

**Citation Analysis of Masters' Theses in Computer Science to Support Collection
Development at the University of Ilorin Library**

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Abstract

This study focused on citation analysis of masters' theses in Computer Science submitted to the University of Ilorin Library, Kwara State between 2008 and 2014. Normative Law of Citation (1972), Garfield's Law of Concentration (1971) and Bradford's Law of Scattering (1934) provided the theoretical framework. The population comprised all masters' theses in Computer Science available at the University of Ilorin Library and was ninety-one (91) in number while the total enumeration sampling technique was used to determine the sample size. The study used a quantitative method of research design and adopted the total enumeration sampling technique for data collection. Three (3) document extraction templates that covered items relating to the study objectives were designed and used to collect data from twenty (20) copies of masters' theses in the library. The study identified the subject areas of the theses' titles, chronological distributions of the cited references, and the collaboration patterns of cited journals. The findings revealed that the titles have an intersection with other fields of knowledge while the findings on the chronological distribution of cited references revealed recency of cited documents as documents published between 2011- 2014 were mostly referenced with a total number of 1138 representing 38.0 percent and 2006-2010 with 625(20.9%). It was observed that at the time of citation of cited references, the documents were current and relevant to the topic of the study. The findings on the collaboration patterns of cited journals showed that 531 journals representing (63.7%) were multidisciplinary.

Keywords: Collection Development, Bibliometrics, University Libraries, Computer Science, Masters' Theses

Introduction

Collection development is a planned and systematic development of the collections based on the objectives of the library. These objectives could be stated in documents relating to how to achieve them (Daniel, 2019). Kaur and Kuar (2017) defined collection development as a process of identifying and analysing content and citation in various kind of library collection towards meeting the academic and research needs of researchers in an identified faculty or disciplines. Collection development takes into account library collections, correlating them with the environmental aspects such as audience demand, need and expectation, the information world, fiscal plan, history and trends of the collections. The changes in these characteristics lead to the development of the measurement tool in assessing a scholarly article impacts such as postgraduate theses (Kurniasih, 2016). Collection development plays a pivotal role in identifying the strengths and weaknesses of any field which helps in making the right decisions and developing policies. Quantitative measurements such as citation analysis can be employed by libraries to investigate the productivity and impact of their collections for collection building and research engagements (Reyes-Gonzalez et al., 2016).

Library collections are the bedrock for services provided to the community where the libraries are situated and eternal assets to the library. Akinola (2020) identified the aim of a modern university library as largely to provide access to both print and non-print collections and this makes it necessary to develop a balance between ownership and access to information or knowledge. To meet this purpose, there is need for in-depth analysis of various categories of library collections. This can be viewed from the number of access to the level of popularity and impact of information resources. The presence of bibliometric activities in libraries is driven by desire for a redefinition and widening of the professional roles and services of academic librarians and libraries within the university because hitherto librarianship focuses on the acquisition and organisation of its collections, searching and retrieving information for the library patrons. Libraries have also increasingly focused on development of knowledge and services related to scholarly communication other than the searching and retrieving of scholarly information. Citation analysis reveals the real state of the impact of published works that are embraced by librarians, information professionals and information users to determine what titles to select, acquire, and deselect. It further captures unique information that was not found in library statistics and other relevant documents. Citation analysis could also be used to measure scientific output, impact and collaboration based on the number of publications usually interpreted as proxies of the indicators (Waltman & Noyons, 2018).

Statement of Problem

University libraries house bibliographic collections designed to provide relevant and current information, access and supply services derived from these collections. However, most libraries acquire information resources with little knowledge of current trends of what users' information needs are and most especially the research needs of postgraduate students. The use of bibliometrics as an important tool for collection development becomes a necessity because it provides evidence based information of publications and citations for the benefit of effective collection development.

This is pertinent because academic libraries are most times faced with paucity of funds for their collection development, space management, ever increasing cost of library resources and outdated information resources to satisfy the needs of different departments in their parental institutions. Thus, the issue of librarians abdicating the core responsibilities of selection to commercial interests and the passive approach to selection policies fail to achieve the core objective of collection selection and evaluation. This research study recognised the lack of inquiry and potential gap in evidence based publications and citations for collection development in universities.

Objectives of the Study

The study was guided by the following objectives:

1. compile titles of masters theses in Computer Science submitted to University of Ilorin library and the number of cited references appended to them;
2. find out the chronological distributions of cited references to support collection development; and
3. identify the relationship between cited journals and their pattern of collaboration.

Literature review

The concept of collection development is germane to the professional practice of librarianship as the whole notion of a library is fundamentally associated with idea of a collection. . Collection development, according to Sanjay (2016), focuses on varieties of routines 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. Citation analysis however is built on another author's contribution in the work of the current author(s) by mentioning their name(s) in the same work. It is a research concept which shows the documents cited by a researcher in the research process and assisting librarians in identifying the core collection, using citation as a check list, ranking journals and analyzing disciplines structure to assist collection development decision making in the disciplines concerned.

Citation indicators such as subject areas of publications, impact of publications, authorship patterns, formats of documents, age of cited documents and geographical impacts in a particular field are designed to provide a quantitative picture of usefulness and relationships that guide their subscriptions in libraries or other information centres as well as their usage. While subject distribution is necessary to describe publication activity in given subject areas or subfields, document format provides information on the forms of publications utilized for research endeavours in different fields. Using citation analysis to analyse several documents can provide data which gives more objectives and dependable assessments on subject area, currency and collaboration patterns than other methods. They investigated the number of papers & citations according to the document type. It also includes publications and citations of different subfields in computer science and their authors per page factor.

Explaining the need for bibliometric studies for relevant collection development, Anyaobi *et al.* (2019) explained that knowledge is increasing rapidly and the need to identify the growth of knowledge, core authors and most productive journals in a field becomes imperative for future

collection development librarians and researchers. The increasing interest in citation analysis studies at the libraries as well as in academia in general is the growth in its use to evaluate research impacts especially in university by researchers and administrators, information specialists and librarians and researchers themselves. Also, Aina (2013) states that librarians have tremendously adopted bibliometric laws in selecting journals and other collection development activities involving de-subscription of serials and weeding. It helps to save costs and also to provide the most useful relevant information to the users. Statistical analysis of library routines such as borrowing records can be used to identify frequently borrowed books, and such books will be placed on reserve or even multiple copies of the book can be purchased. If interlibrary loan records are analysed, one can identify books that are regularly requested for and that will be an indication that the book should be purchased by the library (Anyaoobi, Olise and Idoko, 2019). Bibliometric analysis can capture both the quantity and quality of previously available scientific writings such as research drafts, theses, journals and provide latest information about current developments in any field of knowledge (Devendra *et al.*, 2014).

Methodology

This research design employed for this study was a quantitative research. The population of the study included all the masters' theses in computer science covering the period 2008 -2014 that is seven (7) years. These are the theses arranged and documented in the library as the time of conducting the research. Ninety-one (91) masters' theses covering the stipulated years were submitted to the library while total enumeration sampling technique was adopted. The instruments used in data collection were document extraction templates were used to extract data from the theses.

Presentation of Results and Analysis

Research Question 1: What are the titles of theses in masters theses in Computer Science submitted to University of Ilorin library and the number of references appended to them?

Table 4.3: Masters Theses' Titles Distribution and References Appended

S/N	Titles of Theses	No of Cited References
M.Thesis 1	Fuzzy based system for determination severity level of knee osteoarthritis	34(1.1%)
M.Thesis 2	Monitoring the condition of drilling machine using artificial neural network	44(1.5%)
M.Thesis 3	Improving decryption ambiguity in Rabin public key encryption method or model	45(1.5%)
M.Thesis 4	Comparative study of software complexities of tree search Algorithms	16(0.5%)
M.Thesis 5	Quality of services metrics in grid computing environment	46(1.5%)
M.Thesis 6	Neural network approach to intrusion detection in a computer network	30(1.0%)
M.Thesis 7	System software design for distributed Database designs to hold patient medical record	10(0.3%)
M.Thesis 8	Development of automatic Yoruba speech recognition system	42(1.4%)
M.Thesis 9	Application of field programmed gate array FPGA to digital signal processing using task Fourier transform algorithm	13(0.4%)
M.Thesis 10	The application of artificial neural Network in rock mass blast ability classification	13(0.4%)
M.Thesis 11	Implementation of authentication algorithm A3 Algorithm in a GSM Network	35(1.2%)
M.Thesis 12	Computer forensic procedure and digital crime investigation for judicial crime investigation for judicial dispensation in Nigeria	49(1.6%)
M.Thesis 13	Automatic speaker recognition based telephone voice dialing in Yoruba	32(1.1%)
M.Thesis 14	Ontology and information extraction system.	27(0.9%)
M.Thesis 15	Development of handwritten destination Address recognition system using artificial neural network	34(1.1%)
M.Thesis 16	Mobile bill payment system (A case study of electricity holding company of Benin Republic)	45(1.5%)
M.Thesis 17	Semantic web-creation of Taxonomy for a collection of Journal Articles	24(0.8%)
M.Thesis 18	A smart home system to turn on/off electrical appliances	31(1.0%)
M.Thesis 19	Development of an alternative model for traffic and congestion control in network	15(0.5%)

S/N	Titles of Theses	No of Cited References
M.Thesis 20	Software complexity measure of sorting algorithm using node representation	28(0.9%)
M.Thesis 21	Adaptation mechanism for magazine grid resources	23(0.8%)
M.Thesis 22	Development of Ilorin student Biometric attendances system	54(1.8%)
M.Thesis 23	Frequency analysis of homograph isolated Yoruba words	30(1.0%)
M.Thesis 24	A fuzzy logic temperature controller for preterm incubator	27(0.9%)
M.Thesis 25	Economic based resources management for grid computing	26(0.9%)
M.Thesis 26	A mobile phone-based sensor grid for distributed team operation	15(0.5%)
M.Thesis 27	A model for integrating research work	34(1.1%)
M.Thesis 28	Development of a system for forecasting population growth using data mining paradigm	25(0.8%)
M.Thesis 29	An improved round robin scheduling algorithm using particle swarm optimization	62(2.1%)
M.Thesis 30	Development of a fingerprint biometric authentication technique for electronic examination	62(2.1%)
M.Thesis 31	Automatic homographic words recognition (A case study of Yoruba homographic words)	10(0.3%)
M.Thesis 32	Fuzzy logic in Medicine	37(1.2%)
M.Thesis 33	Design and Development of an electronic learning management system	26(0.9%)
M.Thesis 34	Automatic offline signature verification system	24(0.8%)
M.Thesis 35	Performance comparison of object oriented database and relational database	5(0.2%)
M.Thesis 36	Quality of service (QoS) provisioning in IPv5 traffic using differentiated service code point (DSCP)	69(2.3%)
M.Thesis 37	Scheduling of resources in a grid computing application	28(0.9%)
M.Thesis 38	Mobile computing mobile digital cash payment system for mobile phone user	40(1.3%)
M.Thesis 39	Genetics algorithm techniques for finding critical pattern improving software testing	43(1.4%)
M.Thesis 40	An intrusion detection system in computer	24(0.8%)
M.Thesis 41	A search based technique for stakeholders identification on software requirement engineering using particle swarm optimization algorithm	42(1.4%)
M.Thesis 42	Software infrastructure for grid computing	21(0.7%)

S/N	Titles of Theses	No of Cited References
M.Thesis 43	Internet audio streaming and podcasting application in radio broadcasting	32(1.1%)
M.Thesis 44	Development of a novel finger printing system for immigration control	68(2.3%)
M.Thesis 45	Development of geographical information system GIS database for Unilorin spatial map	14(0.5%)
M.Thesis 46	Machine independent estimation of the required by both sequential and binary searching algorithm	14(0.5%)
M.Thesis 47	Design of a caching service architecture for authorize users in grid community	18(0.6%)
M.Thesis 48	Development of medium access control MAC protocol for temporal to whitespace	65(2.2%)
M.Thesis 49	Forting of Unilorin Spatial Map to mobile devices	32(1.1%)
M.Thesis 50	The detection of online phishing attack using dual web image analysis	51(1.7%)
M.Thesis 51	Automatic Nigerian vehicle number plate recognition (ANVNPR)	28(0.9%)
M.Thesis 52	Staff scheduling system that ensure fairness in patrol rosters(A case study of the federal road safety corps	24(0.8%)
M.Thesis 53	Particle swarm optimizer a tool for numerical analysis	59(1.9%)
M.Thesis 54	Automatic text to speech recognition for English Language	34(1.1%)
M.Thesis 55	Network Analysis of online shopper guide concept of mobile agent negotiator	34(1.1%)
M.Thesis 56	A simulation to examine Bluetooth in a mobile Adhoc Networks	61(2.0%)
M.Thesis 57	Analysis of microarray gene expression data using artificial neural Networks	77(2.6%)
M.Thesis 58	Design and implementation of a novel based vehicle inspection management system	21(0.7%)
M.Thesis 59	Design and implementation of network configuration management system. (A case study of MTN)	17(0.6%)
M.Thesis 60	Embedding technical analysis into neural networks for stock index prediction	25(0.8%)
M.Thesis 61	Location awareness system using radio frequency identification. A way to mitigate child kidnapping in nursery and primary schools	40(1.3%)
M.Thesis 62	Development of an human resources performance evaluation system for stock broking fire employees	19(0.6%)

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S/N	Titles of Theses	No of Cited References
M.Thesis 63	Viability reliability and performance evaluation of encryption algorithm	17(0.6%)
M.Thesis 64	Design and Implementation of software metrics on software product performance	18(0.6%)
M.Thesis 65	Hospital management report generating system. (A case study of Kwara State Civil Service Clinic)	38(1.3%)
M.Thesis 66	Comparative analysis of university timetabling algorithm	53(1.8%)
M.Thesis 67	On robust automatic offline isolated handwritten word verification algorithm	20(0.7%)
M.Thesis 68	Complexity measurement of some programming language on traveling salesman problem	20(0.7%)
M.Thesis 69	A search strategy/mechanism for grid resources	17(0.6%)
M.Thesis 70	Evaluating the opportunities of cloud computing for SMEs	42(1.4%)
M.Thesis 71	Automatic extradition of telephone numbers from Arabic documents	53(1.8%)
M.Thesis 72	Comparative analysis of selected database management system	46(1.5%)
M.Thesis 73	Location management in a mobile environment	32(1.1%)
M.Thesis 74	Computer-assisted preconception sex selection	21(0.7%)
M.Thesis 75	Fingerprint-based identity verification system for library users	43(1.4%)
M.Thesis 76	Refactoring large process model in process aware information system	37(1.2%)
M.Thesis 77	Online crime reporting system (A case study of Nigeria Police System)	18(0.6%)
M.Thesis 78	Image denoising using principal component analysis with local pixel grouping (PCA-LPG) method	40(1.3%)
M.Thesis 79	Examining performance trends in the unified tertiary matriculation examination (UTME) using linear regression	37(1.2%)
M.Thesis 80	User authentication by secured graphics password implementation using cued click point	23(0.8%)
M.Thesis 81	Identifying influential bloggers on the web	27(0.9%)
M.Thesis 82	Application of software concept in an organizational network on a case study of Kwara State polytechnic	31(1.0%)
M.Thesis 83	Implementation of fuzzy logic control decision system. A case study of admission process in university of Ilorin	30(1.0)

S/N	Titles of Theses	No of Cited References
M.Thesis 84	Data mining in financial institution a case study of Nigerian stake exchange	46(1.5%)
M.Thesis 85	Comparative study of data encryption standard and the new advance encryption standard	23(0.8%)
M.Thesis 86	Computer-aided planning tool for WCDMA heterogeneous network deployments	32(1.1%)
M.Thesis 87	Prediction of bank customer's credit worthiness using fuzzy logic control	26(0.9%)
M.Thesis 88	Application of an algorithm to routing network	17(0.6%)
M.Thesis 89	Hospital management into system case study university of Ilorin teaching hospital	23(0.8%)
M.Thesis 90	Development of a framework for computerized health management information systems in Nigeria	17(0.6%)
M.Thesis 91	Weblog as information/knowledge sharing tools among Academics Traffic control on mobile wireless system	72(2.4%)
Total		2992

Table 1 focused on the titles of the theses and the number of references cited in them. A total of 91 masters theses were studied with 2992 references cited in them. The Table revealed that the thesis 57 titled Analysis of microarray gene expression data using artificial neural Networks has the highest number of references of 77 representing 2.6 percent. The Table also revealed that theses 91, 44, 36 and 48 with the title: Development of a framework for computerized health management information systems in Nigeria with 72(2.4%), Quality of service (QoS) provisioning in IPv5 traffic using differentiated service code point (DSCP) with 69(2.3%), Development of a novel finger printing system for immigration control with 68(2.3%), Development of medium access control MAC protocol for temporal to whitespace with 65(2.3%). Theses with the titles 29 and 30 “An improved round robin scheduling algorithm using particle swarm optimization and Development of a fingerprint biometric authentication technique for electronic examination” accounted for 62(2.1%) references respectively while thesis 56 “A simulation to examine Bluetooth in a mobile adhoc networks pulled” 61(2.0%). Five theses (theses 53,22,66,71 and 50) referenced more than the average of the total references cited in the theses studied with 59(1.97%), 54(0.18%), two theses cited 53(1.77%), and 51(1.70%) references respectively. Fourteen theses cited 49(1.6%) references, three theses accounted for 46(1.5%) cited references, two more theses cited 45(1.5%) references, 44(1.5%), two accounted for 43 (1.4%) references while three other theses cited 42(1.4%) references and 40(1.37%) respectively. More theses cited number of references between 38(1.27%) and 20(0.66%) Sixteen theses cited references ranging from 19 to 5. The interpretation is that numbers of cited references were low and multidisciplinary in nature and also the titles have intersection with other fields of knowledge. This therefore creates the need to reference more publications in the research works.

Research Question 2: What are the chronological distributions of the cited references to aid collection development?

Table 2: Chronological (Currency) Distributions of Cited References

S/N	Period of citation	Books (%)	Journals (%)	Conferences (%)	Unpublished documents (%)	Seminar Report (%)	Web Resources (%)	Newsletters (%)	Newspapers (%)	Workshop Reports (%)	Others	No of citations
1	1965-1969	12	7	2	2	-	-	-	-	-	1	24 (0.8%)
2	1970-1974	15	9	2	-	-	-	-	-	-	-	26 (0.9%)
3	1975-1979	25	10	5	-	-	-	1	-	-	-	41 (1.4%)
4	1980-1985	30	17	5	3	-	-	-	-	2	-	57 (1.9%)
5	1986-1990	35	18	10	8	1	-	-	2	-	1	75 (2.5%)
6	1991-1995	70	65	15	10	4	92	1	5	-	3	265 (8.9%)
7	1996-2000	82	94	25	17	7	98	2	7	11	2	345 (11.5%)
8	2001-2005	95	101	31	21	9	101	4	12	12	9	395 (13.2%)
9	2006-2010	162	202	57	26	14	103	8	13	14	26	625 (20.9%)
10	2011-2014	255	310	133	43	26	301	9	19	16	26	1138 (38.0%)
												2992 (100%)

Table 2 revealed the chronological distributions of cited references. This was divided into five years intervals based on the oldest and recent years of cited references. Table 2 revealed that publications produced between 2011- 2014 are mostly referenced with a total number of 1138 representing 38.0 percent. Publications produced in 2006-2010 came second with 625(20.9%) followed by 2001-2005 with 395(13.2%). 1996 -2000 and 1991-1995 have a total number of cited references of 345(11.5%) and 265(8.9%) respectively. The least cited references were produced in 1986-1990; 1980-1985; 1975-1979; 1970-1974 and 1965-1969 with 75(2.5%); 57(1.9%); 41(1.4%); 26(0.9%) and 24(0.8%). The above table implies that the cited references as the period of citation were current and spread across the different forms of publications.

Research Question 3: What is the relationship between cited journals and their collaboration patterns?

Table 3: Relationship between Cited Journals and their Collaboration Patterns

SN by Thesis	No of Cited Journals	Collaboration Patterns of Cited Journals		
		Single Discipline	Interdisciplinary	Multidisciplinary
1	20	-	5	15
2	15	-	6	9
3	29	-	3	26
4	7	-	-	7
5	9	-	3	6
6	14	-	5	9
7	2	-	1	1
8	3	-	1	2
9	-	-	-	-
10	2	-	1	1
11	2	-	-	2
12	12	1	5	6
13	11	1	3	7
14	6	-	2	4
15	7	-	4	3
16	11	-	2	9
17	13	1	2	10
18	10	-	3	7
19	2	-	-	2
20	13	-	7	6
21	4	-	1	3
22	30	-	14	16
23	13	-	1	12
24	19	-	6	13
25	13	-	4	9
26	1	-	-	1
27	3	-	-	3
28	-	-	-	-
29	33	-	20	13
30	35	-	19	16
31	1	1	-	-
32	14	-	12	2
33	-	-	-	-

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SN by Thesis	No of Cited Journals	Collaboration		
		Patterns of Cited Journals		
		Single Discipline	Interdisciplinary	Multidisciplinary
34	3	-	-	3
35	-	-	-	-
36	1	-	-	1
37	19	1	5	13
38	1	-	-	1
39	10	-	8	2
40	12	-	8	4
41	18		7	11
42	8	-	2	6
43	-	-	-	-
44	29	-	6	23
45	2	-	-	2
46	4	-	3	1
47	2	-	-	2
48	12	-	6	6
49	2	-	1	1
50	13	-	5	8
51	3	-	1	2
52	-	-	-	-
53	29	-	9	20
54	-	-	-	-
55	4	-	-	4
56	33	2	8	23
57	35	-	16	19
58	2	-	2	-
59	1	-	1	-
60	6	-	2	4
61	19	-	2	17
62	9	-	2	7
63	4	-	2	2
64	5	-	3	2
65	13	-	1	12
66	20	2	7	11
67	9	-	7	2
68	6	1	2	3
69	-	-	-	-
70	6	-	1	5
71	12	-	6	6

SN by Thesis	No of Cited Journals	Collaboration		
		Patterns of Cited Journals		
		Single Discipline	Interdisciplinary	Multidisciplinary
72	-	-	-	-
73	10	-	1	9
74	7	-	1	6
75	6	-	2	4
76	8	-	3	5
77	2	-	-	2
78	3	-	-	3
79	5	-	2	3
80	1	-	-	1
81	3	-	-	3
82	-	-	-	-
83	5	-	5	-
84	3	-	3	-
85	3	-	1	2
86	10	-	2	8
87	6	-	1	5
88	-	-	-	-
89	18	-	7	11
90	3	-	-	3
91	18	-	7	11
Total	833(100%)	11(1.3%)	291(34.9%)	531(63.7%)

Table 3 revealed the relationship between cited journals and their collaboration patterns which are identified as single-discipline, interdisciplinary, or multidisciplinary. Table 3 revealed that 833 journals were cited in the theses. 531 journals representing (63.7%) were multidisciplinary. 291(34.9%) journals were interdisciplinary while 11(1.3%) were found to be in a single discipline. This indicates that most journals cited in Computer Science masters' theses and by extension published are multidisciplinary.

Conclusion

The increasing interest in citation analysis in library operations as well as in academia is due to its use in evaluating research impacts, especially in universities by researchers and administrators, information specialists librarians, and researchers themselves. Also, librarians have tremendously adopted citation laws in selecting journals and other collection development activities involving the de-subscription of serials and weeding. This study analyzed a total of ninety-one (91) titles of the masters' theses and their respective features. It was observed that the theses covered different aspects of human endeavours where computer science is applicable. Also, the study revealed the importance of recent and relevant references in research activities. The relationship between cited journals and their mode of collaboration which bore strong affiliation to the multidisciplinary nature of

journals showed that they are scholarly publications which do not provide current information and rich research proceedings alone but also foster strong collaboration amongst scholars in different disciplines.

Recommendations

1. Academic libraries should spread the tentacles in the provision of publications for researches in Computer Science and not limited to the core of the discipline alone but also to disciplines where computer utilisation is applicable.
2. Collection Development committees should take cognisance of the penchant for obsolescence of scientific publications under few years of their production and therefore acquire information resources that do not go out of use as quickly as possible.
3. Acquisition/Collection Development policy should encourage more multidisciplinary and interdisciplinary journals to be included in their collections. This has become a reality due to the law of scattering of journals.

References

- Aina, L.O. (2013). *Information knowledge and the Gatekeeper*. A 132nd Inaugural Lecture was delivered under the Chairmanship of The Vice-Chancellor, Professor Abdulganiyu Ambali, University of Ilorin, Ilorin, Delta State.
- Akinola, S.A.(2020). Security of library resources and crime challenges in Nigerian University Libraries: A look at the situation in Joseph Ayo Bablola University, Ikeji Arakeji. *Library Philosophy and Practice*, 4080. <http://digitalcommons.uni.edu/libphilprac/4080>
- Anyabobi, G., Olise, F.N. & Idoko, F.A. (2019). Need and Justification for the Implementation of Bibliometrics Studies in Library and Information Science Schools Curriculum in Higher Institutions in Nigeria. *Unizik Journal of Research in Library and Information Science (UJOLIS)*, 4(1), 110-117
- Daniel, L.O. (2019). *Collection Development and Management in Libraries*. Issues and themes in information and communication technology in Nigeria. Offa: Ahlan-Wasahlan Prints
- Devendra, K.M., Manisha, G. and Madhu, S.S. (2014). Bibliometric study of Ph.D thesis in English. *Global Journal of Academic Librarianship*, 1(1), 19-36
- Kaur, Rajinder and Kuar, Rupesh (2017) Collection development in academic libraries with special reference to digital era. *International Journal of Digital Library Services*, 7(2), 107-114.
- Kurniasih, N. (2016). *The Implementation of Altemetrics in Library as an alternative measurement method for scholarly article impact in Social Web Ecosystem*. International Conference on Science Mapping and the Development of Science held at Jogjakarta, Indonesia
- Reyes-Gonzalez, L., Gonzalez-Brambila, C.N. & Veloso, F. (2016). Using coauthorship and citation analysis to identify research groups: A new way to assess performance. *Scientometrics*, 108(3), 1171-1191
- Sanjay, P. (2016) Collection development in academic libraries. *International Journal of Library and Information Science*, 8 (7) 62-67 doi: 10-5&97/IJLIS 2015-0601
- Thanuskodi, S. (2011). Library Herald Journal: A Bibliometric Study. *International Refereed Research Journal*. 2(4), 68-77.

Waltman, L. & Noyons, E. (2018). *Bibliometrics for Research Management and Research Evaluation*. CWTS: Universiteit Leiden.

Yeoh, K. H. & Kaur, K . (2018). Subject support in collection development: Using bibliometric tools. *Collection Building*.24(7), 157-166