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**SCIENTOMETRIC STUDY OF AUTHORSHIP PATTERNS AND DEGREE OF COLLABORATION OF  
AUTHORS CITED IN PHD LAW DEGREE THESES SUBMITTED TO THE FACULTY OF LAW RIVERS  
UNIVERSITY.**

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**Abstract**

*The study examined scientometric study of authorship patterns and degree of collaboration of authors cited in PhD degree theses submitted to the faculty of law from 2015-2023. The study made use documentary analysis methods. The population of the study comprised of a total of 60 PhD Law degree theses submitted to the faculty of Law, randomly selected from 2015-2023 in 12,304 articles. Similarly, a checklist was designed for data collection hence, data was analysed using descriptive statistics. Findings indicated that single authors made the highest contribution in the field of Law as they dominated the authorship pattern in the study with 7,124 articles (57.89%). Also followed were corporate authors with 1,978 articles (16.06%), two authors with 1,888 articles (15.34%), three authors with 1,136 articles (9.23%) and the least which is four authors' contribution with 178 articles (1.44%) respectively. The degree of collaboration (DC) was 0.421 which indicated that faculty of Law PhD Theses were in favour of single authors, hence this indicates that, researchers in the field of Law undertook lesser collaborative research. The study therefore recommended that; Mentorship in research should be champion by senior academics in all fields and research contributions should not be centered on the basis of appraisal and recognition of lead authors instead, collaborative researches should be encouraged to promote expertise and mentorship among others.*

**Keywords: Scilentometric Studles, authorship patterns, Degree of Collaboration, PhD Degree, Theses.**

**INTRODUCTION**

Academic and research community are concerned about research, publishing a large number of scholarly communications on daily basis across the spectrum of fields of human endeavour. These publications most times are scrutinized or subjected to analysis of different kinds, whether quantitative or qualitative studies. The aim of these studies most times is the evaluate the publication patterns, h-index value, impact factors, trends, and productivity outputs from different fields of study. Looking at Scientometric studies, it is a quantitative and statistical approach that analyzes research on certain themes. It originated from information/library science but has been applied in various disciplines, including information science, library science, natural science, technology, engineering, medical sciences, and social sciences and humanities. Although,

researchers in scientific disciplines form the greater, and most significant group in scientometric studies.

It is conducted mainly on journals related to scientific fields and are based mainly on critical elements such as author, title, subject, citations, institutions or organization among others. This type of study provides useful insights of trends, scientific productivity, emphasis of research in various fields, and e-searcher preferences for publication (Thavamani, (2013) . it is imperative to note that, Scientometrics is essentially the analysis of big publication data from various sources, such as a certain journal(s), topic(s), or databases (e.g., Web of Science, Scopus, Medline, and Google Scholar). This study explores the Authorship patterns and Degree of collaboration of Authors Cited in PhD Law degree Theses submitted to the Faculty of Law Rivers University.

### **Rivers State University Law Faculty**

The faculty of law started in 1981, a year after the establishment of the University in 1980. It was basically set up to provide an opportunity for young men and women of Niger Delta region to have access to legal education in order to contribute to the social and economic development of the nation. The main objective of the training in law is to ensure that graduates of law from the faculty have clear understanding of the place and importance of law in the society. Since all human activities- social, economic, political etc. - take place and are regulated within the legal framework, it is necessary that the students of law should have a broad knowledge and exposure to other discipline in the process of acquiring legal education. It is also intended to act as a stimulus to stir students into critical analysis and examination of the prevailing social, economic and political systems and the relevance of these phenomena in the development of the country.

The faculty started without component departments since the LL.B programme is technically a faculty one. However it was later realized that there was need to have departments in the faculty. In 1991 two departments were created by the then acting Dean Mrs A.E. Ogbuigwe which were thus: Department of Jurisprudence, Public and International law, and Department of Commercial, Private & Property Law. Meanwhile , after several years, later in 2002, the faculty was restructure into four departments such as; Dept of Business Law, Dept of Jurisprudence and International Law, Dept. of Private and Property Law and Dept. of Public Law. The faculty has a robust Staff strength and students. The flagship programme of the Faculty is the Bachelor of Laws (LL.B) programme which is an inter-departmental programme. It consists of five years of legal training for those with West African School Certificate and four years for direct entry students who must be either first degree holders or holders of Diploma Certificates in Law.

The faculty also runs a Post graduate diploma in Petroleum and Enviromental Law as well as Masters of Laws (LL.M) and Doctor of Philosophy (PhD) programmes in any areas of Law. There is also Master of Law and Diplomacy among others.

The Faculty proposes to strengthen and consolidate its short term courses in Customary Law and Legislative studies, as well as engage in similar courses in several areas of Law among others.

### **Statement of the Problem**

Over the years, scholars have engaged themselves into diverse publications in different fields pertaining issues of social concerns, environment and science. However, this has generated a lot of research outputs and had formed trends and patterns in style and dynamics of publications. Studies and Observations have shown that, little studies or non has been carried out on special areas like scientometrics especially on area of authorship patterns and degree of collaborations on works

cited in PhD Law theses submitted to the faculty of law Rivers State University. This is a critical study on the pattern and extends of research collaboration in the field. Hence the study will provide answers to several questions which may arise in the course of the study.

### **Purpose of the Study**

The main aim of the study is to examine Scientometric study of authorship patterns and degree of collaboration of authors cited in PhD Degree Theses submitted to the faculty of Law, Rivers State University. More specifically:

1. To identify the authorship pattern of authors cited in PhD degree theses submitted to the faculty of law
2. To identify the degree of authorship collaboration in the works cited in PhD degree theses submitted to the faculty of law, Rivers State University.
3. To identify article wise distribution cited in the PhD Law theses submitted to the faculty of law Rivers State University.

### **LITERATURES REVIEWED**

The Scientometric is systematic survey tool of trustworthy and important for tracking research trends and intellectual activities (Wodeyar & Mulla,2022). The term Scientometric can be used interchangeably with bibliometrics, informetrics and webometrics study. They study scientific and quantitative analysis and evaluation of research publications, authorship patterns, degree of collaborations, trends and citation analysis of research outputs and databases of a given area of study.

Bibliometric approach is a notch for scientific analysis, procedure and evaluation of publications and patterns that are associated with authors writings and publication. The aim of bibliometric studies is to measure national research performance in the international context or to describe the development of a science field with the help of bibliometric means (Das,2021). It analyzes quantitative studies of publications and publication patterns. Also, bibliometrics employs quantitative analysis to measure patterns of scientific publication and citation, mainly, focusing on journal papers. It is a measure of scientific collaboration, assess to interdisciplinary research and examines the quality and excellence in research. Metric Studies in LIS domain has multidimensional evolution, development has been classified as Librametrics, bibliometrics, scientometrics, cyber metrics, or webometrics, and informatics (Wodeyar & Mulla,2022). In academic environment, analytical studies play a vital part in decision and policy-making process. Scientometric studies primarily focused on evaluating scientific production and investigating various aspects of scholarly communication. Verma, Yadav and Singh (2018) conducted a bibliometric study of Library Philosophy and Practice (e-journal) from 2008 to 2017. A total of 1478 scholarly papers were published. It is found that the average growth rate of paper was 147.8 per year. The highest number of publications is in the year 2011 with 197(13.33%) followed by 2017 with 193(13.06%). Majority of papers during 2008-2017 in LPP are in the form of joint authorship, and 41.13% of articles are published in two authorship. From the 35 countries of the world contributed their articles in LPP during 2008-2017. With 42.23% contributions, Nigeria is in top rank while India (24.13%) and USA (9.52%) contribution stood second and third respectively. Ordu & David-West, (2024), examined citation analysis of LIS publication outputs in Nigeria. A descriptive research survey design was adopted while 270 articles formed the population of the study while a purposive sampling technique was used with a checklist as instrument for data collection. The results of the study indicated that, the highest citation index was 78 citations while the lowest was 1 citation. Meanwhile funding of LIS research was relatively poor in Nigeria while the

TETFUND was adjudged to be the major funding agency of LIS research in Nigeria. Ordu(2024), examined the Authorship patterns and degree of Collaboration of Authors Cited in PhD Dissertation submitted to the Faculty of Education, Rivers State University. The findings revealed that single authors made the highest contribution in the field of Education as they dominated the authorship pattern with 52.18% of the sources cited and a mean score of 77.5 per dissertation. The degree of collaboration was 0.478, indicating low collaborative research in the field of Education.

Thanuskodi (2010) discussed the research output performance of social scientists on social science subjects. The analysis cover mainly the number of articles, authorship pattern, subject wise distribution of articles, average number of references per articles, forms of documents cited, year wise distribution of cited journals etc. Bharvi et al.(2007)analyzed 1,317 papers published in the first fifty volumes from 1978 to 2001 of the international journal Scientometrics and found that the US share of the papers is constantly on the decline while that of the Netherlands, India, France and Japan is on the rise and that the scientometric output is dominated by the single-authored papersSerenko et al.(2010), conducted a bibliometric analysis of a body of literature continued in 11 major knowledge management and intellectual capital peer-reviewed journals and revealed the institutional and individual productivity, co-operation patterns, publication frequency, and other related parameters. Ordu, Okon & Wagwu,(2024), investigated trends and research collaboration in library and information science (LIS) publications outputs in Nigeria from 2000 2016 in the Web of Science (WOS) database. 270 articles formed the population of the study and the sample size. Meanwhile a census sampling technique was used with a checklist as instrument for data collection. The study was limited to the use of Social Science Citation Index (SSCI), Arts and Humanities Citation Index (AHCI) all in WOS while publication counts and analysis were used to analyze data based on the research questions. Results of the study showed among others that, there was an increasing and fluctuating trend in the annual publication outputs in LIS in Nigeria, also multiple authors dominated the published articles and researchers in Nigeria prefer to collaborate more with their colleagues within the same institution, whereas, there was a limited collaboration with foreign authors. Zainab et al.(2009), in their bibliometric study of Malaysian Journal of Computer Science, reported their findings regarding the article productivity, authorship collaboration, and journal impact factor of MJCS. Garg & Bebi (2018), conducted a citation study of a number of articles published in Annals of Library and Information Studies (ALIS) and DESIDOC Journal of Journal of Library and Information Technology (DJLIT) from the period 2010-2013 and found that the average number of articles published in DJLIT are more than the articles published in ALIS during the period of study, for this reason DJLIT is published six times in a year, while ALIS is published four times in a year. It was also found that DJLIT 10 received more citations and published more papers than ALIS, citations per paper for both the journals are almost equal, DJLIT has a better immediacy index than ALIS and the impact factor of both the journals was less than one in 2012, but it increased in 2013 and was more than one.

## **METHODOLOGY**

The study made use of documentary analysis methods for the study. Documentary analysis is a social research method that refers to the various procedures involved in analyzing and interpreting data generated from examination of documents and records relevant to a particular study (Heffernan, 2001). The population of the study was a total of 60 PhD Law degree theses submitted to the faculty of Law, randomly selected from 2015-2023 in 12,304 articles. Hence, a checklist was designed for data collection. Data was analysed using descriptive statistics.

### **Data Presentation, analysis and Discussion of findings**

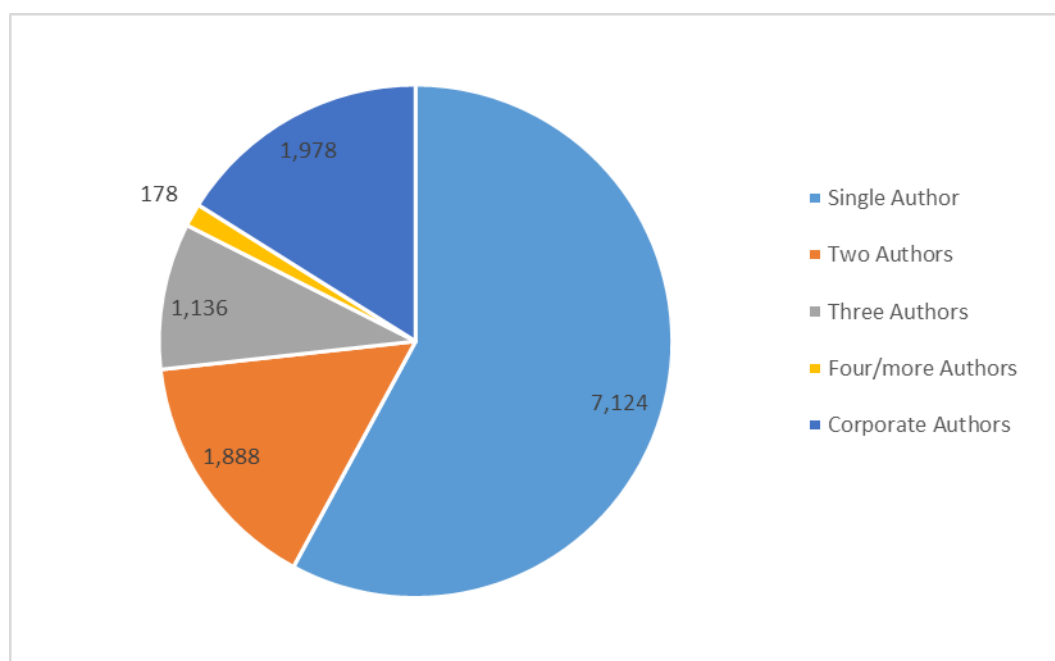
This explains the analysis of data collected using the data collection checklist. Although, findings of the study will be articulated.

### Authorship Pattern

The Authorship pattern is been analyzed to determine the percentage of single, multiple and cooperate authors respectively.

**Table 1: Authorship Patterns**

S/N	Authorship patterns	Numbers Articles	of Percentage %	Mean Score of Articles
1	Single Author	7,124	57.89	118.7
2	Two Authors	1,888	15.34	31.4
3	Three Authors	1,136	9.23	18.9
4	Four/more Authors	178	1.44	2.9
5	Corporate Authors	1,978	16.07	32.9
	<b>Total</b>	<b>12,304</b>	<b>100%</b>	



**Figure 1: Authorship Patterns**

Table 1 and Figure 1 explained the authorship patterns of all the cited authors in the 60 PhD Law degree theses. A total of 12,304 articles were analyzed, out which 7,124 articles (57.89%) were contributions by single authors with an average mean of 118.7 per thesis, 1,888 articles (15.34%) were contributions by two authors with an average mean of 31.4 per thesis, 1,136 articles (9.23%) were contributions by three authors with an average mean of 18.9 per thesis. 178 (1.44%) were contributions by four authors with an average mean of 2.9 per thesis which is the lowest number of contributions for the study, whereas corporate authors contributed 1,978 articles (16.07%) with an average mean of 32.9 per thesis which is the second highest number of contributions for this study.

Findings indicated that single authors made the highest contribution in the field of Law as they dominated the authorship pattern in the study. Also followed were corporate authors, two authors,

three authors, and the least which is four authors' contribution. The findings of this study is in agreement with Salisu and Gama (2019), Singh and Bebi (2013), as they found single authors to be the most prominent and highest contributions in their studies. Although, corporate authors ranked second in this study, which is in disagreement with previous studies of Bhedekar and Sonawane (2014), Mukherjee (2009), and Swain (2014). Single authors with (57.89%) outweighed all the other types of authorship patterns. This could be attributed to most authors wanting to take credit for a particular paper or the assumption that, single authors score highest in most appraisal assessments in most institutions; whereas research output is supposed to be a measure of quality and impact not based on the notion of high Scores in appraisal or who takes the first shot as lead author. This is the concern of the researcher as expertise insights from senior colleagues may be missing in the quality of the research which may not address the key essence of the research.

#### **Degree of Collaboration**

The degree of authorship collaboration is measured using the Subramanyam's formula and it ranges from 0.79 to 0.89, though the average degree of collaboration is 0.83. The degree of collaboration is calculated by using the following formula.

$$DC = \frac{NM}{NM + NS}$$

$$NM = 1888 + 1136 + 178 + 1978 = 5180$$

$$NS = 7124$$

$$DC = \frac{5180}{5180 + 7124} = \frac{5180}{12,304}$$

$$DC = 0.421$$

DC is the degree of collaboration in a discipline. NM is the number of multi-authored research papers in the discipline published during the year. NS is the number of single authored research papers in the discipline published during the year.

For this study, the degree of collaboration (DC) is 0.421. The authorship pattern in the study indicated that, faculty of Law PhD Theses are in favour of single authors, whereas researchers in the field of Law undertook lesser collaborative research. This findings are in agreement with Mukherjee (2009), Singh and Bebi (2013), Salisu and Gama(2019) and Bhedekar and Sonawane (2014), where single authored studies ranked the highest or dominated the studies, hence projecting lesser collaboration of authors in the field.

However, this finding is contrary to that of Ordu, (2018), Bansal (2013), and Roy & Basak (2013), where multiple authorships were found to be dominant, which significantly showcased the highest level of collaboration among authors or researchers alike. Apart from the single authorship dominating the research stage in the faculty of Law, the findings also revealed corporate authors as taking the second position.

It is pertinent to buttress here that, the degree of authors' collaboration was 0.421. This indicates that, there was lesser collaborative research in the field of Law, in the faculty which showed below average collaboration. This development explains that in a situation where single authors dominated research in a field, automatically, the degree of collaboration will definitely be lesser among the researchers.

**Article Wise distribution Cited in the PhD Law theses**

**Table 2. Article wise distribution**

S/NO.	Types of Articles	No. of Articles	Percentage %	Rank
1.	Internet sources(articles)	4,680	38.3	2
2.	Periodicals	302	2.45	5
3.	Law Books	6,124	49.77	1
4.	Theses	258	2.09	6
5.	Reports	394	3.20	3
6.	Unpublished works	166	1.34	7
7.	Seminars/Conference/Lectures	380	3.08	4
<b>Total</b>		<b>12,304</b>	<b>100%</b>	

(Figures in Parentheses indicate percentage)

Table 2 represents the article wise distribution cited in the field of Law. It would be understood from the table that 49.77% articles cited were in Law books followed by internet sources(articles) (38.03%), Law reports ranked third with (3.20%) among others.

**Conclusion**

The relevance of scientometric studies and techniques globally in different disciplines has made a tremendous growth of literature and expansion of the study area. The technique is favorable for a number of purposes which includes selection of journals for the libraries, showing the benefits of a desired field, scientific output evaluation, determining scientific indicators. Authorship patterns, degree of collaborations of authors and types of information resources show cased the eminent value placed on the pattern of research, quality and impact that is expected of any scientific research. Every research is expected to yield a positive result; hence collaborative efforts should not be sacrificed on the altar of scores and appraisal purposes. Significant publication outputs, high

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**impact values, quality research and robust mentorship are key in achieving great desire and expectations in any scientific research and evaluation.**

**Recommendation**

**Having considered the findings of the study, the study therefore recommends that;**

- 1. Research collaboration is key to quality research output.**
- 2. Awareness is needed to encourage multidisciplinary approach to research**
- 3. Expertise in research should be champion by senior academics in all fields**
- 4. Research collaboration should be encouraged to promote quality in research outputs.**



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