholarly publications) domiciled in a particular work or group of works. Therefore, citation analysis tries to ascertain the quality, quantity, use, age, and productivity of certain kinds of literatures and scholarly issues.

Conclusively, citation analysis is a vital tool for assessing research quality and performance, through evaluation of bibliographic information contained within and appended at the end of a scholarly document to shed more light on the process of written communication. The method of citation analysis is very effective and user friendly within other methods to determine the trend of scholarly findings in a particular field,

also to know the literature demands, preferences, seeking behavior and utilization of varied information sources. Borthakur (2015) stressed that the outcome of citation analysis helps institutions, organizations and libraries to plan and execute cost effectiveness in collections development and management.

The need for user studies gave birth to citation analysis as a method. According to Lahiri (1996) it is a method to study the information needs of scholars and scientists. The author opined that it is useful in providing a quantitative indication of some characteristics of literature used and at the same time their limitation in accepting the final conclusion is accepted too. Furthermore, citation analysis thus is the analysis of literature, which is within and appended with the written communication by counting how many times a paper is cited, which assumes that it influences anyone who comes across it more than other works. Therefore, citation analysis describes formal pattern of scholarly communication according to Obuh and Babatope (2011). The authors stressed that though, citation analysis shows that different fields of research need different types of references towards measuring the use and impact of publications. It is a way of understanding users' needs and also helps libraries and information providers in building information resources. Citation analysis also shows the direction of disciplines, information resources mostly used and accepted in any local settings.

2.2.3   Citation content analysis

Since natural language processing technologies are broadly adopted and full text document data has open accessibility, describing the citation details becomes easy and possible. The practice of citation content analysis has redrawn researcher's attention and become anew happening in the field of Library and Information Science. The study of content-based citation analysis is the analysis of the citations within the full text of

any scientific article rather than its simple cumulative frequency. Content-based citation analysis tends to address a reference value by depicting and explaining each based on their context syntactically and semantically. Articles and their citation have been used to generate links for example, articles citation links, author citation networks, co-author links, journal co-citation networks etc., Nodes represents the number of papers, authors or journals while edges indicate the count of times each has been mentioned, co-authored or co-mentioned. Content-based citation analysis can be divided in its two tracks: Syntactic content-based citation analysis and semantic content-based citation analysis. Syntactic content-based analysis studies the location where the reference has been mentioned within the citing document and the function it performs while semantic content-based analysis studies why the reference has been mentioned within the citing source (Ding *et al*., 2013).

The evolution of the illustrious Science Citation Index in the early 60's paved the way and polished citation analysis studies and practices. According to Nicolaisen (2007) citation analysis focuses on authors who scholars cite, which journal article or document they cite and which journals they cite while content-based citation analysis, according to (Zhao and Strotmann, 2014) analysed citation frequencies by using reference information at both semantic level (how a reference is cited and how knowledge or a concept is cited) and syntactic aspects (the location of where each reference is mentioned and the function is carried it performed).

 Lu *et al.* (2016); Gabb *et al.* (2015) have identified different citation content indexes at the syntactic and semantic levels to include citation mention, citation location, frequency of citation, citation functions, citation styles and citation disposition (Ding *et al.,* 2013) to describe citation content. The studies properly used these citation indexes to evaluate the influence and value of a publication, detect the year of publications as

well as a guide to novices on how to properly carryout researches. Lu *et al.* (2016) indicated that those citation indexes represent the features of citation content. Citation mention is defined as how many times a cited article is mentioned within a given citing document which according to Ding *et al.* (2013) involves counting every citation throughout the sections of a body of discourse. Citation location is where citation is located and Hu *et al.* (2013) proved that citation location is related to the citing behavior. The authors further stated that different locations of the cited paper in the citing paper may appear or weigh differently. Based on this assertion, the citation locations are based into types: Introduction, Review of related works, Methods used, Analysis, Results, Discussion, Conclusion. Citation Date simply means the year of the publication of the cited work in the citing document. Dates accompanied every acceptable citation, though dates may appear missing in some cases.

Citation Length has to do with the length of the citation contents. Previous works such as Liu and Chen (2013) has extracted only one sentence of the citation content, Lu *et al.* (2016) also employed some methods. The length of the citation content can point out the importance of the cited article. Citation function means the roles citations play within the body of discourse or the cited document. It shows that citation provides historical background, provide data as methodological functions, developing methods as well empirical information about a related previous work (Zhang *et al.,* 2013).

Citation disposition has to do with the stance or sentimental view of the citation Zhang *et al.,* 2013). For example, if citations may show a positive or negative or neutral or mixed reactions. Citation styles indicates the importance of a cited document. Zhang, *et al.* (2013) argue that a reference that is cited by a paper but is not obviously mentioned in text can be considered less relevant than one that is discussed in depth within the text of the citing paper. Based on this, citation styles of mentioning such as

not specifically mentioning, specifically mentioning but interpreting and direct lifting and quoting. Citation frequency in a given cited work means identifying and counting the frequency of mentioning in a particular article which can suggest its level of significance according to Zhang *et al.* (2013). The contribution of a cited reference can be calculated based on the number of times it is cited. The authors further stated that a work that was cited in Introduction, Review of Related Literature and again cited in the Methodology or Discuss section has a greater contribution to the citing papers than others that have appeared once. Therefore, it is possible that a paper was cited more than 4 or 5 times in different sections of an article is of greater importance than a reference that was mentioned once throughout the work.

2.3   Theoretical Framework

2.3.1   Theory of citation

Following the Normative and Social Constructivist theories of citation propounded by a famous Sociologist named Robert K. Merton in 1973, in which the current study drew its support towards determining the reasons for citations and the motivation behind scholars citing published articles. According to the Normative theory of citation, citations are norms which form the indicators of cognitive influence of a scientific article upon a citer. The Normative theory of citations entails that citations reflects the scholarly quality and achievement of research finding, because researchers use them to reward the articles of their colleagues in which the current study focuses through the content and citation analyses of theses in library information technology. The Social Constructivist theory entails that citers and scholars use citations and references to support their claims, approval disapproval, points made, and so on. The Social Constructivist theory lay much emphasis on the factors affecting citations (citation content analysis) and content of the cited article as in content analysis.

Scholars involved in articles writing refer to earlier articles which are similar to study to be undertaken or ongoing. These references and sources consulted are supposed to indicate earlier research whose methods, opinions, equipment and concepts inspired the citing author to develop a study. As earlier stated, citations are used to appraise the quality, impact, frequency of occurrence, penetration and originality of individual scholars and corporate entity performance across fields. The fact that an article is referenced shows that within the author's frame of mind, there exist a similarity between a part or the whole of the referenced article. But Chubin (2009) stated that before considering problems in citation analysis, it should be stated that these problem are relative that is; what may be a problem in one theory is not in another.

That theory is the normative theory, which maintains that bibliographies are lists of impacts and that writers acknowledges due to the following reasons.

1. To give credit where credit is due in related studies.

2. To pay homage to pioneers;

3. To identify methodologies, equipment;

4. To criticize previous work;

5. To correct one's work or the works of others.

All these are found within the context of any scholarly literature. When an author consults information from another author's work, he/she will cite the work. The rationale behind this norm is that the norm of science requires them to cite the work that they found useful while pursuing their own study and it is important that they abide by these norms. References cited by an author are indicators of impact on the authors work is a valid assumption, though variations on this assumption occur many times

throughout the article, but the assumptions whether implicit or explicit is basic to most types of citation analysis.

Blessinger and Hrycaj (2010) opined that what appears in one's mind are first, which is simply to identify a source of information, so that the reader of the cited work can verify this accuracy of that statements or fact made within the work it need be. Another closely related reason which is to incorporate a body of information by referencing, that is referring the reader to a place where the information can be found if interest for more grows.

The third reasons for citing is to comply and adhere to applicable norms or laws against plagiarism by acknowledging the originators of ideas, arguments, theories and terms applied towards citations. Furthermore, Blessinger and Hrycaj (2010) gave a reason for citing, the author called it a "celebratory" is midway between informational citing and authority citing. The feature of the mentioned article that induces the citation is the articles reputation or relevance. By merging it with the new research the researcher enhances the credibility of the article. This is because it is the common reason for citing. All these signify an acknowledgement of importance or impact, a pointer to a useful source of information, a focus of disagreement an authority and a prestige of the article or the author. These points mentioned are all forms of influence that may be enough to justify lumping them together for the purpose of citation studies in a broad sense that concerned with measuring impacts. It is a tradition for scholars and academia to acknowledge and cite an earlier work that relates with similar theories, methodologies, findings, concepts, problems and tools that inspires others who use or comes across such works. Nicolaisen (2007) said that citations have become intellectual correspondence among academic and professional field of study and can be an indicator to the nature, course and development of different disciplines, though citation can be

studied from various aspect such as linguistics (discourse analysis) and through information science (bibliometrics).

One crucial problem in citation pointed out as early as 1986 by Swales according to Nicolaisen (2007) is that, there exist two relatively independent and separate discussions in citation analysis, i.e. "quantitative description of different citations contained in a given literature (references) and the qualitative interpretation of the textual symbols in citations. Most studies on bibliometrics majorly focused on citation counts (frequency) but often ignore the citer's rhetorical and linguistic choices into considerations, through linguists mainly focus on the attached meanings in sample citation, but do not investigate the complex image by quantitative scales. Though, Small (2011) posited that such separations are caused by avalanche of data.

Citation analysis comprises of many attributes and features. For the purpose of this study, the framework is based on the three main features of citation, namely;

1. Numerical
2. Literal
3. Socio cultural

The most significant feature of citation is the numerical features which entails that citations can be quantitatively studied; this view is inconsonant to the Science of science facts which means scientific techniques can be applied to study the phenomenon of science itself. This approach, according to Zhang *et al.* (2013) has been widely accepted and used in the field of information science and have the counting of the numbers of citations(quantitatively) as its basis. The presume thoughts here is that, literature impact is not tangible but measurable through quantifying it.

The second feature of citations is literal, that is, it is constructed by words put uniformly as language, while language is a sign and representation of ideas, facts and concepts. The construction of this language in form of words is used as linguistic weapons to suggest citer's intellectual structure, cognitive interaction, homage, attitude and sentiments. Words and languages can also signify, according to Small (2011) whether literature in consideration is novel, indispensable which can be used to detect scientific breakthroughs, shifts, revolution and even subject fusion and fission. Words can be both explicitly quantified by perusing, counting and then carefully appraised through a qualitative process to determine the semantic meaning.

The last feature of citation is socio-cultural which appears difficult to obtain either from counting references or from the discourse analysis. the reason is that, citation is a complex social system where both individual attributes and social dynamics interacts and impacts each other. Motivation behind every citation may vary greatly due to personalized psychological process, the citers social environment and cultural background and normative tendencies governed by the internal norms in science as proposed by Zhang *et al.* (2013) furthermore as an art of persuasion may play key roles in this feature. Zhang *et al.* (2013) asserted that there is not an existing method that provides for a complete analysis of all three feature of citations.

Additionally, this framework for the syntactic and semantic analysis of citations and contents culls from many theories of citing. The framework major on advancement on two current analysis methods; quantitative description of bibliographies and qualitative interpretation of citation functions and content analysis including traditional citation analysis are to be combined in order to advance and effectively exploit and capture the nature of citations.

2.3.2 Theories of citation behaviour

Some studies have explained the theories of citation behavior which form the basis for citation and content analysis and citing behavior (Tahamatan and Bornman, 2018). The two traditional theories are the normative and social constructive theories. Merton (1973) as cited in the above-mentioned author proposed these theories. The author explained that scientists primarily cite their peers to accord them credit according to normative theory and reasons to cite articles or authors are cognitive in nature. The socio-constructivist theory inclines that the reasons behind citations are multidimensional and depend on many factors. For instance, socio-constructivist theorists believe the researchers cite scientific articles to persuade readers that the claims they have got in their own articles are valid, robust and authentic so therefore, scholars cite to defend their claims against abuse, fight for the advancement of their interest, persuade others and attract a dominant position among the community of scientists.

2.4 Review of Related Empirical Study

Content analysis has become a focal point in communication research methods. Chu (2015) used content analysis approach to analyze 1,162 research articles published between 2001 and 2003 in three major LIS journals. The articles went through qualitative and quantitative analysis in an aid to address some thematic occurrence about research method selection and application in scholarly domain. The study showed that content analysis, experiment, and theoretical approach have displaced questionnaire, survey and historical method to become the top choices of research methods in LIS field. The recommendation was that LIS scholars undergo training in

order to gain a better understanding of research methods selection and implementation in their scholarly pursuits.

Turcios *et al.* (2012) carried out content analysis of the LIS literature available at the Simmons College Library. The study was done to determine what percentage of LIS literature was available to graduate students, faculty and staff qualifies as research. The proposition was to analyze the contents in the LIS database and LIS periodicals collection based on eight elements such as journal titles, journal volume and issue, article title, page numbers, authors name(s), research objectives, methodology used on the study and findings. The research was expected upon completion to highlight the distribution of literature on the LIS field, the methodology frequently adopted and the subject coverage within the time frame of the study.

A study by Ma and Lund (2020) on content analysis and systematic examination of the evolution and distribution of LIS research topics and methods at Six Year increment from 2006-2018 at Emporia State University, Kansas, USA. Bibliographic data was collected for 3,422 articles published in LIS journals for the years 2006, 2012, and 2018. Through conceptual research strategy, the researchers identified the central research topics and research method for each title. The results revealed that a shift towards greater emphasis on scholarly communication, informetric and information seeking/behavior topics, along with a reduction in information systems and library and information service topics. Quantitative-based approaches are predominant across the 3 years examined with observed growth in the usage of questionnaires and informetrics methods from 2006-2018.These findings means according to the study that LIS is a dynamic discipline, with quickly shifting interests/usage of research topics and methods.

Content analysis conducted by Tuomaala *et al.* (2014) have contributed substantial and stringent approaches to understanding the distributions of topics and methods within research publications in Library and Information Science (LIS). The study employed research journals, selected based on the LIS journal ranking by the 2019 Journal Citation Report (JCR) of Social Science Citation Index (SSCI). The study seeks to demonstrate the emphasis on scientific strategies and novel methodological developments and emerging and evolving topics that bridge and transcend the traditional bounds of the discipline. Content analysis of articles is a viable method to present the trends and topics a profession deems important. A study on the content analysis of articles published in military psychology was conducted by Daniels *et al.* (2015) to identify critical issues and trends in the research and practice of military psychology. A total of 379 articles were analysed, and the study revealed that the majority were empirical (304, 80.2%) and employed quantitative method (283, 93.1%). The primary key topic were personnel (air force, army, military and navy; n = 166) military (psychology, training, veterans, etc. n = 104) and Carrier issues (employed, interests, job, vocation etc. n = 57). Trends and directions for the future of military psychology were also considered.

Content analysis lays much emphasis on the structure of a body of discourse in any given field of study. The findings of Sichalwe and Elia (2020) which investigated the research methodology practices among postgraduate students of Arts in Information Studies in Tanzania revealed students' insufficient understanding and application of research methodology concepts. According to the findings, survey research was predominant, with purposive and convenience non-probability sampling methods being extensively used. The study further revealed that, simple random sampling and stratified sampling were the probability sampling methods highly utilised. According

to the results further, advanced qualitative and quantitative data analyses were inadequately used. The study recommended the results can assist library and information science instructors improve teaching research methodology to produce quality theses with logical conclusions which can develop new theories. It very important to note that the study is very similar to the aims of the current study. Uniqueness and goodness of fit of these can translate into increased quantity and quality of journal articles and proper enhancement of the discipline (Library and Information Science). There is the need according to study to strengthen research methodologies training for students and lecturers to generate generalizable findings that meet diverse needs. This finding is similar to the research results of Chu, (2015) on the need to continuously train scholars on research methods selection and implementation to better their understanding scholarly pursuits.

A study by Ferran-Ferrer *et al.* (2017) examines the research methods and techniques used in top seven Spanish Journals of Library and Information Science. The authors selected 580 articles from top seven Spanish LIS journals indexed in Web of Science and Scopus, then conducted a content analysis of 394 papers out of 580 articles. The result revealed that most frequently addressed topics were information sources, metric studies and technologies. Most of the authors were Spanish and 42% of the papers had just single author. The study further revealed that research methods used in the journals did not lag behind in the international sphere. However, there is still room for improvement in experimental research, of which is very little and more internationalization of authorship according to further finding of the study.

A Content and Citation analysis study was conducted by Abifarin *et al.*, (2017) on undergraduate research projects in the Department of Library and Information Technology, Federal University of Technology Minna, Niger State, Nigeria, between

2009 and 2014. The study was carried out through record inspection and data collections by extracting bibliography and contextual data found within undergraduate research projects. The data collected were presented using tables and charts then analysed using frequency counts and percentages. The study showed that electronic resources dominated as the most consulted sources, while Information and Communication Technology was the major subject of interest in researches by undergraduate students. Survey type of research emerged as the most adopted methodology of undergraduate researchers. Questionnaire was the dominant instrument for data collections.

Citation content and citation context studies are based on the analysis of the statement around the reference author. Chang (2013) evaluated the 1963 and 1965 editions of de Solla Price's book "Little Science, Big Science" (LSBS) a landmark publication in Scientometrics to identify the citation functions and cited concepts to evaluate differences between natural sciences and social science and Humanities. 908 articles citing de Solla's price's book were obtained from Web of Science, and their citation context analyzed. Ulrichs Global Series Directory, Dewey Decimal Classification (DDC) and the Library of Congress Classification Scheme were used to classify cited papers on Natural Science and Social Sciences and Humanities. According to the study, "Science growth patterns" which has (16%), "Scientific communication" which has (15.7%) and Scientific productivity (12.9%) were the top concepts in Natural Science while "Scientific communications" (16.2%) "Science growth patterns" (13.2%) and Scientific Productivity (10.8%) were the top concepts in Social Science and Humanities. Chang (2013) classified the citation contents according to one of the citation indexes; Citation functions which were, Background information, Definition, Empirical evidence and Related studies.

Tahamtan and Bornmann (2018) tasked 50 psychologists and 49 biologists to rate the importance of the cited references in their own publications, and to describe their reasons for citing them. The study explored textual indexes of cited references (frequency of citation, citation length, location of citation within the text and citation treatment) which could be used to predict citation importance. The results showed that citations where relatively important. 64.7% of references in psychology and 50.9% in biology were cited in the introduction section. Most reasons for citing were found in general background "(37.3%), conceptual ideas" (31%), "Methods and Data" (13.4%).

In addition to Citation Content Analyses, surveys and interviews have been used to investigate the citing behaviors of scholars as stressed in Tahamtan and Bornmann (2018). In interviews and surveys, the citing authors are requested to express their reasons for citing the article. There are several weaknesses towards this in content analysis purposes. This is because, according to Harwood (2009); Sometimes the motivation of the citing author is not explicitly apparent after going through the text and a successful text analysis demands the scholar to have in depth knowledge of the article research focus. Willet (2013) revealed that there was a limited level of agreement among citing authors judgement of their own reasons for citing and the judgement of independent readers. The authors noticed that experts understand the contexts of some citations in very different ways.

Clarke and Oppenheim (2006) conducted a survey on the citing behavior of 65 postgraduate students in Loughborough University Department of Information Science. The findings showed that most frequent reasons for citing was to "support their own argument" (95.4%) and because of the currency of the cited paper (95.4%), "Acknowledging related work" (94.4%) and persuasion of readers" (92.3%) were the most reasons given to cite. The results also showed that 80% of the students said they

cite to criticize other works. 56.9% of respondents disagreed that they cite because the cited author had been their tutor. Well-known authors seemed another reason for citing for 70.8% of the participants. The work cited that the students believed they often based their reasons to cite on the references and importance of the cited articles than any other or non-scientific reasons.

Analyses of top cited papers in the field of Library and Information Science carried out to understand the main characteristics and features of publication such as bibliographic details, authorship collaboration, citation counts and specialty the list of classic paper was extracted from Google Scholar Metrics in June 2018.The most cited articles were published in 2006,the finding revealed that these 10 highly cited papers originated from 10 different institutions in 6 countries majorly Europe and North America. The number of citation ranged from 410 to 3057 the number of authors per article is 2.3 and the mean of citation per year was 98. Nine out of the 10 papers reported the study of citation analysis. The result further suggest that LIS research has shifted towards exploring scientific publication contents, impacts through content and citation analysis according to Elia and Sife (2018). This work is similar to the findings of Ma and Lund (2020) on LIS research shifting towards scholarly communication, Informetrics and Research Methods used in the field of Library and Information Science.

Sahu and Jena (2017) conducted a study on roles of libraries in promoting education using bibliometric analysis between 2012 and 2016 investigated the authorship pattern and the relationship between them based on some statistical indices from Education Resources Information Center (ERIC) database. Design, methods and focus data were searched for the peer reviewed and full text available journal articles the data was analysed based on certain statistical calculations to find the degree of collaboration, collaborative co-efficient, Shannon index, Simpson's indices, Spearman's coefficient

and Co- authorship pattern among other indices. The criteria were met by 262 publications by 517 authors. The highest number of articles were authored by single authors rather than multiple authors. The result gave insight for more collaborative research patterns (multiple authors) in the field of Library and Information Science.

Research using bibliometric analysis to analyse topic area of are very scarce and scanty among literature on the field of library and information science, though, Choi (2013) aimed to illustrate the topic areas of researchers needs for academic publications in a department of University by analysing bibliographic details of their publications. Publications were used to discover the topic area where the researchers had published. Cited publications in those papers were analysed to identify the expanded topic areas of these researcher. Additionally, highly cited journals were analyzed by network analyses methods. The finding is that the importance of topic areas by the number of journals was not necessarily proportional to that by the number of papers. The finding also reveals that researchers have a tendency to use many papers in a small number of journals in a certain topic area. Furthermore, the usefulness of topic areas discovered by researchers' publication was not as the same as that discovered by researchers' citations.

In a recent study by Gonzalez-Teruel and Abad-Garcia (2018) on citation content analysis investigated the influences of Elfreda Chatman's Theories (Information Poverty Theory, Life in the Round Theory and Normative Behavior Theory) on citing papers. Full text of 332 citing papers were obtained from Web of Science and Scopus. Result showed that most of the citing papers were in "Social Sciences," 39% for Information Poverty Theory, 29.4% for Life in the Round Theory and 66.7% Normative Behavior Theory. The analysis also showed that for "Computer Science" (31.7% for Information Poverty Theory, 47.1% for Life in the Round, and 33.3% for Normative

Behavior Theory). and "Medicine" (19.5% for Information Poverty Theory, 11.8% for Life in the Round Theory, and 33.3% for Normative Behavior Theory).

Literatures are surplus on the use of citation analyses for higher institution library's collection development. Despite the avalanche of research reports on undergraduate's projects citation and content analysis, postgraduates' student's theses are most preferred due to the facts they constitute a large form of users' community in libraries, using tools and other library materials for conducting researches. In order to buttress this assertion above, Anunobi *et al.* (2012) in a similar research found that most of the references from journals and monographs were credited to postgraduate students' theses which negates the undergraduate projects which constitutes limited citations of monograph also as cite. The study revealed that most citations of postgraduate research reports correlates rightly with citation of faculty publication of postgraduate research in solving collections development problems, the history of disciplines and ages of publications including Bradford laws testing.

Huang and Chang (2011) used direct citations and co-authorship analysis to study interdisciplinary alteration in information science between 1978 and 2007. The research gathered a total of 17,985 citations from 770 selected articles from five Information science journals and analysed them to determine the disciplines of references and co-authors. Using the Brillion's index to measure interdisciplinary, the study showed that researchers in Information Science mostly cite publication of Library and Information Science. The research further showed that the co-authors of Information Science articles emanate also from Library and Information Science profession.

Gayan and Singh (2018) carried out a study on citation analysis of Doctoral theses of Mathematics at Tripura University India. The study considered only those theses that

were submitted to Shodhganga. According to the author, 6 theses contributing 377 citations were selected for the study. The references were analysed with respect to authorship pattern, year, country, the publisher and the kind of documents used. Bradford's law was used to determine the core journals in the field of Mathematics which showed that fuzzy sets and systems is one of the journals that have high impact in the field of Mathematics. Then the half-life of mathematical journals was found to be 22 years from the obsolescence rate of journals in Mathematics. The author also tested the degree of collaboration on the discipline in India and was found out to be 0.58. Average citation per thesis in Mathematics was 62/83 as revealed by the study. The general results found on the study will help Mathematical researchers in understanding the features of the field as well benefit librarians in policy making in terms of collection development.

A report by Kushkowski *et al.* (2003) studied Masters and Doctoral theses at Mid-Western University USA. The findings showed that graduates students carrying out research or writing theses prefer current research despite fields of collaboration. The length of the theses output increase over time and the number of citations contained in theses varied by discipline as the study stated. The pros and cons of the results of the studies with regards to collections development and scholarship were stated and future suggestion made. Some of the obvious results were that; Social Sciences were highest number of disciplines where citation analysis was used frequently; representing 36.9%, while 27.0% for Biological science theses. Another is the Department of Engineering with 20.7% of the theses analyzed, Arts and Humanities and Physicals Sciences contributed 4.9% and 10.5% respectively, where 57 Academic departments were represented, the sample include 261 (41.5%) Doctoral and 368 (58.5%) Master's theses.

The result further showed that journals and monographs constituted the most literature cited with 63. 6% and 23.7% respectively while other sources make up the rest. The study showed that there were no Web materials cited given the date of the data set. The mean age of the citations is 12 years, with a median of 8 years. Half of the citations are 8 years old or less and 90% of the citations are 26 years old or less as of the time the study was carried out. Citation analysis is used for assessing the referencing behavior of scholars and researchers.

Mill (2008) analysed the citations of sampled bibliographies from College-wide collections of undergraduate papers to determine the kinds of resources cited, and Libraries ownership of books, journals and other resources. Citation analysis is a major area of bibliometric studies from across the globe, acceptable as a means of getting useful, effective and important information about the characteristics of literature in each and every discipline.

Devi and Das (2016) conducted a citation analysis of doctoral dissertation submitted to the Department of English, Guahati University, India between 2009 and 2012. The study analysed 908 citations appended to six doctoral dissertations. Bibliographic indices such as the number of citations received, different formats sources, authorship pattern, collaboration coefficient, obsolescence, age and other parameters were used in analysis of the data gathered. The study showed that books are the most preferred sources of information used by the researchers in the English language literature, which contributed to 77% of the total counts, while the second highest source of information are periodicals with 15%. The researchers showed much tendency towards citing older literature like over a decade or so in their works. The study revealed also that one-author publications contributed 85.1% of the total references, while the collaborative coefficient is summed at 0.10. The research findings can assist library managers to

identify important information sources and can help predict the future of disciplines by academic faculties.

Angammana and Jayatissa (2015) applied bibliometric approach to study postgraduate theses on Library and Information Science at University of Kelaniya and University of Colombo, Sri-Lanka. The aim of the study was to determine the bibliometric characteristics contained in the theses. There were fifty Masters of Library Science (MLS) theses and twenty Masters of Social Science (MSSc) theses at the University of Colombo and University of Kelaniya respectively that were analyzed by the authors. A total sum of 4,909 citations were gathered from the theses and used for the analysis. The result showed that books constitute majority of the materials cited with 39%, while Journals accounted for 34% as the second most cited literature. *Organizational Behaviors* by Robbins was the most cited book, while the most referenced journal was the *College and Research Libraries*.

Geetha *et al.* (2016) studied Computer Science theses submitted to the top five Universities in Shodhaganga contributing electronic theses to the repository between 2014 and 2015. Using citation analysis 4,490 citations were extracted and analysed to ascertain the authorship patterns along with collaboration coefficient calculation, literature formats, journal ranks, book ranks, time span (age) and geographical locations. The study revealed that journals are the most preferred and frequently used information sources by researchers in the computer science field. The investigation showed that the *Journal of the Institute of Electrical and Electronic Engineering (IEEE)* ranked first as the most preferred journal, while other journals and other formats of information sources queued behind it. The study will be helpful in recognizing researcher's needs according to the authors and by recommendation will serve as feedback to librarians in acquisition of most useful sources.

Citation analysis was carried out by Aliyu (2015) on Doctoral theses in Education, University of Maiduguri, Nigeria between 1987 and 2007. Bibliographic details, including subject area of the theses were extracted. Bibliometric techniques were used in the data analysis using frequency counts, and percentage scores. Tables were used also for the presentations of research findings. The study revealed that Curriculum and Instruction ranked as the most researched subject area, while Educational Psychology was the least researched subject area. The findings also showed that Books and Monographs were the most cited information source. The author stated that out of 912 journals cited, 18 were identified as the most frequently cited while most of the works cited by the researchers fall between 1980 and 1989. The study will be of tremendous assistance to potential researchers who wish to exploit other subject areas of education.

Furthermore, Citation analysis study was conducted by Sam and Tackie (2007) on dissertation submitted to the Department of Information Studies, University of Ghana, Legon from 1998 to 2004, with the aim of ascertaining pattern of use of different types of information formats. The study showed that 2,212 citations were extracted from 67 dissertations. 969 were books and monographs, which were cited more than journal articles which had only 550 while unpublished materials had only 4 which was the least cited materials.

The study of Olatokun and Makinde (2009) on Master's degree dissertation submitted to the Department of Animal Science, University of Ibadan, Nigeria between 2000 and 2007. The study aimed at finding possible relationships between citing, cited articles and authors. The study involved descriptive method of research. Data extracted for the Master's degree theses were analysed using frequency and percentage distributions (presented in tables, charts and graphs) and measures of central tendency. The results revealed that journals were the most cited sources within the dissertations. Furthermore,

Poultry Nutrition publications had the highest number of dissertations then followed by Agricultural Biochemistry and Nutrition. Forage production and Management was the least researched subject area, so also Monogastric Nutrition with just two dissertations each.

Similarly, Labonte (2015) used citation analysis to find out if the Science-Engineering Library at the University of California Santa Barbara is meeting the needs of an interdisciplinary group of 60 faculty members at the new California Nano systems institute. The aim of the study was to develop a list of core journals and identifying journals that should be added to the Sciences Engineering Library at UCSB. Findings showed that the library subscribed to 98% of the journal in which faulty members are publishing or citing majorly. The research provided useful information on citation patterns and that can be used for future collections management decision.

A study carried out by Georgas and Cullars (2015) on the characteristics of the linguistic literature of which citations were obtained from the Language and Linguistic Behavior Abstracts Database. Specified counts and percentages of citations in terms of sources types, such as monographs, articles on books, journals and theses were analyzed. The findings showed that journal articles had the highest score in the cited and citing sources which were 73.3% and 4.2.8% respectively.

Similarly, Anaehobi and Muokebe (2014) examined the citation analysis of theses submitted to the Department of Engineering and Technology, Nnamdi Azikiwe University Awka, Nigeria. The study aimed to know the availability of the resources cited. Document analysis guide was employed to gather data from the master's degree theses available in the Department of Engineering and Technology. 87 theses were studied and 2,947 citations found therein. Analyses of data were performed with the

use of frequency tables and percentages. The findings revealed that internet sources had the least citations with (12.14%). Books were the main information resources used by researchers then journals articles came second with 54.09% and 34.05% apart. Most of the cited sources were not available in the University Library according to the researcher and the most cited resources in the theses analyzed were foreign materials. The study recommended that the library management should collaborate with the department to acquire most used information sources and effort made to acquire those titles used by the researchers in theses that were hitherto not available in the library. Abifarin *et al.* (2017) also found out that most of the cited sources in undergraduate students' projects in the Department of Library and Information Technology, Federal University of Technology Minna, were not available in the University Library.

Goi (2017) analysed the research trends of postgraduate students in the Humanities based on the dissertations available in the University of Malaya between 1984 and 1994. The study revealed that the preferred language was Malay (61%), and then followed by English. The study showed that the subject interest were local oriented books which were majorly cited more than journal articles. Authorship pattern used more in the study was the single author. The above finding is very similar to the study of Kumar and Sharma (2010) where analysis of 61 Library and Information Science dissertations were carried out. About 80% of the citations were single authors. However, the study showed that journals articles were cited more than books, proceedings and dissertations. The most cited journal was the *College and Research Libraries*, followed by the *Journal of the American Society for Information Science*. Most articles cited were published outside Malaysia mostly from USA and UK.

The origin of the cited materials were foreign materials which corresponds with that of Tonta and AI (2006) who studied the scatter and obsolescence of journal articles cited

in theses of Librarianship in the Department of Librarianship of Hacettepe University, Ankara, Turkey between 1974 and 2002. While Monographs received more citations, *College and Research Libraries* and the *Journal of American Society for Information Science* were the most journals cited. These results are similar to the findings of Kumar and Sharma (2010).

Hart (2007) study on collaboration and article quality in the literature of academic librarianship. The author suggested that co-authorship results in high quality articles. The researcher utilised citation counts to articles from two important journals over a decade and found no evidence to support the superiority of co-authored documents. A total of 543 Journals articles were used and is mostly from the *College and Research Libraries* and that of *Academic Librarianship*.

Also, a study by Vallmitjana and Sabate (2018) on bibliometric analysis of PhD dissertation within Chemistry field in the Institut Quinnic de Sarria (IQS) of the Universitat Ramonhull Barcelona, Spain. The aim of the study was to ascertain what type of documents are mostly used in their research processes, the most frequently cited journals and obsolescence rate of the journals. The analysis involved 46 Doctoral theses presented at the Institutat Quinnic de Sarnia between 1995 and 2003. The findings obtained from the 4,203 citations extracted from 46 PhD theses showed that the most frequently used documents were scientific papers that accounted for 79%. 33 journals met 50% of the informational needs; 50% of the citations were not older than 9years. The analysis of the references and bibliographies contained in Master's Degree Theses has been an effective evaluative tool to determine researcher's information needs, research quality, trends in transfer of knowledge and development of disciplines. It also reveals that scientific journals represent the biggest proportion of sources cited in the dissertation in Political Science, asserting that articles that were cited allow the libraries

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better management of their collections. Sylvia and Lesher (2015) employed citation analysis methods on citations in the theses and dissertation of the field of Psychology and found two parameters are complementary, i.e. the number journals that are frequently cited and their cost-per-use.

Smith (2013) carried out a study on the result of the citation analysis of a portion of theses from 2001 about several different Subjects and likens them with the analysis done a decade before. The author evaluated the usefulness of the library collections and investigated the evolution through time in correspondence to the in production of electronic information sources and with subscription to scientific journals. The results showed that Arts and Humanities depended more on Monographs; Science and Technology cited scientific journals, the lifespan of the referenced materials also established differences showing that Science and Technology do not use old literatures like Arts and Humanities.

A citation analysis study by Borthakur (2015) on theses and dissertations in Chemistry seeks to find the citation patterns used by Students and Scholars alike in Dibrugarh University, 21 theses and 7 dissertations of Chemistry were picked up as a sample from 2009-2013 in which 5,145 citations extracted from within and appendix of theses and dissertations. The research showed that collaborative research is really prevailing in the Chemistry field. Journals contributed to the highest number of citations, though books also enjoyed wide use compared to Web and other literature formats. The author recommended that the findings will help Librarians plan effective collection development in the face of limited budgets.

A similar study by Banateppanrar *et al.* (2013) on citation analysis of Doctoral theses on Zoology submitted to Kuvempu University, India. The purpose of the study was to

determine the references cited in those theses between 2002 and 2006. Data used for the study were extracted from title page and references at the end of each chapter using statistics and Microsoft excel. The study revealed that journals were the most preferred sources of information in the field of Zoology accounting for 74.47% of total citations, and then books, monographs too and then other formats of information according to the authors. Journal of *Mutation Research* ranked the highest with 94 citations representing 5.71% of the total journals' citations. Bradford's law of scattering was applied to the study and it was observed the most citations were from journal articles and most cited sources were contributed by multi authors and then the degree of collaboration is 0.71. The study will help information workers to improve their collections.

The citing features or behavior have been studied in great details. Researches has been carried out on the citation behavior of scholars and users to information across fields of studies and most times with the objective to find out if these features are prone to change or have changed over a period of time.

Studies on Citation behaviors covers disciplines by examining the authenticity and quality of references used and cited, number of articles in terms of the type of resources identified, frequency of use and age. Though, most of these studies provided some analysis usually through opinion by the use of questionnaire, to determine the motivation behind individuals' citation behavior. But then, Clarke and Oppenheim (2010) studied the Citation Behaviors of undergraduate and Master's Students respectively, 20 undergraduate Information Science student's final year projects were picked between 1997 and 2000, in order to determine if there has been increase in the use of the internet as source over that period. The researchers presented that majority of the sources were obtained from books and journals, but when revisited after three years ahead, the result showed sharp increase on the use of Internet sources. However,

Clarke and Oppenheim (2010) carried out a similar study on 120 dissertations between 1998 and 2003. The result showed that majority of the citations obtained were from less books and more journals, with journal articles gradually taking dominance.

Horde (2010) in a similar study, examined the bibliographies of 109 English year one students' papers. Books were cited more frequently at 47.69%, followed by journals at 43.1%. The internet sources were not cited which means that students did not have access to the internet their library, thus no electronic resources in the analysed bibliographies. Gao *et al.* (2007) revealed that PhD researchers referenced more sources than Master's researchers averagely. Eckel (2009) tried to find out the different citations behavior of scholars who successfully completed their work between 2002 and 2006, in civil and building programs. The results thereafter, showed that there was progressive trajectory on the use of definite sources of information by PhD students while Master's students' sources of information were more of wider sources of information. The study further revealed the use of general Websites which ranked fourth as the most commonly sources of information by both PhD and Master's students. The findings are similar to that of Williams and Fletcher (2006). A similar study on a sample of first- and second-year students research works by Carlson (2006) which analysed citations extracted from 583 bibliographies submitted in 2002, with the aim of showing how students Citations Behavior differed with regards to disciplines, Course Level and Year of Study. Results gathered from the study showed that the rate of books cited by students remained unchanged throughout the period at about half the cited materials.

The study also reported significance difference in the rate at which journals were cited by first year students compared to the rate of journal articles cited by students in other years however rose progressively. The study showed that the year one students are citing websites more frequently while from year two and above cited more of journal

articles. According to the author, the ones in Foundation Seminars and Course are the heaviest citers of Websites sources. In line with other Studies furthermore, the study pointed out disciplinary preferences where Humanities Students cited books more than the other sources.

Conclusively, Gadd *et al.* (2010) analysed 47 final-year projects of Civil and Building Engineering Undergraduates Students. The study revealed positive correlation between the literature review marks and overall marks for each project as well as a slight weaker correlation between the number of references cited and the mark received. An analysis of the numbers, age and type of references cited was performed including an inward look into the quality of the bibliographic citations itself. The research recommended on how information Literacy teaching about literature review may be improved.

Knowledge accumulation, scholars and research communities have mapped out consistent means for communicating and reporting scientific feats. The organisation of research into standard segments of first, Introduction of the background, Review of Related Articles, Methods, facts and End products (results), Discussions, Recommendations and Conclusions has been generally adopted and utilized by most journals and conferences. Within the body of discourse of these knowledge media, citations are located within each section of the article be it a journal or conference proceedings and a document such as research projects, theses and dissertations. So, based on the reference location within a standardised section, it becomes very easy to study and analyse a citation perceived relevance, reasons, functions and level of usefulness within the work.

The authors analysed citations contained in an article based on its location within the Introductions covering the background of the study, Methodology, Discussions and

Conclusions sections of a citing article. The results show among things, that the Introduction section contained more highly referenced articles than the other sections. A conclusion was drawn that citation should be based on both its frequency and its location within the article. Kumar and Sharma (2010) extended their own argument by contending that an article cited on the Introduction, Review of Related Works and later again in the Methodology and also in the Discussion section should be regarded as having contributed a greater impact to the citing article than others, which may have appeared once in the entire citing document frequently was a method used to determine a citation to the citing article; as such Peritz (2013) differentiated between formal citations, which indicate the further name with one of the imprints (year of publication) and informal citations which bears the authors name. The author further studied the redundant patterns of citation in which a given author cites multiple articles simultaneous within a citation block to indicate a list of instances such as very similar situation, impact full source and the application and used of similar classic methods. Their analysis of 575 references in 30 articles of theoretic high-energy physics found that one third of the reference were reductant, one-seventh were negation and two-fifths were perfunctory.

Snizek *et al.* (2010) in a related study conducted on these textual and non-textual characteristics (for instance, number of uncommon words, number of references, figures and abstract readability) can take up to 15%-35% of the variation in citation frequencies. There is important need to note that these early studies on syntactic content-based citation analysis were mostly carried out manually on small size paper sets, However, Marivic *et al.* (2008) carried out a Citation Content Analysis based on the location of references in more than 350 papers. The results showed that the methods, result and discussion chapters contain more impactful and meaningful citation than the

introduction and background chapter. In support of the above finding, Suppe (2018) indicated that article sections about methods, data and interpretations were very useful to the evaluation of inclusion of the new findings into the common knowledge pool or base of a discipline.

2.5   Summary of Literature Review

In citation content researches, the citation around the reference within the body of discourse is analysed. it is not the aim of citation content analysis to yield information about the content of a certain cited article, rather to describe the citation process of the citing author. This process is used to analyse the totality of citations of the article in the citing publication and to determine different functions citations have for instance giving credit to pioneer or previous work and providing background information and also investigate different meanings of citations studies also took account on the location of citations within the citing documents for instance, in specific sections to investigate citation functions.

According to the review of related works, citation and content analysis have their peculiar challenges and limitations, one of which is the contradictory results some studies at times obtained are based on the subjective judgement of Scientometricians who are most times not experts in the field understudy. Another bottleneck is that a text may carry several citations while parts of the text may not be talking about a cited paper even if it contains a reference anchor to it and thirdly, even a citation that appears once in an article can have more than one function.

The researcher reviewed related publications on Content analysis, Citation Analysis and Citation Behavior while carrying out the research. From the review of previous works, it was observed that studies were carried out simultaneously to analyse the

contents and citations within a given literature or in any field of study over a period of time. Thus, efforts were geared towards shedding lights on the processes of written communication and discover their historical development and antecedents. Another important reason behind Contents and Citation Analysis is to indicate the quality and quantity of publications outputs, also to measure the impacts and contributions of different authors in any given field of study. The understanding of the reasons and functions of Citations within a body of literature can be revealed through in-depth analysis. Additionally, it was observed also that the rationale for most previous works on Citation analysis were aimed at helping libraries towards effective management of their collections through providing the preferred and right sources of information and at the right time for the users even in the era of limited budgets and scarce resources. Thus, efforts were geared towards shedding lights on the processes of written communication and to discover the historical development and antecedents of diverse area of studies.

Therefore, the uniqueness of this present is based on its ability to study Content Analysis, Citation analysis and Citation Behaviors of MTech Theses at the Department of Library and Information Technology, Federal University of Technology, Minna, Niger State.

CHAPTER THREE

3.0   RESEARCH METHODOLOGY

3.1   Research Design

Content analysis research design was complemented with bibliometric research design for the purpose of this study. Content analysis research design enables a researcher to determine and quantify the existence of certain words, phrases, subjects or concepts from texts, written, oral or visual using summative content analysis method. The summative analysis method enables a researcher to identify and quantify the existence of certain words, phrases, subjects or concepts (indexes) and making qualitative inferences about the meaning and their semantic relationship in the context of use (Hsieh and Shannon, 2014) The summative content analysis method was used to determine and quantify the existence of research content indexes in MTech theses in Library and Information Technology. It was used to determine and quantify the occurrence of citation content indexes in the theses.

Bibliometric research design enables a researcher to conduct a productivity count of cited references and their bibliographic features with a view to evaluation collection support for postgraduate research (Obuh and Babatope, 2011) using descriptive and evaluative bibliometric approaches. The descriptive bibliometric approach will be used to determine and quantify the bibliographic features of cited references in MTech theses in Library and Information Technology while the evaluative bibliometric approach was used to determine their state of availability in Federal University of Technology Library, Minna.

3.2 Population of the Study

The population for this study consisted of 41 M.Tech theses in Library and Information Technology available at Federal University of Technology Library, Minna. These M.Tech theses were completed between 2016 to 2019.Table 3.1.1 shows a breakdown of the theses according to year of production.

Table 3.1: Population of M.Tech Theses by Year of Production

Year of production	Number of theses
2016	13
2017	2
2018	17
2019	9
TOTAL	**41**

Source: University Library, Federal University of Technology, Minna (2021)

3.3 Sample Size and Sample Techniques

A population frame was constructed for the 41 copies of M.Tech theses in Library and Information Technology at Federal University of Technology Library, Minna. The population of Theses were stratified according to year of completion and numbered according to matriculation number. The sample size of 30 at 90% level of confidence (Louis, Lawrence and Keith (2007) was picked using Table of Random Numbers.

Table 3.2: Sample size of M.Tech theses by year of production

Year of production	Population	Sample Size
2016	13	9
2017	2	2
2018	17	15
2019	9	4
TOTAL	**41**	**30**

Source: University Library, Federal University of Technology, Minna (2021)

3.4 Instruments for Data Collection

The following five instruments were constructed by the researcher for the purpose of conducting the research:

(i)   MTech Theses Research Content Worksheet (MTechTRCW)

(ii)   MTech Theses Citation Productivity Worksheet (MTechTCPW)

(iii) MTech Theses Syntactic Analysis of Citation Content Worksheet (MTechTSACCW).

(iv)   MTech Theses Semantic Analysis of Citation Content Worksheet (MTech TSACCW)

(v)   MTech Theses Availability of Cited References Worksheet (MTechTACRW).

MTechTRCW was used to collect data on the existence of research content indexes in the MeTech theses under study. Such indexes include: Thesis organisation, Subject focus, thesis, Theoretical frameworks, Research designs, Data collection instruments, Sampling techniques, Data presentation techniques, Data analysis techniques and Hypothesis testing techniques used in the MTech theses.

MTechTCPW was used to collect frequency of occurrence of bibliometric characteristics of cited references. Such characteristics include number of cited references per thesis, Format of cited references, Age of cited references, Highly cited publications, Type of authorship in cited references.

MTechTSACCW was used to collect data on of the frequency of occurrence of syntactic citation content indexes in the theses. Such indexes include Location of mentioning, Style of mentioning and Frequency of mentioning

MTechTSACCW was used to collect data on the frequency of occurrence of semantic citation content indexes: Function of citation, Citation motivation, Disposition of citations in the MTech theses.

MTechTACRW was used to collect data on the availability of cited references in Federal University of Technology Library, Minna.

3.5 Validation of the Instruments

The draft and construction of the data collection instruments were done under the watch and inputs of the supervisor of this study. The data collection instruments were made to undergo validation. Four experts, two librarians, one bibliometrician, a research supervisor apart from the one supervising this thesis and one statistician did scrutinize the Worksheets. The professionals were requested to check for relevance and clarity of the bibliometric constructs contained in the Worksheets. Their observations, comments, suggestions and other inputs were deployed in the modification of the items in the Worksheets. Therefore, the Worksheets were found suitable to collect the needed data for this research.

3.6 Data Collection Procedure

A letter of introduction was obtained from the Department of Library and Information Technology to the University Librarian to use M.Tech theses in Library and Information Technology deposited in the University Library for the study. The researcher scanned through each thesis and record manually the frequencies of existence or occurrence, as the case may be, of each of the relevant data items on each of the worksheets. This manual recording was repeated for each thesis until the 30 theses were covered.

The list of M.Tech theses was compiled and arranged alphabetically by the Author's name to provide a bibliography of M.Tech theses in the Department of Library and

Information Technology, Federal University of Technology, Minna between 2016-2019.

3.7   Methods of Data Analysis

Data collected using the worksheet was extract and manually presented in tables. Frequencies and percentages were used to summarise the existence or occurrence of the various indexes in order to determine the predominant patterns. Spearman's rank correlation was used to test if there is a significant associative relationship between location of mentioning and citation function in M.Tech theses in Library and Information Technology, Federal University of Technology, Minna. The spearman's rank correlation formular is this: $P = 1 - \frac{6\Sigma di^2}{n\,(n^2-1)}$.   (3.1)

4.0   **RESULTS AND DISCUSSION**

4.1   **Results**

RQ1: What are the Research Contents of M. Tech Theses in Library and Information Technology at Federal University of Technology Library, Manna?

(a) Organisation of M.Tech Theses in Library and Information Technology
Table 1 presents the organisation of M.Tech theses In Library And Information Technology

Table 4.1: Organization of M.Tech Theses In Library And Information Technology

Abstracts	Introduction	Literature Review	Research Methodology	Results/ Discussions	Conclusion/ Recommendation	References
30	30	30	30	30	30	30

Table 4.1: shows that 30 copies of M.Tech Theses in Library and Information Technology between 2016 and 2019 were organised and had Abstracts, Introductions, Literature Reviews, Research Methodologies, Results and Discussions, Conclusions and Recommendations, as well as References. This means that Theses were organised according to standards and best practices in research and academic presentations.

(b) Subject Focus of M.Tech Theses in Library and Information Technology
Table 2 presents subjects focus of M.Tech theses in Library and Information Technology

Table 4.2: Subjects focus of M.Tech Theses in Library and Information Technology

Subjects Focus	Frequency	Cumulative Frequency	Percentage	Cumulation Percentage
Library Administration	7	7	23.3	23.3
Reference Services	7	14	23.3	46.6
Information Communication Technology and Libraries	6	20	20	66.6
User Studies	3	23	10	76.6
Collection Development	2	25	7	83.3
Library Information Technology	1	26	3.3	86.9
Library Automation	1	27	3.3	90.0
Entrepreneurial Librarianship	1	28	3.3	93.5
Public Libraries	1	29	3.3	96.8
Special Librarianship	1	30	3.3	100

Table 4.2 reveals that Library Administration and References Services were the subject focus of M.Tech researchers in Library and Information Technology. 7 titles each dealt on Library Administration as well as References Services. Information and Communication Technology aspects of librarianship had 6 titles of subject focus of M.Tech researchers in Library and Information Technology. 3 titles were recorded on Users Studies, while Collection Development had 2 entries. Lastly, Library and Information Technology, Entrepreneurial Librarianship, Public Library, Library Automation and Special Librarianship had just 1 entry each.

Theoretical frameworks used in M. Tech Theses in Library and Information

Technology

Table 4.3 shows the theoretical framework used in M.Tech theses in Library and Information Technology.

Table 4.3: Theoretical Frameworks used in M.Tech Theses in Library and Information Technology

Thesis ID	Theoretical Framework
MTLIT 001	Nil
MTLIT 004	Nil
MTLIT 005	Theory of Motivation
MTLIT 007	Nil
MTLIT 008	Psychological Theory of Crime and Sociological Theory of Crime
MTLIT 009	Nil
MTLIT 010	Cranfield Experiments
MTLIT 012	Nil
MTLIT 013	Nil
MTLIT 014	Nil
MTLIT 015	Abraham Maslow's Theory of needs
MTLIT 016	Connectivity Theory
MTLIT 017	Theory of awareness, Penchansky and Thomas theory of access
MTLIT 018	Innovation theory
MTLIT 019	Operational conservative theory
MTLIT 020	Theory of consumer satisfaction, Van Dijk's theory of digital divide and social model of disability
MTLIT 021	Information behavior model
MTLIT 022	Information utilization capacity theory and the uses and gratification theory
MTLIT 023	Nil
MTLIT 024	Connectivity Theory
MTLIT 025	Nil
MTLIT 026	Information needs and information seeking behavior theory
MTLIT 027	Social cognitive theory
MTLIT 028	Nil
MTLIT 029	Marland's Steps to Research in the form of Nine Questions
MTLIT 030	Diffusion of innovation theory
MTLIT 033	Self determination theory and Maslow's motivational theory.
MTLIT 038	Henri Fayol's theory of management and diffusion theory
MTLIT 039	Yield shift theory
MTLIT 040	Ranganathan's law of Library Science.

From the table, prominent among the theoretical frameworks are the Theory of

Motivation, Cranfield Experiments, Abraham Maslow's Theory of Needs, Connectivity

Theory, Gratification Theory, Social Cognitive Theory were all adopted by M.Tech

researchers. Contrastively, the table further revealed that some researchers did not apply or use theoretical frameworks in the course of their researches. Theses such as MTLIT 013, MTLIT 014, MTLIT 023, MTLIT 028 had no theoretical frameworks.

(c) Research design used in M.Tech Theses in Library and Information Technology

Table 4.4 indicate the research design used in M.Tech theses in Library and Information Technology

Table 4.4: Research Design used in M.Tech Theses in Library and Information Technology

Research Design	Frequency	Cumulative frequency	Percentage	Cumulative frequency
Descriptive research design	20	20	67	67
Survey research design	9	29	30	97
Experimental research design	1	30	3	100

Table 4.4 reveals that descriptive research designs is the major research designs used by M.Tech researchers in Library and Information Technology. Description research designs had 20 entries, Survey research design had 9 entries, while experimental research design had 1 entry.

(d) Data collection instruments used in M. Tech Theses in Library and Information Technology.

Table 4.5 shows the data collection instruments used in M.Tech theses in Library and Information Technology

Table 4.5: Data Collection Instruments used in M.Tech Theses in Library and Information Technology

Data collection instrument	Frequency	Cumulative frequency	Percentage	Cumulative frequency
Questionnaire	21	21	70	70
Questionnaire and others	8	29	27	97
Participant observation template	1	30	3.3	100

Table 4.5 indicates that Questionnaire is the most used data collection instruments by M.Tech researchers which had 21 entries. 8 entries had the combination of Questionnaire and other instruments. Participant observation template contributed 1 entry.

(e) Sampling Techniques used in M. Tech Theses in Library and Information Technology

Table 4.6 presents the sampling techniques used in M.Tech theses in Library and Information Technology

Table 4.6: Sampling Techniques used in M.Tech Theses in Library and Information Technology

Sampling technique	Frequency	Cumulative frequency	Percentage	Cumulative frequency
Stratified random sampling techniques	10	10	33.3	33.3
Total Enumeration/Census	10	20	33.3	66.6
Purposive sampling techniques	6	26	20.0	86.6
Cluster sampling techniques	1	27	3.3	89.9
Simple random sampling	1	28	3.3	93.2
Sample size of a population (Polina, 2013)	1	29	3.3	96.6
Multistage sampling techniques	1	30	3.3	100

Table 4.6 reveals that Stratified random sampling technique and total enumeration were the major sampling techniques used by M.Tech researchers which had 10 entries each, followed by purposive sampling techniques which contributed 6 entries while Multistage sampling techniques, Cluster sampling, Simple random sampling techniques and Polina (2013) table of random numbers contributed 1 entry each.

(f) Data Presentation Techniques used in M.Tech Theses on Library and Information Technology

Table 4.7 shows the data presentation technique used in M.Tech theses in Library and Information Technology

Table 4.7: Data Presentation Techniques used in M.Tech Theses in Library and Information Technology

Data presentation technique	Frequency	Cumulative frequency	Percentage	Cumulative frequency
Tables	28	28	93.3	93.3
Tables and graphs	1	29	3.3	96.6
Tables, pie chart, histogram and bar chart	1	30	3.3	100

Table 4.7 shows that Tables constitute the major data presentation technique employed by M.Tech researchers in Library and Information Technology. Tables and graphs, Tables, Pie-chart, Histogram & Bar-chart combined had 1 entry each in M.Tech Theses between the year 2016 and 2019.

(g) Data Analysis Techniques used in M.Tech Theses in Library and Information Technology

Table 4.8 presents the data analysis techniques used in M.Tech theses in Library and Information Technology

Table 4.8: Data Analysis Techniques used in M.Tech Theses in Library and Information Technology

Data analysis Technique	Frequency	Cumulative frequency	Percentage	Cumulative frequency
Frequency, Percentages, Mean score and Standard deviation	28	28	93.3	93.3
Frequency counts and Percentages	1	29	3.3	96.6
Mean recall, Mean precision, Mean response time and Standard deviation	1	30	3.3	100

Table 4.8 indicates that Frequency, Percentages, Mean score and Standard deviation combined together as a data analysis techniques is the most used data analysis techniques, while frequency counts and percentages only and Mean recall, Mean precision, Mean response time and Standard deviation produced 1 entry each as data analysis techniques least used by M.Tech researchers in Library and Information Technology produced between the year 2016 and 2019.

(h) Hypothesis Testing Techniques used in M.Tech Theses in Library and Information Technology

Table 4.9 shows the hypothesis testing techniques used in M.Tech theses in Library and Information Technology

Table 4.9: Hypothesis Testing Techniques used in M.Tech in Theses Library and Information Technology

Hypothesis testing technique	Frequency	Cumulative frequency	Percentage	Cumulative frequency
Pearson product moment correlation	21	21	70	70
No hypothesis tested	3	24	10	80
T-test	2	26	7	87
Multiple regressions	1	27	3.3	90.3
Analysis of variance	1	28	3.3	93.6
Kendal tau	1	29	3.3	96.9
Chi-square	1	30	3.3	100

Table 4.9 reveals that Pearson product moment correlation is the major hypothesis testing technique employed by M. Tech researchers in Library and Information Technology. T-test, Chi-square, Multiple regression, Analysis of Variance and Kendal tau contributed 1 entry each and contrastively 3 copies of M.Tech theses had no hypothesis tested.

RQ2: What are the bibliometric characteristics of cited reference in M.Tech Theses in Library and Information Technology?

(a) Number of Citations and Cited References in M.Tech Theses in Library and Information Technology

Table 4.10 presents the number of citations and references in M.Tech theses in Library and Information Technology

Table 4.10: Number of Citations and References in M.Tech Theses in Library and Information Technology

Thesis 1D	Citations	References
MTLIT 001	99	69
MTLIT 004	95	59
MTLIT 005	119	66
MTLIT 007	204	120
MTLIT 008	68	66
MTLIT 009	70	30
MTLIT 010	145	93
MTLIT 012	184	110
MTLIT 013	115	72
MTLIT 014	130	59
MTLIT 015	97	58
MTLIT 016	136	85
MTLIT 017	108	71
MTLIT 018	142	78
MTLIT 019	118	110
MTLIT 020	135	113
MTLIT 021	183	86
MTLIT 022	131	91
MTLIT 023	172	100
MTLIT 024	225	147
MTLIT 025	195	119
MTLIT 026	149	85
MTLIT 027	119	51
MTLIT 028	125	94
MTLIT 029	169	70
MTLIT 030	160	108
MTLIT 033	117	76
MTLIT 038	130	93
MTLIT 039	150	121
MTLIT 040	82	45
TOTAL	**4,072**	**2,542**

Table 4.10. shows that a total of 4,072 citations and 2,542 references are counted in all

the M.Tech theses in Library and Information Technology in the Department of Library

and Information Technology, Federal University of Technology Minna. It further reveals the number of citations and references contained in each of the M.Tech Thesis on Library and Information Technology. The Table indicates the highest number of citations per the Thesis was 225 (MTLIT 024) which also doubled as the highest of in number of references with 147. The least number of citations is in (MTLIT 009) with 70 citations.

(b) Formats of Cited References in M.Tech theses in Library and Information Technology

Table 4.11 shows the formats of cited references in M.Tech theses in Library and Information Technology

Table 4.11: Formats of Cited References in M.Tech theses in Library and Information Technology

Formats	Frequency	Cumulative frequency	Percentage	Cumulative frequency
Journals	1,525	1,525	60	60
Reports/Reviews	342	1,867	13	73
Books/Book chapters	281	2,148	11	84
Links/Blogs	270	2,418	11	95
Conference proceedings	124	2,542	5	100

Table 4.11 shows the formats of cited references in M.Tech Theses in Library and Information Technology from 2016 to 2019. Out of 2,542 references, Journal articles had the highest frequency of 1,525, Conferences proceedings had 124 entries, followed by Books/Book chapters with 281 entries while Reports/Reviews and Links/Blogs had 342 and 270 entries respectively.

(c) Date of Cited References in M.Tech Theses on Library and Information Technology

Table 4.12 presents the date of cited references in M.Tech theses in Library and Information Technology

Table 4.12: Date of Cited References in M.Tech in Library and Information Technology

Age of Cited Reference	Frequency	Cumulative frequency	Percentage	Cumulative frequency
Below 1990	30	30	1	1
1991-1995	15	45	1	2
1996-2000	58	103	2	4
2001-2005	169	272	7	11
2006-2009	662	934	26	37
2010	272	1,206	11	48
2011	280	1,486	11	59
2012	262	1,748	10	69
2013	283	2,031	11	80
2014	198	2,229	8	88
2015	175	2,404	7	95
2016	87	2,491	3	98
2017	34	2,525	1	99
2018	17	2,542	1	100

Table 4.12 indicates that out of 2,542 references cited, 2006-2009 had the high of entries of 662. 2013 and 2011 contributed 283 and 280 entries. The year 2010 had 272 entries of cited references, then, 2012 had 262 entries, the year 2016 had 87 entries. 1996 and 2000 had 58 entries while the years 2017, 2018, 1991-1995, below 1990 had 34, 17, 15 and 30 entries respectively.

(d) Highly Cited Publications in M.Tech Theses in Library and Information Technology

Table 4.13 shows the highly cited publications in M.Tech theses in Library and Information Technology

Table 4.13: Highly Cited Publications in M.Tech Theses in Library and Information Technology

S/N	Journals	Frequency of Occurrence
1.	Library Philosophy and Practice	98
2.	International Journal of Library and information Science	94
3.	Library and Information Science Research	40
4.	Library Management	38
5.	Library Review	28
6.	Journal of Information Science	26
7.	Journal of Research in Education and Society	22
8.	The Electronic Library	18
9.	Owena Journal of Library and Information Science	17
10.	Information and Knowledge Management	16
11.	Library Hi-Tech	15
12.	Chinese Librarianship: An International electronic journal	12
13.	Journal of Library and Information Science	12
14.	The Journal of Academic Librarianship	12
15.	International Journal of Library Science	11
16.	New Library World	11
17.	African Journal of Library, Archival and Information Science	8
18.	DESIDOC Journal of Library and Information Technology	8
19.	Information Development	8
20.	Nigerian Libraries	8
21.	Annals of Library and Information Studies	7
22.	Borno Library, Archival and Information Science	6
23.	Crown Research in Education	6
24.	Heartland Journal of Library and Information Science	6
25.	International Federation of Library Association Journal	6
26.	An International Electronic Journal	5
27.	Delta Library Journal	5
28.	Education Journal	5
29.	IASIC Bulletin	5
30.	Information Research	5
31.	International Journal of Business and Social Sciences	5
32.	International Journal of Digital Library Services	5
33.	International Journal of Education and Development using Information and Communication Technology	5
34.	International Journal of Information Dissemination and Technology	5
35.	Journal of Information Resources Management	5
36.	Journal of Education and Practice	5
37.	Journal of Librarianship and Information Science	5
38.	Middle East Journal of Scientific Research	5
39.	Niger Biblios	5
40.	The Information Technologist	5
41.	Journals Publication Cited 5 times and above	608
42.	Journals Publication Cited 1-4 times	917
	Total	**1,525**

S/N	Conference Proceedings	Frequency of Occurrence
1.	Future of academic libraries in India: challenges and opportunities. A paper presented at the International Conference on Academic libraries (ICAL) held at the university of Delhi, India.	8
2.	Library and information resources for effective research on Nigerian universities. In conference proceeding on the 1st international conference of the school of technology education federal university of technology, Minna held on 6th – 9th October, 2013.	6
3.	Information and Communication Technologies: opportunities and challenges for National and University Libraries on libraries, in a service paper delivered in Eastern, Central and South Africa. Key note paper presented at the standing conference of African National and University Libraries of Eastern, Central and Southern African. (SCANUL-ECS). the courtyard Hotel, Dares Salaam Tanzania.	3
4.	Computer Application to Libraries: A Paper presented at the 39th Annual National Conference and AGM of the Nigeria Library Association at the Imo Concord Hotel Owerri	2
5.	Emerging challenges and opportunities for Nigerian Libraries in a service paper delivered at the Nigeria Library Association, 46th Annual National Conference and AGM held at Arewa House Conference Center, Kaduna.	2
6.	Conference proceedings cited 2 times and above	21
7.	Conference proceedings cited once	103
	Total	124

S/N	Books/Books Chapters	
1.	Techniques for Writing and Presentation of Theses and Dissertations: A Companion Guide to Postgraduate Students in Nigerian University System	18
2.	Educational Research: Basic Issues & Methodology	6
3.	Library and Information Science Text for Africa	5
4.	Fundamentals of Library and Information Science	4
5.	Social Research Methods: Qualitative and Quantitative approaches	3
6.	Academic Libraries States of Arts in Madu E.C (ed.) Technology for Information Management & Services: Modern Library & Information Center in developing countries.	2
7.	Diffusion of Innovations	2
8.	Libraries, Knowledge & National Development	2
9.	Library and Information Management in Nigeria	2
10.	Books/Books chapters cited 2 times and above	44
11.	Others cited once	237
	Total	**281**

S/N	Reports/Reviews	
1.	Agricultural Research Council of Nigeria Strategic Plans.	5
	Others	237
	Total	**342**
	Grand Total of Highly Cited References	**2,542**

Table 4.13 shows that out of 1542 journals articles cited M.Tech researchers, Library Philosophy and Practice had the highest frequency of occurrence of 98, International Journal of Library and Information Science had 94 entries, Library and Information

Science Research had 40 entries. Library Management was cited 38 times, Library review 38, Journal of Information Science 26, Journal of Research in Education and Society had 22 entries. the Electronic Library contributed 18 entries, Owena Journal of Library and Information Science had 17 entries, Information and Knowledge Management contributed 16 entries, Library HiTech had 18 entries. 12 entries went to Chinese librarianship: An electronic Journal, Journal of Academic Librarianship, as well as Journal of Library and Information Science. International Journals Library Science and New Library World had 11 entries each while African Journal of Library, Archival and Information Science, Information Development and Nigerian Libraries had 8 entries each.

Annals of Library and Information Studies provided 7 entries. Borno Library, Archival and Information Studies, Crown research in Education, Heartland Journal of Library and Information Science and International Federation of Library Association Journal had 6 entries each.

Five entries went to An International Electronic Journal, Delta Library Journal, Education Journal, IASIC Bulletin, Information Research, International Journal of Business and Social Science as well as International Journal of Digital Library Services. Among the list of the 5 entries are: International Journal of Education and Development using Information and Communication Technology, International Journal of Information Dissemination and Technology, Journal of Information Resources Management, Journal of Education and Practice, Journal of Librarianship and Information Science also on the list are: Middle East Journal of Scientific Research, Niger Biblios and Information Technologist.

For Conference Proceedings; Future of Academic Libraries in India: Challenges and Opportunities: A paper presented at the International Conference on Academic

Libraries held at the University of Delhi, India had 8 entries, Library and Information resources for effective Research on Nigerian Universities. In conference proceedings of the 1st International Conference of the School of Technology Education, Federal University of Technology had 6 entries. Computer Application to Libraries. A paper presented at the 39th Annual National Conference and AGM of the Nigeria Library Association at the Imo Concord Hotel Owerri and Emerging Challenges and Opportunities for Nigerian Libraries in a service paper delivered at the Nigeria Library Association, 46th Annual National Conference and AGM held at Arewa house Conference center, Kaduna had 2 entries while Information and Communication Technologies: Opportunities and Challenges for National and University Libraries in Eastern, Central and South Africa key note paper presented at the standing conference of African National and University Libraries of Eastern, Central and Southern Africa (SCANUL - ECS). The Courtyard Hotel, Dares Salaam contributed 3 entries.

Out of the 281 entries for Book/Book Chapters, Techniques for writing and presentation of Theses/Dissertations: A companion guide for postgraduate students in Nigerian Universities Systems had 18 entries, Educational Research: Basic issues and methodology had 6 entries, Library and Information Science Text had 5 entries, Fundamentals of Library and Information Science had 4 entries, Social Research method: Qualitative and Quantitative Approaches 3, Academic Libraries States of Arts in Madu E.C (ed.) Technology for Information Management & Services: Modern Library & Information Center in Developing Countries 2, Diffusion of Innovations 2, Libraries Knowledge & National Development as well as Library and Information Management in Nigeria 2 entries each.

For Reports/Reviews, Agricultural Research Council of Nigeria Strategic Plans only contributed 5 entries while Links/Blogs had no entry mentioned up to 2 times.

e. **Types of Authorship in Cited References in M.Tech Theses in Library and Information Technology**

Table 4.14 presents the types of authorship in cited references in M.Tech theses in Library and Information Technology

Table 4.14: Types of Authorship in Cited References in M.Tech Theses in Library and Information Technology

Type of authorship	Frequency	Cumulative frequency	Percentage	Cumulative frequency
One author	1,315	1,315	50	50
Two authors	683	1,998	27	77
Three authors	251	2,249	10	87
Four authors	110	2,359	4	91
Five or more authors	183	2,542	9	100

Table 4.14 reveals that out of 2,542 references cited by M.Tech researchers in Library and Information Technology, 1,315 entries were for One author, 683 entries represented Two authors, Three authors had 251 entries, while Four authors and Five more authors had 110 and 183 entries of authors respectively.

RQ3: What are the roles of in-text citations in the research contents of M.Tech Theses in Library and Information Technology?

(a) Location of Mentioning in M.Tech Theses in Library and Information Technology

Table 4.15 presents the location of mentioning in M.Tech theses in Library and Information Technology

Table 4.15: Location of Mentioning in M.Tech Theses in Library and Information Technology

Location of mentioning	Number of Citations
Abstracts	Nil
Introductions	587
Literature Reviews	3,045
Research Methodologies	125
Results and Discussions	314
Conclusions and recommendations	1
Total	**4,072**

A total of 4,072 citations were found in 30 copies of M. Tech theses in library and information technology produced between 2016 and 2019.

Table 4.15 reveals that none of the Abstracts section had any of citation. Out of 4,072 Citations, introduction had 587 Citations, Literature Review produced 3045 Citations, Research Methodologies contained 125 Citations then Results and Discussions, Conclusions and Recommendations produce 314 and 1 Citations respectively.

(b) Styles of mentioning in M.Tech Theses in Library and Information Technology

Table 4.16 shows styles of mentioning in M.Tech theses in Library and Information Technology

Table 4.16: Styles of mentioning in M.Tech Theses in Library and Information Technology

Styles of mentioning	Number of Citations
Specifically mentioning but interpreting	1,796
Direct quotation	1,549
Not specifically mentioning	435
Summarizing	268
Paraphrasing	69
Block quotation	15
Plagiarizing	Nil
Total	**4,072**

Table 4.16 indicates that not specifically mentioning produce 435 Citations, specifically

mentioning but interpreting produce the highest frequency of 1,796, Direct Quotation

produced the second to the highest with 1,549 Citations, Block Quotation had the lowest

tally of Citations with 15 entries, Plagiarizing produced no citation in the Style of

Mentioning, while Summarising and Paraphrasing produced 208 and 69 Citations

respectively.

(c) Frequency of Mentioning in M.Tech Theses in Library and Information Technology

Table 4.17 presents the frequency of mentioning in M.Tech theses in Library and
Information Technology.

Table 4.17: Frequency of Mentioning in M.Tech Theses in Library and Information Technology

Frequency of Mentioning	Number of Citations
Once	1661
Two times	508
Three times	235
Four times	141
Five or more times	78
Total	**2,623**

Table 4.17 reveals that Authors mentioned just 'Once' produced 1,661 entries, Authors

mentioned Two times had 508 entries, mentioning of Three times produced 235 entries,

while Four times had 141 entries and Five times or more produced only 78 entries.

(d) Functions of Citation in M.Tech theses in Library and Information Technology

Table 4.18 Shows the functions of citation in M.Tech theses in Library and Information Technology

Table 4.18: Functions of Citation in M.Tech in Library and Information Technology

Functions of Citations	Number of Citations
Provide Background information	586
Construct Theoretical framework	270
Construct Conceptual framework	2,333
Provide Methodology	124
Provide Previous experiment /empirical evidence	546
Provide Resources to support results and discussion	213
Describe Challenges	Nil
Total	**4,072**

Table 4.18 shows that of the total of 4,072 citations in M. Tech Theses in Library and Information Technology, 586 Citations provided Background Information, 270 Citations were used to construct Theoretical Frameworks, 2,333 Citations contained Conceptual Frameworks, 124 citations provided Methodologies. Furthermore, citations entries on Previous Experiment/Empirical evidence were 546, 213 citations supported Results and Discussions while none was used to Described Challenges.

(e) Citation Motivation in M.Tech Theses in Library and Information Technology

Table 4.19 shows the citation motivation in M.Tech theses in Library and Information Technology

Table 4.19: Citation Motivation in M.Tech Theses in Library and Information Technology

Citation Motivation	Number of Citations
Interpretative	1,966
Affirmative	1,846
Negational	115
Contrastive	88
Comparative	57
Total	**4,072**

Table 4.19 indicates that most citations motivation of M. Tech researchers centers on

Interpretative and Affirmative which had 1,966 and 1,846 citations out of 4,072

Citations in M.Tech Theses in Library and Information Technology. The Contrastive,

Comparative and Negative Motives for citing had 88, 57, and 115 entries.

(f) Disposition of Citation in M.Tech Theses in Library and Information Technology

Table 4.20 presents the disposition of citation in M.Tech theses in Library and Information Technology.

Table 4.20: Disposition of Citation in M.Tech Theses in Library and Information Technology

Disposition of Citation	Number of Citations
Positive	3,708
Negative	250
Mixed	76
Neutral	38
Total	**4,072**

Table 4.20 shows that out of 4,072 citations in M. Tech theses, 3,708 were positive,

250 citations were negative, 76 Citations were Mixed while 38 citations were Neutral.

RQ4: What is the state of availability of Highly Cited References in M.Tech Theses in

Library and Information Technology at Federal University of Technology, Library

Minna?

(a) Availability of Highly Cited Journal Publications in M.Tech Theses in Library and Information Technology.

Table 4.21 presents the availability of highly cited journal publications in M.Tech theses in Library and Information Technology

Table 4.21: Availability of Highly Cited Journal Publications in M.Tech Theses in Library and Information Technology

S/N	Journals	Frequency	Available	Not Available
1.	Library Philosophy and Practice	98		√
2.	International Journal of Library and information Science	94		√
3.	Library and Information Science Research	40		√
4.	Library Management	38		√
5.	Library Review	28		√
6.	Journal of Information Science	26		√
7.	Journal of Research in Education and Society	22	√	
8.	The Electronic Library	18		√
9.	Owena Journal of Library and Information Science	17		√
10.	Information and Knowledge Management	16		√
11.	Library Hi-Tech	15		√
12.	Chinese Librarianship: An International electronic journal	12		√
13.	Journal of Library and Information Science	12		√
14.	The Journal of Academic Librarianship	12		√
15.	International Journal of Library Science	11		√
16.	New Library World	11		√
17.	African Journal of Library, Archival and Information Science	8	√	
18.	DESIDOC Journal of Library and Information Technology	8		√
19.	Information Development	8		√
20.	Nigerian Libraries	8		√
21.	Annals of Library and Information Studies	7		√
22.	Borno Library, Archival and Information Science	6	√	
23.	Crown Research in Education	6		√
24.	Heartland Journal of Library and Information Science	6		√
25.	International Federation of Library Association Journal	6	√	
26.	An International Electronic Journal	5		√
27.	Delta Library Journal	5		√
28.	Education Journal	5		√
29.	IASIC Bulletin	5		√
30.	Information Research	5		√
31.	International Journal of Business and Social Sciences	5		√
32.	International Journal of Digital Library Services	5		√
33.	International Journal of Education and Development using Information and Communication Technology	5	√	
34.	International Journal of Information Dissemination and Technology	5		√
35.	Journal of Information Resources Management	5	√	
36.	Journal of Education and Practice	5		√
37.	Journal of Librarianship and Information Science	5		√
38.	Middle East Journal of Scientific Research	5		√
39.	Niger Biblios	5		√
40.	The Information Technologist	5		√

(b) Availability of highly cited Conference proceedings in M.Tech Theses in Library and Information Technology.

Table 4.22 shows the availability of highly cited conference proceedings in M.Tech theses in Library and Information Technology.

Table 4.22: Availability of highly cited Conference proceedings in M.Tech Theses in Library and Information Technology.

S/N	Conference proceedings	Frequency	Available	Not Available
1.	Future of academic libraries in India: challenges and opportunities. A paper presented at the International Conference on Academic libraries (ICAL) held at the university of Delhi, India.	8		√
2.	Library and information resources for effective research on Nigerian universities. In conference proceeding on the 1st International Conference of the School of Technology Education Federal University of Technology, Minna held on 6th – 9th October, 2013.	6		√
3.	Information and Communication Technologies: opportunities and challenges for National and University Libraries on libraries, in a service paper delivered in Eastern, Central and South Africa. Key note paper presented at the Standing Conference of African National and University Libraries of Eastern, Central and Southern African. (SCANUL-ECS). The Courtyard Hotel, Dares Salaam Tanzania.	3		√
4.	Computer Application to Libraries: A Paper presented at the 39th Annual National Conference and AGM of the Nigeria Library Association at the Imo Concord Hotel Owerri	2		√
5.	Emerging challenges and opportunities for Nigerian Libraries in a service paper delivered at the Nigeria Library Association, 46th Annual National Conference and AGM held at Arewa House Conference Center, Kaduna.	2		√

(c) Availability of Highly Cited Books/book chapters in M.Tech Theses in Library and Information Technology.

Table 4.23 presents the availability of highly cited books/book chapters in M.Tech theses in Library and Information Technology.

Table 4.23: Availability of Highly Cited Books/book chapters in M.Tech Theses in Library and Information Technology.

S/N	Books/Book Chapters	Frequency	Available	Not Available
1.	Techniques for Writing and Presentation of Theses and Dissertations: A Companion Guide to Postgraduate Students in Nigerian University System	18	√	
2.	Educational Research: Basic Issues & Methodology	6	√	
3.	Library and Information Science Text for Africa	5	√	
4.	Fundamentals of Library and Information Science	4	√	
5.	Social Research Methods: Qualitative and Quantitative approaches	3		√
6.	Academic Libraries States of Arts in Madu E.C (ed.) Technology for Information Management & Services: Modern Library & Information Center in developing countries.	2	√	
7.	Diffusion of Innovations	2		√
8.	Libraries, Knowledge & National Development	2		√
9.	Library and Information Management in Nigeria	2	√	

On the Availability of Highly Cited Journals Publications in M.Tech Theses in Library and Information Technology. Table 4.21 revealed that the following Journals were available at the Federal University of Technology Library: *Journal of Research in Education and Society, Journal of Library, Archival and information Science, International Federation of Library Association Journal International Journal Education and Development using information and Communication Technology* as well as *Journal of Information Resources Management*.

On the Availability of Highly Cited Conference Proceedings, none of the highly cited Conference Proceedings was available in the Federal University of Technology, Minna Library.

On the Availability of Highly Cited Books/Books Chapters, *Techniques for Writing and Presentation of Theses and Dissertations: A Companion Guide to Postgraduate Students in Nigerian University Systems, Educational Research: Basic Issues & Methodology, Library and Information Science Text for Africa*, *Fundamentals of Library and Information Science, Academic Libraries States of Arts in Madu E.C (ed.) Technology for Information Management & Services: Modern Library & Information Center in Developing Countries*, *Library and Information Management in Nigeria* were all available while *Social Research Methods: Qualitative and Quantitative approaches, Diffusion of Innovations, Libraries, Knowledge & National Development* were not available in the Federal University of Technology, Minna Library.

4.2   Hypothesis Testing

Table 4.24: Hypothesis Testing between Citation Location and Citation Function in MTech Theses

Locations of citation		Functions of citation	
Abstracts	0	Provide background information	586
Introduction	586	Construct Theoretical Framework	270
Literature Review	3,045	Construct Conceptual Framework	2,333
Research Methodology	125	Provide methodology	124
Results and Discussion	314	provide previous experiments	546
Conclusion and Recommendation	1	provide resources to support result	213
0	0	Describe challenges	0

Ho: There is no associative relationship between citation location and citation function in M.Tech Theses in Library and Information Technology at Federal University of Technology, Minna. Using Spearman's Rank correlation equation, $P = 1 - \frac{6\Sigma di^2}{n\,(n^2-1)}$

Spearman's *P* is a non-parametric measure of rank correlation between two or more data items.

P = Spearman's rank correlation coefficient.

di = difference between two ranks of each observation.

n = Number of Observations

Table 4.25: Result of Hypothesis Tested

Location of Mentioning X	Functions of Citation Y	R_x	R_y	d_i (R_x - R_y)	Σd_i^2
0	586	6.5	2	4.5	20.25
587	270	2	4	-2	4
3,045	2,333	1	1	0	0
125	124	4	6	-2	4
314	546	3	3	0	0
1	213	5	5	0	0
0	0	6.5	7	-0.5	0.25
					28.5

Key: R_x = Rank of x R_y: Rank of y d_i: Difference in R_x and R_y

$$P = 1 - \frac{6(28.5)}{7\,(7^2 - 1)} \quad = 1 - \frac{171}{336} = 0.4911$$

From Table 4.25, it can be deduced that the result is significant and produced weak hypothesis value. This means that there is an associative relationship between location of mentioning and citation function in M.Tech theses in Library and Information Technology. Therefore, the null hypothesis is rejected. From the result of the hypothesis testing which shows that there is an associative relationship between location of mentioning and citation functions in M.Tech theses in Library and Information Technology. In describing citation content analysis, location of mentioning is where citation is located and it is very related to citation functions, as citations location are categorized into sections such as Introduction, Literature Reviews etc, while citation functions means the roles citation plays on the body of the document. It clearly shows

just like location of mentioning that citation functions also to provide background of the study, provide research methods as well as support previous research findings. According to the positive value of the hypothesis testing, it is deduced that there is an associative relationship between location of mentioning and citation functions in M.Tech theses in Library and Information Technology.

4.3   Discussion of Findings

RQ1: The findings from the study indicated that M.Tech theses in Library and Information Technology were organised according to the methodological formats in which research are carried out or based. These involved the contextual manifestation in form of Introduction or the Background of the Subject focus, Related Literature, Methodologies, Data presentation and Analysis methods, Research results, Discussions, Conclusion and Recommendations. These findings are similar to the article of Cresswell (2008) that found out that research must be characterized by the above stated processes, steps and arrangement. Any document (Research) that fails to produce these steps is not considered authentic. The study also showed that the subject focus of library and information technology research were library administration and reference services. The least subject focus happens to be library automation, public library special librarianship. In addition, research must show the subject focus or discipline to be undertaken or covered. These findings are related to the study of Ma and Lund (2020) who investigated the LIS research topics between 2006 – 2018 Emporia State University USA, and identified that the most researched subjects are Informatics and Information seeking behavior topics along with Information System and Information Services.

The findings further outlined the theoretical framework used on the course of writing theses in Library and Information Technology. Researchers adopted different theoretical framework that were used to support and buttress their facts. As research aims to discover and build on existing fact, it must also review acceptable theories or laws that are related to the new study in the light of practical application of such revised theories or laws. Therefore, researches must contain a theoretical framework in which the study to be undertaken must be based upon as stated by Eclevia and Janio (2016). This reveals the insufficient understanding on the application of theoretical framework among M.Tech theses researchers who did not apply any theoretical framework while writing their theses (see Table 4.3).

The research designs predominantly used by M.Tech researchers are descriptive and survey research designs, then experimental and non-experimental research design were the least use in research by M.Tech researchers. The classification of research according to methodology as descriptive, survey, inferential experimental and non-experimental must be clearly stated and adopted where needed. The study of Chu (2015) on research methods selection in LIS articles rightly pointed out that experiments and survey research design were the top choices among researchers in LIS field. Also, Abifarin *et al.* (2017) equally pointed out that survey research designs were the top choices of research design among Library and Information Technology undergraduate researchers. The current study also identified descriptive research design as the predominant research design among M.Tech researchers in Library and Information Technology. These findings also collaborate the findings of Sichalwe and Elia (2020) who investigated the research designs and methods among postgraduate's student of Art and Information Studies in Tanzania and reported that survey research design was the predominant among the students.

The study revealed among M.Tech researchers in Library and Information Technology, that the questionnaire was the most adopted data collection instruments. This finding collaborates the results of Abifarin *et al.* (2017) who reported that the questionnaires are the most data collection instrument among Library and Information Technology in undergraduate studies. Ma and Lund (2020) on the content analysis and systematic revolution and the distribution of LIS research topics and methods from 2006 to 2018 at Emporia State University observed growth in the use of questionnaires. However, Chu (2015) reported that content analysis approaches, experiment have displaced the use of questionnaires in the field of Library and Information Science.

The findings revealed that total enumeration and stratified random sampling techniques were the top choices sampling techniques of M.Tech researchers in Library and Information Technology. Multistage sampling, cluster sampling techniques were the least used sampling techniques. This means that M.Tech research had insufficient understanding and application of other sampling techniques in research. This statement is very similar to the research finding of Sichalwe and Elia (2020) who investigated and reported the research methodology practices among postgraduate students of arts in information studies in Tanzania. The authors reported that survey research was predominant, purposive and convenience non-probability sampling methods being extensively used. Furthermore, it was reported that sample random sampling and stratified sampling techniques were highly preferred. These findings are closely related to the current study.

The result on the data presentation techniques used in M.Tech theses predominantly tables, some researchers adopted tables and graphs, tables, pie chart, histogram and bar charts combined. These collaborates with the research findings of Abifarin *et al.* (2017) who reported that tables were the most dominant data presentation techniques. Data

involved in research writing has not been presented in a tabular form to give clarity and logical projection of data. Aliyu (2015) also result the use of tables on the analysis of Doctoral theses in Education, University of Maiduguri between 1987 and 2007.

The result showed that frequency counts, percentages, means score and standard deviation produced the highest frequency of data analysis techniques used on M.Tech theses on Library and Information Technology quantitative data analysis are required to be enumerated and counted and analyzed through with other data analysis and statistical techniques deem fit. This finding revealed that most researchers adopted frequency counts and could also adopt mean score, standard deviation and other statistical indexes for data analysis to carry out researches. The report of Abifarin *et al.* (2017) has it that most undergraduate research projects adopted frequency counts and percentages as their top choice in data analysis techniques. Aliyu (2015) also reported high use of frequent counts and percentages on Doctoral theses in Education University of Maiduguri Nigeria.

For hypothesis testing techniques in M.Tech theses in Library and Information Technology, the findings indicated that Pearson Product Moment Correlation had 21 entries as the most preferred hypothesis testing techniques having taken 70% of the total entries. t-test produced 2 entries (7%). Chi-square, Multiple Regression, Analysis of Variance, Kendal Tau produced 1 entry 3% each of the total entries. Unfortunately, 3 documents has no hypothesis tested in them, making up the remaining 10% of the hypothesis testing techniques in M.Tech theses in Library and Information Technology.

The findings on the number of citation and references in M.Tech theses in Library and Information Technology, reveals that 30 copies of M.Tech theses in Library and Information Technology between 2016 and 2019 produced 4,072 citations and 2,542

references. Research work cannot stand alone; it is based on the existing literature of the subject. Citations and references are integral part of research activities which portray the sources of information consulted prior to the study. It is on this note that Anganmana and Jayatissa (2015) reported a total of 4,909 citations extracted from the theses on Library and Information Science, University of Kelaniya Sri-Lanka between 2014 and 2015.

RQ2: M.Tech theses were analysed to extract the formats of bibliographies (cited references) appended at the back of each thesis. It was discovered that journal articles were the majority of the cited references while conference proceedings were the least cited through conference proceedings contain recent research findings but journals article are the most preferred channel of publishing recent scientific breakthroughs and emerging innovations. Scholars find it appropriate to publish in journal articles. No wonder, Geetha *et al.* (2016) in their analysis of computer science theses submitted to top 5 Universities in Shodhaganga between 2014 and 2015, reported that journals were the most preferred and frequently cited information sources by researchers in the computer science disciplines. Contrastively, Angammana and Jayatissa (2015) analysed the bibliometric characteristics of 50 Masters of Library Science (MLS) theses and 20 Masters of Social Science (MSS) theses at the University of Colombo and University of Kelaniya and reported books constitute majority of the information materials cited (39%) while journals articles had (34%) as the second top choice of literature used by researchers. Aliyu (2015) who analysed Doctoral theses on education, University of Maiduguri, reported that books and monographs were the most cited information sources. Furthermore, Sam and Tackie (2007) studied the dissertation submitted to the Department of Information Studies, University of Ghana, Legon, and

reported that 969 articles were books and monographs which were cited more than journals and other materials which had 550 counts.

Dates of the cited references were analysed and the study reported that M.Tech researchers cited more Information sources published between the year 2006-2009. This period produced the highest member of the cited references. There appears a wide gap on the date of publication of these information sources cited by M.Tech researchers and the time of the production of the M.Tech theses were carried out. Kushkowski *et al.* (2003) reported the mean age of the cited references was 12years old when the current study was carried out on masters and doctoral theses at Mid-Western University USA. Aliyu (2015) and Abifarin *et al.* (2017) in their different studies on dates of cited publication reported a wide gap in years between the date of cited references and the date in which the documents understudy was carried out. The recency of information sources is considered to be very important when embanking on researches. With the growing trends in human development, researchers are churned out in daily basis, it is expected that researches source for recent publications before embarking on researches.

The findings revealed the highly cited publications in M.Tech theses in Library and Information Technology were Library Philosophy and Practice, International Journal of Library and Information Science, Library and Information Science Research. The findings of the current study reported that books are one of the most cited publication. Many studies reported that journal articles were most cited publications used on research writing. it is assumed that journal publications are the best medium through which latest discoveries are communicated. Clarke and Oppenheim (2010) studied citation behavior of undergraduate and master's student research work produced between 1997 and 2000 and reported that journal articles were cited more than books. A repeated study by Clarke and Oppenheim (2010) on research work produced between

1998 and 2003 reported less books and sharp increase in journal articles. Kumar and Sharma (2010) on the analysis of 61 Library and Information Science dissertations and reported that journal articles were cited more than books, proceedings and other sources of information. The study reported further that College and Research Libraries and Journal of the American Society for Information Science were the most cited journals.

On the types of authorship in cited reference in M.Tech theses in Library and Information Technology, it was discovered that "one author" produce the highest frequency. It is an emerging trend that two or more authors critically examined a given problem, study and come up with a conclusion. Afterward, it could be seen as an issue treated elaborately (Eclevia and Janio, 2016). The study discovered that four or more authors were the least authorship type in cited references in M.Tech theses in Library and Information Technology.

Scholars and research communities have created a consistent path for communicating and reporting research feats. The organisation of research into standard segment has created room for citations to be studied based on these segments. The study discovered that literature review produced the highest citation while Abstracts had no citation. This discovery is related to the study of Eclevia and Janio (2016) who reported that Filipino faculty members cited more in the literature review segment while communicating their research activities. The study also reported citations within the Abstracts in contrast to the finding of the current study. Ding *et al.* (2013) also reported that introduction section which covers the background of the study, literature review and methodology produced more citations more than other sections of the research documents.

RQ3: On the styles of mentoring in M.Tech theses in Library and Information Technology, it was discovered that more citations were based on Specifically

mentioning and interpreting the submission of other related articles and directly quoting other articles towards building up literature. M.Tech theses had few block quotation styles while there was no citation attributed to plagiarism, Zhang *et al.* (2013) accorded that a reference that is cited by a paper but it is not constantly cited text can be seen as less relevant than one that is discussed or cited in depth. Based on this, citation styles of mentioning such as not specifically mentioning, direct quotation, block quotation were applied to study the styles of mentioning in M-tech theses in Library and Information Technology. Eclevia and Janio (2016) studied the Citation styles of mentioning among Filipino faculty researchers and reported that 'Not specifically mentioning' produced the highest styles of mentioning among Filipino faculty members and researchers.

The study revealed that on the frequency of mentioning authors mentioned 'Once' has the highest frequency of reference in M.Tech theses in Library and Information Technology. Having mentioning of 'Two times', 'Three times' and more showed that those references are considered to be more relevant than those mentioned 'Once'. Eclevia and Janio (2016) also reported higher number of citations being mentioned 'once'. Researchers are expected to review literature that have in depth knowledge related to issue to be solved at hand and whose article provided for other segment of research.

The function of citation in M.Tech theses in Library and Information Technology were extracted and the study discovered that more of the citations were used to define and support facts on the concept of the subject matter or the problem identified. Each segment of the research contain citation used to build up or support facts. It was discovered that citations were not made to describe challenges on M.Tech theses in Library and Information Technology. This is very different from the investigation done

by Eclevia and Janio (2016) on Filipino faculty members and researchers which reported that citations were made to describe challenges. Fewer citations provided background information, theoretical frameworks, research methodologies.

Citation motivation of M.Tech researchers in Library and Information Technology were extracted and analyses to determine their citation behavior. The study indicated that researchers cite to interpret and affirm previous researches related to the subject matter. In issues in motivation to cite, it is the norm that researcher cite to always acknowledge related work, support their own argument and also make criticism where due. Citation motivations should not be based on non-scientific practices in which researchers cite authors because they have met them before or for the reason that they may have been taught by the authors they cite. Citation motivation could he spurred through comparing two articles and also totally rejecting the submission of others.

The findings further indicated that disposition of citations of M.Tech researches were mostly positives which means interpreting support and upholding submissions of articles of interest to them. According to the findings, citations were made to negate the statements of others while a handful of citation were mixed and neutral towards citing. Eclevia and Janio (2016) reported that Filipino faculty members and researchers were mostly positive in their disposition of citation. Ding *et al.* (2013) used citation indexes such as disposition of citation to determine the value of publication and as well as guide novices on how to carryout researches.

RQ4: On the availability of highly cited formal publication in M.Tech theses in Library and Information Technology the result of this study discovered that most cited journals in M.Tech researchers are not available in the Federal University of Technology, Minna Library. The library is expected to stock the holdings with relevant information

resources that would cater for researcher's information needs especially journal articles, which contains scientific feats and breakthrough in research. Table 22 which is on the availability of Conference proceedings. The finding reported unavailability of the Conference proceedings cited by M.Tech researchers. The situation has not really improved on the provision of information resources for researchers in Library and Information Technology. Considering the findings of Abifarin *et al.* (2017) which revealed that highly cited information resources such as journal articles were not available in the library. On the availability of cited books/book chapters, the study revealed that most of the highly cited books were available in the Federal University of Technology, Minna Library. The finding is similar to that of Abifarin *et al.* (2017) who reported the availability of highly cited books for researchers in Library and Information Technology, in Federal University of Technology, Minna Library. It is expected that the library management constantly review the collection development guide in order to make available necessary and relevant information resources on researchers.

4.4   Summary of the Findings

The following are the summary of the findings

1. The organisation of M.Tech research contents were according to the standard formats of academic research writings and presentation.

2. Library Administration and Reference Services were the Subject focus of M.Tech researchers in Library and Information Technology within the years studied, while Library Automation was among the least Subject interest of M.Tech researchers.

3. Theoretical frameworks were applied by M.Tech researchers in theses writing and presentations. Surprisingly, it was discovered that about 10 theses had no Theoretical frameworks.

4. Descriptive research designs were the preferred research design. It was just a copy of Thesis that used experimental research design while others used Survey research designs.

5. Data collection instruments predominantly used by M.Tech researchers in theses writing were Questionnaires while the Participant Observation Template was used in a copy of the Theses.

6. Total Enumeration and Stratified random sampling techniques were the frequently used Sampling Techniques by M.Tech students in their choice among other Sampling techniques.

7. Tables were most frequently used data presentation techniques. It was further made known that other data presentation techniques were rarely used by M.Tech researchers in Library and Information Technology except for a copy that used Tables and Graphs.

8. Data analysis techniques such as frequency count, percentages, mean score and standard deviation were the most frequently used Data analysis techniques.

9. Pearson Product Moment Correlation was the preferred hypothesis testing techniques used by M.Tech researchers in writing and presentation of Theses.

10. Four thousand and seventy two (4072) citations and two thousand five hundred and forty two (2542) references were counted in 30 copies of M.Tech Theses in Library and Information Technology produced between the year 2016 and 2018.

11. Journals were the most cited or format of publications by M.Tech researchers while conference proceeding were the least sources of information for M.Tech students in Library and Information Technology between 2016 and 2018.

12. Year 2006-2009 produced the highest number of information sources consulted by M.Tech researchers in Library and Information Technology.

13. *Library Philosophy and Practice* was the most highly cited publication among M.Tech researchers in Library and Information Technology within the years studied. *"Future of Academic Libraries in India; Challenges and Opportunities; an International Conference on Academic Libraries"* was the most used conference proceedings then *Techniques for Writing and Presentation of Theses/Dissertations: A Companion guide to Postgraduate Students in Nigeria University System* was the most used book by M.Tech researchers.

14. "One author" was the highest type of authorships cited by M.Tech researchers in Library and Information Technology, while 'Four authors" was the least cited authorship types.

15. in-text roles of citations with regards to locations of citations; Literature reviews produced the highest citations counts while abstracts produced none of the citation.

16. Specifically mentioning but interpreting other previous statements was the highest in styles of mentioning by M.Tech researchers in Library and Information Technology.

17. Authors mentioned "Once'' had the highest frequency of mentioning while authors mentioned 'Five or more times' produced the least citation frequency in M.Tech theses in Library and Information Technology.

18. The Functions of citations with regards to construct Conceptual framework produced the highest counts of citations while no citation was used to describe Challenges and Limits in M.Tech theses in Library and Information Technology.

19. Citation motivations of M.Tech researchers was predominantly to interpret previous researches related to their individual areas of interest to buttress their assertions. It was also discovered that M.Tech researchers affirms more of close related submissions.

20. The disposition of citations by M.Tech researchers shows 'Positive' motives, with less counts on Negative, Mixed and Neutral positions in the process of citing.

21. The highly cited journal articles by M.Tech researchers were not available in the Federal University of Technology Library, Minna.

22. On the availability of Conference proceedings, the highly cited conference proceedings were not available in the Federal University of Technology Library, Minna.

23. Highly cited Books/Book Chapters were available in the Federal University of Technology Library, Minna.

CHAPTER FIVE

5.0   CONCLUSION AND RECOMMENDATIONS

5.1   Conclusion

From the finding above the study concluded that M.Tech theses in Library and Information Technology were organised according to the standard and format of theses writing and presentation. Library Administration was the subject focus of M.Tech researchers. M.Tech theses had theoretical framework, descriptive research design and questionnaires were the most used research design and data collection instrument respectively.

Complete enumeration was the adopted sampling techniques while tables were the preferred presentation techniques, then frequency counts, percentage, mean score & standard deviation and Pearson product moment correlation was used as the data analysis and hypothesis testing techniques respectively.

Furthermore, the theses analysed had 4,072 citations and 2,542 references, journals publications were the most cited, while single authorship appear more than any authorship type in M.Tech theses in Library and Information Technology. Literature reviews had the highest location of mentioning, while specifically mentioning but interpreting has the highest counts in styles of mentioning in M.Tech theses in Library and Information Technology. M.Tech researchers used more of the citations to construct conceptual frameworks while their motivation to cite were of positive opinions and affirmation of previous opinions.

Highly cited journals were not available in the Federal University of Technology Library, Minna as well the conference proceedings, unlike the books/book chapters that were available in the Federal University of Technology Library, Minna.

5.2   Recommendations

Based on the conclusion drawn from this study the following recommendations are provided:

1. That theses writing/presentation should be constantly checked for standards and bench mark formats by supervisor(s).

2. Technology related subject focus should be encouraged among intending researchers in order to meet the goals and objectives vision and mission of both the department, faculty members and the university community at large.

3. Experimental researches should be encouraged among the practice in order to meet up with the changing nature of the practice of librarianship from the traditional methods to real time library services.

4. Researchers understand the rationale behind citing in order to properly gain the knowledge of and reasons why people cites in researches and in academic writing in order to do away with biasness when citing documents or articles

5. The management of Federal University of Technology Minna Library and other libraries to adopt Content and Citation analysis methods in Collection development policies and processes.

6. The research recommends that the library management should put in all necessary information resources to ensure that information needs of M.Tech researchers are met and ensure resources needed for the curriculum are provided.

5.3 Contributions to knowledge

The findings of this study revealed the research content analysis, citation analysis, citation content analysis and citation behaviour of M.Tech researchers in Library and Information Technology. Therefore, contributed to knowledge in the following ways:

1. The application of bibliometric approach to study M.Tech theses on Library and Information Technology as a new field from other previous studies and got similar results reported by other researches in other field of studies.

2. The study contributed to knowledge by compiling bibliography of M.Tech theses in Library and Information Technology.

5.4 Suggestions for further research

1. The study suggested for further studies on the analysis of Citation behavior of M.Tech researchers in other disciplines.

2. A study could be conducted on the Content and Citation analysis of PhD theses in Library and Information Technology or any given field of study.

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APPENDIX A

FEDERAL UNIVERSITY OF TECHNOLOGY MINNA
SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY (SICT)
DEPARTMENT OF LIBRARY AND INFORMATION TECHNOLOGY

VICE – CHANCELLOR:
Prof. Abdullahi Bala PhD,fssn

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22ndth June, 2021

TO WHOM IT MAY CONCERN
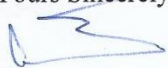
LETTER OF INTRODUCTION:
ILOKA, EMEKA CLETUS /M.TECH/SICT/2018/9212

The above named is a M.Tech student of the Department of Library and Information Technology, Federal University of Technology, Minna, Niger State.

He is writing a thesis titled: "CONTENT AND CITATION ANALYSES OF MASTER OF TECHNOLOGY THESIS IN LIBRARY INFORMATION TECHNOLOGY IN FEDERAL UNIVERSITY OF TECHNOLOGY, LIBRARY MINNA. NIGERIA"

I therefore request you to kindly give him all the necessary assistance he may require for the success of his assignment.

Thank you for your anticipated cooperation.

Yours Sincerely,

Dr. A.O, Ahmed,
HOD/LIT.

HOD (LIT)
Sir, the Univ. Library doesn't allow Theses to be loaned out. However, I further request you to allow the Student-on-research to use the available ones in the Department.
UL 02/07/21

APPENDIX B

DATA COLLECTION INSTRUMENTS

i) **MTech Theses Research Content Worksheet (M.TechTRCW)**

a) Organization of M.Tech Theses in Library and Information Technology

Structure	Existent	Inexistent
Abstract		
Introduction		
Literature Review		
Research Methodology		
Results and Discussion		
Conclusion and Recommendations		
References		

b) Subject Focus of MTech Theses in Library and Information Technology

Subject Focus	Existent	Inexistent
Library Automation		
Library Administration		
Collection Development		
Reference Services		
Information and Communication Technology and Libraries.		

c)Theoretical Frameworks used MTech Theses in Library and Information technology

Theoretical Framework	Existent	Inexistent
Theory of Citation Behaviour		
Technology Acceptance and Use Theory		
Task-Technology Fit Theory		
Recall and Precision Theory		

d) Research Design used in MTech Theses in Library and Information Technology

Research Design	Existent	Inexistent
Descriptive Research Design		
Comparative Research Design		
Correlation Research Design		

e) Data Collection Instruments used in MTech Theses in Library and Information Technology

Data collection Instrument	Existent	Inexistent
Questionnaire		
Observation Template		
Interview Checklist		

f) Sampling Techniques used in MTech Theses in Library and Information Technology

Sampling Technique	Existent	Inexistent
Simple Random Sampling		
Stratified Random Sampling		
Systematic Sampling		
Quota Sampling		
Multistage Sampling		
Convenience/Availability Sampling		
Cluster Sampling		
Snowballing		

g) Data Presentation Techniques used in Mtech Theses in Library and Information Technology

Data Presentation Technique	Existent	Inexistent
Table		
Graph		
Pie-chart		
Polygon		
Histogram		

h) Data Analysis Techniques used in Mtech Theses in Library and Information Technology

Data Analysis Technique	Existent	Inexistent
Percentage		
Mean		
Median		
Mode		
Range		

c) Hypothesis Testing Techniques used in Mtech Theses in Library and Information Technology

Hypothesis Testing Technique	Existent	Inexistent
Chi-Squared (X^2) test		
Median test		
t-test		
Analysis of Variance(ANOVA)		
Analysis of Variance(ANOVA) by Ranks		
Pearson Product Moment Correlation(PPMC)		
Spearman Rank Correlation		
Kendal-tau		
Goodness- of- fit test		

ii)Mtech Theses Citation Productivity Worksheet (MTechTCPW)

a)Number of Cited References in Mtech Theses in Library and Information Technology

Thesis ID	Number of Citations	Number of References

d) Formats of Cited References in Mtech Theses in Library and Information Technology

Formats	Number of References
Journal	
Conference Proceeding	
Book/Book Chapter	
Report/Review	
Link/Blog	

e) **Date of Cited References in MTech Theses in Library and Information**
    Technology

Year of Publication	Number of cited references
1991-1995	
1996-2000	
2001-2005	
2006-2009	
2010	
2011	
2012	
2013	
2014	
2015	
2016	
2017	

d) **Highly cited Publications in MTech Theses in Library and Information**
Technology

Title of Publication	Number of citations

e) Type of Authorship in Cited References in MTech Theses in Library and Information Technology

Type of Authorship	Frequency of occurrence
One author	
Two authors	
Three authors	
Four authors	
Five or more authors	

(iii) MTech Theses Syntactic Analysis of Citation Content Worksheet (MTechTSACCW)

a) Location of Mentioning in MTech Theses in Library and Information Technology

Location of mentioning	Frequency of occurrence
Abstract	
Introduction	
Literature Review	
Research Methodology	
Results and Discussion	
Conclusion and Recommendations	

b) Styles of Mentioning in MTech Theses in Library and Information Technology

Style of mentioning	Frequency of occurrence
Not specifically mentioning	
Specifically mentioning but interpreting	
Direct quotation	
Block quotation	
Paraphrasing	
Summarising	
Plagiarising	

c) Frequency of Mentioning in MTech Theses in Library and Information Technology

Frequency of mentioning	Frequency of occurrence
Once	
Two times	
Three times	
Four times	
Five and above times	

iv) MTech Theses Semantic Analysis of Citation Content Worksheet (MTech TSACCW)

f) Function of citation in MTech Theses in Library and Information Technology

Function of citation	Frequency of occurrence
Provide background information	
Construct theoretical Framework	
Construct conceptual framework	
Provide methodology	
Provide previous experimental/empirical evidence	
Provide resources to support results and discussion	
Describe challenges	

e) Citation Motivation in MTech Theses in Library and Information Technology

Citation motivation	Frequency of occurrence
Negational	
Contrastive	
Comparative	
Affirmative	
Interpretative	

f) Disposition of Citation in MTech Theses in Library and Information Technology

Disposition of citation	Frequency of occurrence
Positive	
Negative	
Mixed	
Neutral	

v) MTech Theses Availability of Cited References Worksheet (MTechTACRW)

a) Availability of Journals Cited in MTech Theses in Library and Information Technology

Cited Journal	Available	Not available

b) Availability of highly cited conference proceedings in M.Tech Theses in Library and Information Technology

Conference Proceedings	Available	Not Available

c) Availability of Books/Book chapters cited in MTech Theses in Library and Information Technology

Cited Book/book chapter	Available	Not available

APPENDIX C

List of M.Tech theses used in the study

S/N	TITLE	AUTHOR	MATRIC NO	SUPERVISOR'S
1.	Effects of Access and utilization of Electronic resources on Academic performance of postgraduate students in selected Universities in North Central Nigeria.	Isah, Abdullahi Yahaya	M.Tech/STE/2013/4431	Dr. P.U. Akor and Prof. J.N. Udensi
2.	Relationship between Staff Development and job performance among Academic Librarians in Niger State.	Abu, Isa Omali	M.Tech/SSTE/2013/4652	Dr. G.A Babalola and Prof. E.M.K Dawha
3.	Library Polices, students residence and recently as factors affecting use of resources by undergraduate students of two Universities in North Central Nigeria	Abu, Ahmed Adamu	M.Tech/STE/2013/4432	Dr. G.U Oyedum and Dr. K.O Shittu
4.	Impact of Leadership styles and communication patterns on job performance of staff in Academic Libraries in Niger State	Abutu, Paul	M.Tech/STE/2013/4607	Dr. J.A. Alhassan and Dr. A.O. Ahmed
5.	Personnel Records Management and information retrieval in Government Ministries in Niger State, Nigeria	Mohammed, Ishaq Zainab	M.Tech/STE/2013/4372	Prof. J.N. Udensi and Dr. J.T. Kur
6.	Availability and utilization of electronic information databases for research by Agricultural Scientist in University Libraries in North Central Nigeria	Mohammed Suleiman Abubakar	M.Tech/STE/2013/4664	Dr. P.U. Akor and Dr. A.M. Baitagi
7.	Staff Attitude, Book theft and Library policies as factors affecting lending services to	Raji, Rabiat Egigogo	M.Tech/STE/2013/4566	Dr. G.U. Oyedum and Dr. P.U. Akor

	students in two State University Libraries in North Central Nigeria			
8.	Relationship between motivational factors and job performance of Librarians in public libraries in North Central Nigeria.	Saidu, Nda Abubakar	M.Tech/STE/2013/4576	Dr. K.A. Saka and Dr. J.T. Kur
9.	Assessment of reference sources, services provision and use in Academic Libraries in Sokoto State	Ilyasu, Jafar Abdullahi	M.Tech/STE/2013/4221	Dr. G.A. Babalola and Dr. K.A. Saka
10.	Evaluation of awareness and use of online public Access catalogue (OPAC) in University Libraries in North Central zone of Nigeria	Abdullahi, Saba Mohammed	M.Tech/STE/2013/4227	Dr. K.A Saka and Dr. A.O Ahmed
11.	Influence of Job satisfaction on the perform once of Librarians in Niger State Nigeria	Abdulsalam Rukayya	M.Tech/STE/2013/4399	Dr. G.A Babalola and Prof. E.M.K. Dawha
12.	Migrating from Traditional to Web Based Readers Services in University Libraries in Niger State Nigeria.	Akran Miriam, Ayinda Salubuyi	M. Tech/STE/2013/4549	Dr. E.C Madu and Dr. R.O Okwori
13.	Performance Testing of the Effectiveness of Greenstone and space on Handling Rich text Data in Federal University of Technology, Minna Nigeria.	Imavah, Shaka Apodoghe	M.Tech/STE/2013/4527	Dr. F.P Abifarin and Dr. A.M Obaje
14.	An Assessment of the Availability and Utilization of Information and Communication Technology for information provision in University Libraries in Abuja, Nigeria.	Ibrahim, Peter Alih	M.Tech/STE/2013/4470	Dr. G.A Babalola and Dr. A.M Baitagi
15.	Information needs and utilization as correlates of job performance among Media	Tijime, Luther Tartaver	M.Tech/STE/2013/4228	Dr. S.J. Udoudoh and Dr. A.K. Agboola

	Practitioners in North Central Nigeria			
16.	Influence of information literacy skills on use of library information resources among Undergraduate Students of Universities in Kano State, Nigeria.	Lawan, Nura Muhammad	M.Tech/STE/2013/5463	Dr. A.O. Ahmed and Dr. G.A. Babalola
17.	Acquisition and management of Electric information Resources for Effective services Delivery in private University Libraries in North Central Nigeria.	Usman Hassana Yamman	M.Tech/STE/2013/5592	Dr. E.C. Madu and Dr. K.A. Saka
18.	The roles of legislative libraries in meeting legislators information needs and services for Effective law making in North Central State Nigeria.	Bulus, Victor	M.Tech/STE/2013/5951	Dr. S.J. Udoudoh and Dr. P.U. Akor
19.	Awareness and utilization of anti-plagiarism checks software on library and Information Science postgraduate Student research activities in two University in Northern Nigeria	Ismail, Safiya	M.Tech/STE/2015/5727	Dr. S.J. Udoudoh and Dr. J.A. Alhassan
20.	Use and effect of Radio Frequency Identification Technology (RFID) on theft detection for Library management in private Universities in Abuja, Nigeria	Yusufu, Shehu Amanyi	M.Tech/STE/2015/5928	Dr. P.U. Akor and Dr. E.C. Madu
21.	Information needs and communication media for research production among Engineering Lecturers in Universities in North western Nigeria.	Sanusi, Maryam Bako	M.Tech/STE/2015/5701	Dr. J.A. Alhassan and Dr. P.U. Akor
22.	Mobile Technologies and Web 2.0 As Facilitators Of Undergraduate Students Use of	Abedoh, Godwin Onimisi	M.Tech/STE/2015/5430	Dr. G.U. Oyedun and Dr. F.P. Abifarin

	Federal University Libraries In South Western Nigeria.			
23.	Electronic Data bases usage and the Research output of scientist in Agricultural Research institutes in North Central Nigeria.	Mohammed, Hauwa Kandi	M.Tech/SSTE/2015/5464	Dr. J.A. Alhassan and Dr. A.O. Ahmed
24.	Assessment of Role of Medical libraries on pregnant women awareness, Access and utilization of Health information Resources in Federal Universities in Northern Nigeria	Gabasa, Paraya	M.Tech/SSTE/2015/5582	Dr. G.U. Oyedum and Dr. G.A. Babalola.
25.	Utilization of open Access Resources and productivity of Librarians in Federal Universities in North Central Nigeria.	Ibrahim, Lubabatu	M.Tech/SSTE/2015/5462	Dr. G.A. Babalola and Dr. A.O. Ahmad
26.	Influence of Information and Communication Technology on Research activities of Postgraduate Students in Federal University Libraries in North Central Nigeria.	Yisa, Doko Samuel	M.Tech/SSTE/2015/5552	Dr. P.U. Akor and Prof. J.N. Udensi
27.	Use of information Resources and services for effective job performance by Healthcare practitioners in Federal Medical Centers Libraries in North Central Nigeria.	Eniwonmi, Ojo	M.Tech/SSTE/2015/5429	Prof. J.N. Udensi and Dr. P.U. Akor
28.	Information needs and Accessibility as determinant of information use among the disadvantage students in Federal College of Education. Special Library, Oyo, Nigeria.	Adekoya, Olayinka Mary	M.Tech/SSTE/2015/5826	Prof. J.N. Udens and Dr. S.J. Udoudoh
29.	Influence of public libraries and cultural conservation on youth	Ali, Julius Diko	M.Tech/SSTE/2015/4680	Prof. J.N. Udensi and Dr. E.C. Madu

	development in central States Nigeria.			
30.	Influence of the use of Electronic resources on students, Academic performance in Federal Poly Libraries in North Central Nigeria.	Mustapha, Hadizat Tenin	M.Tech/SSTE/2015/5844	Dr. A.O. Ahmed & Dr. K.A. Saka
31.	Influence of the use of ICT facilities on Academic performance of undergraduate Students in University Libraries in FCT Abuja, Nigeria	Aji Kingsley Olawale	M.Tech/SSTE/2015/5593	Dr. K.A. Saka and Dr. S.J. Udoudoh
32.	Undergraduate Entrepreneurship training for National Development in Universities based Library schools in North Central Nigeria	Dauda, Dahiru Anache	M.Tech /SSTE/2015/5802	Dr. G.A. Babalola & Dr. A.O. Ahmed
33.	Influence of journal paucity on information needs and utilization in Public Libraries in North Central Nigeria	Bologi, Umar Adalelu	M.Tech/SICT/2016/6634	Dr. K.A. Saka & Dr. A.M. Baitagi
34.	Assessment of information needs and parent social status on Academic performance of Postgraduate Students of Theological institutions in South Western Nigeria	Ogunjobi, Lois Fumilola	M.Tech/SICT/2016/6203	Prof. G.U. Oyedum & Dr. F.P. Abifarin
35.	Use of information Communication Technologies for Service delivery in Federal University Libraries in North Central Nigeria	Ahmed, Halima	M.Tech/SICT/2016/6531	Dr. E.C. Madu & Dr. P.U. Akor
36.	Influence at information Communication Technology (ICT) facilities and Staff	Eromosele, Peace Osemudimen	M.Tech/SICT/2016/6526	Dr. A.O. Ahmed and Dr. E.C. Madu

	attitude on information resource sharing activities of Librarians in Federal University Libraries North Central Nigeria.			
37.	Information and Communication Technology infrastructures and Staff competence as correlates of effective resources sharing in University Libraries in North Central Nigeria	Babatunde, Tomi James	M.Tech/SICT/2016/6179	Dr. J.A. Alhassan & Dr. G.A. Babalola
38.	Influence of information resources and services on users satisfaction in public Libraries in North Central Nigeria	Yusuf, Abdullahi	M.Tech/SICT/2016/6330	Dr. G.A. Babalola & Dr. A.O. Ahmed
39.	Influence of Management Policy on collection Development in Federal Colleges of Education of Agriculture Libraries in Northern Nigeria.	Jibrin, Abdullahi Dantani	M.Tech/SSTE/2015/5504	Dr. K.A. Saka & Dr. J.A. Alhassan
40.	Effect of Local Journal paucity and utilization on quality in Federal University Libraries in Northwest Nigeria	Adamu, Muhammed Alhaji	M.Tech/SICT/2016/6653	Dr. A.M. Baitagi & Dr. E.C. Madu
41.	Usability evaluation of web search engines using query model examples from Libraries and information services in Federal University of Technology Minna	Omame, Isaiah Michael	M.Tech/SICT/2016/6111	Dr. F.P. Abifarin & Dr. S.J. Udoudoh