TRENDS AND PATTERNS OF PUBLICATIONS OUTPUT OF THE UNIVERSITY OF MAIDUGURI LECTURERS

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1999.

DECLARATION

I hereby declare solemnly that this thesis has been written by me as a record of my independent research effort. I certify also that the work has not been presented and/or accepted in any previous application for any other degree. All the various sources to which I am indebted are properly and clearly acknowledged in the references. I therefore accept responsibility for all errors in the research.

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CERTIFICATION

This thesis entitled Trends and Patterns of Publications output of the University of Maiduguri Lecturers, meets the regulations governing the award of the degree of Master of Library Science, Ahmadu Bello University, Zaria and has been approved for its contribution to knowledge and literary presentation.

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DEDICATION

This work is dedicated to my Parents.

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ABSTRACT

This study investigates the trends and patterns of publications output of the University of Maiduguri Lecturers. Attention was focused on publications output in terms of numbers, collaborative publications output and factors affecting publications output.

The data gathering methods employed in this study are interview, documentary analysis, and Questionnaires. Data collected were quantified and tabulated. The analysis of responses revealed that there were significant differences in the publications output, collaborative publications output and factors affecting publications output, among lecturers of the Humanities, Social Sciences, Natural Sciences and Applied Science of the University of Maiduguri.

Lotka' s law was applied to the publications output of lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences. Lotka' s law revealed that there is a significant difference in the application of the law in the four broad areas of knowledge.

The outcome of the investigation suggests that lecturers encounter a lot of problems which made some of them publish and others do not. A knowledge of such problems formed the basis for the recommendations for this study. These include the University providing physical and non physical resources, providing publishing programmes, subsidizing its presses, establishing administrative measures to coordinate research and

publications among lecturers and organizing a better regional campaign on how to promote research and publications in the University of Maiduguri.

TABLE OF CONTENTS

		Page
Title page		i
Declaration		ii
Certification		iii
Dedication		iv
Acknowledgement		v
Abstract		vii
Table of contents		ix
List of Tables		xiii
List of Figures		xv
List of Appendices		xvii
List of Abbreviations		xviii
CHAPTER ONE: INTRODUCTION		
1.1	Background of the study	1
1.2	Statement of problem	4
1.3	Research questions	7
1.4	Research hypotheses	8
1.5	Objectives of the study	10
1.6	Significance of the study	10
1.7	Basic assumption	11
1.8	Scope and limitation of the study	12

1.9 Operational definition of terms 12

References 13

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction 16

2.2 Concept of author productivity 16

2.3 Research Publications and Collaboration 19

2.4 Factors influencing publications 25

2.5 Summary of Literature review 30

Reference 32

CHAPTER THREE: METHODOLOGY

3.1 Introduction 37

3.2 Research design 37

3.3 Description of the population 38

3.4 Instrument for collecting data 39

3.4.1 Administration the questionnaire 40

3.4.2 Validity of instrument used 41

3.4.3 Reliability of Instrument 41

3.4.4 Administering the interview 42

3.4.5 Observation of documents 43

3.5 Method of analysing data 43

3.5.1 Frequency distribution 44

3.5.2 Percentages 44

3.5.3 Lotka's law distribution 45

3.5.4 Kurskal wallis statistical test 47

3.6 Summary and Discussion 48

References 49

CHAPTER FOUR: ANALYSES OF DATA AND INTERPRETATION OF FINDINGS

4.1 Introduction 51

4.2 Analysis of data and discussion of findings 51

4.2.1 Difference in publications output 54

4.2.2 Diffiference in collaborative publications output 62

4.2.3 Difference in factors affecting respondents publications output 70

4.2.4 Difference between observed publications output of Humanities lecturers with Lotka's inverse law 77

4.2.5 Difference between observed publications output of Social Sciences lecturers with Lotka's inverse law 79

4.2.6 Difference between observed publications output of National Sciences lecturers with Lotka's inverse law 82

4.2.7 Difference between observed publications output of Applied Sciences lecturers with Lotka's inverse law. 84

4.3 Testing the Null hypotheses 87

4.3.1 Hypothesis 1 87

4.3.2 Hypothesis 2 89

4.3.3 Hypothesis 3 90

4.3.4 Hypothesis 4 92

4.3.5 Hypothesis 5 94

4.3.6 Hypothesis 6 95

4.3.7 Hypothesis 7 97

References 99

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Introduction 102

5.2 Summary of findings 102

5.3 Conclusion 105

5.4 Recommendation 107

5.5 Suggestions for further research 108

Bibliography 110

Appendices 120

LIST OF TABLES

TABLE		Page
1.	Distribution Rate of Respondents by broad Subject Areas	52
2.	Distribution of Respondents showing their rate and quantity of Conference Publications output	54
3.	Distribution of Respondents showing their rate and quantity of Journal Publications output	56
4.	Distribution of Respondents showing their rate and quantity of Monograph Publications output	58
5.	Distribution of Respondents showing their rate and quantity of Text Books publications output	60
6.	Distribution of Respondents showing their rate and quantity of Conference Collaborative publications output	62
7.	Distribution of Respondents showing their rate and quantity of Journal Collaborative publications output	64
8.	Distribution of Respondents showing their rate and quantity of Monograph Collaborative publications output	66
9,	Distribution of Respondents showing their rate and quantity of Text Books Collaborative publications output	68
10.	Distribution of Humanities Respondents on factors affecting their publications output according to four broad classes of knowledge	70
11.	Distribution of the observed respondents frequencies in the Humanities with the expected frequencies of Lotka's Law	77
12.	Distribution of the observed respondents frequencies in the Social Sciences with the expected frequencies of Lotka's Law	79
13.	Distribution of the observed respondents frequencies in	

	the Natural Sciences with the expected frequencies of Lotka's Law	82
14.	Distribution of the observed respondents frequencies in the Applied Sciences with the expected frequencies of Lotka's Law	84
15.	Test of hypothesis 1 on the respondents publications output	87
16.	Test of hypothesis 2 on the respondents collaborative publications output	89
17.	Test of hypothesis 3 on the respondents factors affecting their publications output	90
18.	The chi-square test of the observed Humanities publictions output and the expected inverse Lotka's law	93
19.	The chi-square test of the observed Social Sciences publications output and the expected inverse Lotka's law	94
20.	The chi-square test of the observed Natural Sciences publications output and expected inverse Lotka's law	96
21.	The chi-square test of the observed Applied Sciences publications output and the expected inverse Lotka's law	97

LIST OF FIGURES

Figure		Page
4.1	Distribution of respondents by their discipline	53
4.2	Distribution of respondents showing their conference publications output	55
4.3	Distribution of respondents showing their Journal publications output	57
4.4	Distribution of respondents showing their Monographs publications output	59
4.5	Distribution of respondents showing their Text Books publications output	61
4.6	Distribution of respondents showing their conference collaborative publications output	63
4.7	Distribution of respondents showing their Journal collaborative publications output	65
4.8	Distribution of respondents showing their Mongraphs collaborative publications output	67
4.9	Distribution of respondents showing their Text Books collaborative publications output	69
4.10	Distribution of respondents on factors affecting their publications output according to four broad classes of knowledge	74
4.11	Distribution of respondents of Humanities based on Lotka's law	78
4.12	Distribution of respondents of Social Sciences based on Lotka's law	81
4.13	Distribution of respondents of Natural Sciences based on Lotka's law	83
4.14	Distribution of respondents of Applied Sciences based on Lotka's law	86

LIST OF APPENDICES

Appendix		Page
1	An Introduction letter from Department	109
2	Questionnaire on pilot study	120
3	The questionnaire on the field study	123
4	An Introduction letter for an interview	128
5	The interviewed questions	129

LIST OF ABBREVIATIONS

APPREVIATIONS

S = Social Science

N = Natural Science

A = Applied Science

AS = Assistant Lecturer

Lect = Lecturer

S. Lect = Senior Lecturer

Yrs = Years

SC = Sciences

Freq = Frequency

Pub = Publication

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

The University of Maiduguri is located at the ancient seat of Borno Empire, the present capital of Borno state in the geographical area of North Eastern Nigeria. It was a confluence of ancient and modern scholarship. It was among the seven universities established by the Federal government of Nigeria in 1975, under the University of Maiduguri Act 83: 1979. At its founding the university had no infrastructure of its own until it took over the North-East College of Arts and Science (NECAS). This provided the university with a nucleus of facilities such as laboratories, office blocks, and staff residences.

In a study by Nur-Alkali (1978:39), remarked that the north-eastern region of Nigeria is rich in human and natural endowments. Culturally and socially this region is one of the greatest meeting points of early African civilisations. He also revealed that the region has a tradition of Islamic scholarship and learning going back nearly one thousand years. The great cities of the central Bilad al-Sudan, the Chad Basin region and the Benue valley such as Gazargama, Kukawa, Dikwa, Mandara, Adamawa, Katsina had been centres of learning at different stages of history and in their own

right represented a different concept of the gown. Nur Alkali (1987) and Aminu (1986) observed that "with the establishment of the University of Maiduguri, it can help in training manpower, experts and leaders who would provide necessary consultancy for optimum utilisation of available resources. The aforementioned attributes of the region necessitated the establishment of a University. Similarly, Nur-Alkali (1987) remarked that the region is one of the major areas of academic activities in the past and present and that it offers a unique opportunity for creating a University in Nigeria.

The University of Maiduguri Act No. 83 of 1979 spells out in section I sub section 3 item 6 that the institution shall "relate its activities to the social, cultural and economic needs of the people of Nigeria (Aminu, 1986)." This reminds us that the benefits of the society from the university are only derived through research and publications. The then president of the Federal Republic of Nigeria, Alhaji Aliyu Shehu Shagari in: Aminu (1986:245) stated that the "University of Maiduguri has a unique geographical setting. It is a university in the most northerly reaches of Nigeria. It is an arid zone which supports a large population that depends on the sparse offering of fertile land around Lake Chad for its sustenance. This setting dictates for this university, that its teaching and research programmes should be geared towards the solution of immediate ecological and human challenges". This statement by the president warrants the

academic staff to publish so that their output will be felt by the environment and the nation at large.

As observed by Aminu (1986:246) reveals that universities are established on seven principal functions namely, teaching, certification, research, storage of knowledge, public services, enlightened commentary and publications of texts. Research and publications are the basic areas where the researcher focuses much attention. Certainly, research and publication are important functions from which lecturers can not deviate.

Similarly, Khandwall (1983:6) remarks that "publications is generally an act of creativity, it is not one's ability, but a whole cluster of abilities which includes fluency, flexibility, originality, the ability to grasp the causes, visualise the consequences, and the ability to elaborate". Clemens (1995:433) also noted that academic reputation rests on publications. Infact, scholars world-wide publish for different reasons. Some publish in order to contribute to the body of knowledge in their field, while others publish to share their experiences and problems with their professional colleagues. Yet others publish to enhance their academic status or rank and salary position in the university environment.

1.2 STATEMENT OF PROBLEM

University lecturers worldwide generally publish for different reasons, among which are political and economic reasons. The problem of productivity of papers among lecturers is significant. This is because lecturers are expected to publish regularly in order to get their promotion and prepare themselves for future participation in consultancy services. These are in various fields of human endeavour, including in research institutes and private organizations. Academic reputation rests on research and publications of books and journals. This is how authors disseminate their ideas for the benefit of scholars. The National Universities Commission (NUC) expects lecturers to publish and contribute to the growth and development of knowledge. This is reflected in its guideline for establishing Universities. Abdulkadir (1992) remarks that universities are established for the benefit of human development by promoting or regulating the mobility of manpower in general and of key brain power in particular. It will allow stimulation of international development within regions or groups of universities. Indeed, with the above statement university lecturers are the brain power of development in any country. This is recognised through publications, publishing strengthens knowledge and mutual understanding of the various cultures. It facilitates the free flow of ideas and the international exchange of persons. It reinforces the spirit of international understanding and cooperation. Aminu (1986:240)

commented that Universities are centres of competent thought, of lofty behaviour and places where a genius blooms best.

Previous research on author productivity focused on individual subject fields. These include contributions made by Aiyepeku (1976) on productivity of geographical authors, Maclean and Janagap (1993) on the productivity of international agricultural research centers. Bottle (1993) on the productivity of British and Americans Chemists, Hamede (1994), on the characteristics of the literature used by Arab authors in library and information science. Mommoh (1995) on the characteristics of authors in Annals of Borno. Swigger (1995) on the institutional affiliation of authors or research articles. Gupta (1987), on Lotka's law and productivity patterns. Simon (1996), on the productivity of authors of sociology. Abifarin (1996) on the authors of the literature on Nigerian Civil war.

It has also been determined through researches that authors that are productive are also collaborative in publishing papers. These writers are Lawani (1980) on the collaboration and citations in cancer research. Subramanyam (1986), on the bibliometric studies of research collaboration. Gupta (1989), on the collaborative research trend in exploration Geophysics. Lawani (1980) on quality, collaboration and citation in cancer research, Raptis (1992), on the authorship characteristics in five international library science journals. Pao (1992), on the global and local collaboration. Berthlemot (1992), on the international scientific

collaboration in Latin America. Fernandez (1992) on the cooperative research projects in American institutions and Misonger (1996), on the authorship in library acquisition.

However, little is known about the productivity and collaboration patterns in publishing papers among lecturers of individual Universities, particularly the University of Maiduguri. It was only Mommoh (1995) who has published a research paper on the characteristic of authors in the Annals of Borno, the University of Maiduguri's main journal whose main contributors are lecturers of the University. The absence of such a study motivated the present study. Preliminary survey of the publications output of some lecturers of them of the University of Maiduguri and interviews held with some of them revealed that they faced difficulties in getting their papers published. Some of them did not publish at all.

Certainly, this has led to a situation where many of them are frustrated particularly during promotion exercises in which publications are demanded. Some lecturers have even drifted to administrative organisations, where publications are not required for promotion. Then, one wonders what factors are responsible for the inability of some lecturers to publish regularly. It is this observation that stimulated the present study of publications output of the University of Maiduguri lecturers. It represents an effort to relate lecturers productivity output in humanities, social sciences, natural sciences and applied sciences.

Infact, this situation of the lecturers goes against the importance which the University of Maiduguri attaches to publications as evidenced in a section of the preface of the Annals of Borno, the university's major interdisciplinary journal: "the university decided to sponsor the publications of this journal because of the importance attached to encouraging inter disciplinary research in a developing university of a developing country (Aminu, 1986:v). The purpose of this study therefore is to examine the publications output, collaborative publications output and factors affecting publications output of the University of Maiduguri lecturers.

Different types of laws have been introduced in the field of bibliometric studies more especially in the area of productivity output.

A search through library and information science abstracts from 1979 to 1995 however, revealed that Lotka's law has received quite a lot of attention and has been applied on a wide scale with success. It is this observation that stimulated the present research to determine whether the lecturers publications output conformed with Lotka's law.

1.3 RESEARCH QUESTIONS

This study sets out to answer the following research questions:

1. What are the differences among lecturers in the Humanities, Social Sciences, Natural Sciences and Applied sciences, concerning the frequency of their publications output ?

2. What are the differences among lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences, concerning the frequency of their collaborative publications output?
3. What are the differences among lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences concerning the factors that affect their publications output?
4. Is there any difference between the observed publications output by the lecturers of the Humanities and their expected publications output based on Lotka's law?
5. Is there any difference between the observed publications output by the lecturers of the Social Sciences and their expected publications output based on Lotka's law?
6. Is there any difference between the observed publications output by the lecturers of the Natural Sciences and their expected publications output based on Lotka's law?
7. Is there any difference between the observed publications output by the lecturers of the Applied Sciences and their expected publications output based on Lotka's law?

1.4 RESEARCH HYPOTHESES

Based on the above research questions, these research hypotheses were introduced as follows:

HO:1 There is no significant difference among lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences concerning the frequency of their publications output.

HO:2 There is no significant difference among lecturers in Humanities, Social Sciences, Natural Sciences and Applied Sciences concerning the frequency of their collaborative publications output.

HO:3 There is no significant difference among lecturers in Humanities, Social Sciences, Natural Sciences and Applied Sciences concerning the factors that affecting their publications output.

Ho:4 There is no significant difference between the observed lecturers publications output in the Humanities and their expected publications output based on Lotka's law.

Ho:5 There is no significant difference between the observed lecturers publications output in the Social Sciences and their expected publications output based on Lotka's law.

Ho:6 There is no significant difference between the observed lecturers publications out put in the Natural Sciences and their expected publications output based on Lotka's law.

Ho:7 There is no significant difference between the observed lecturers publications output in the Applied Sciences and their expected publications output based on Lotka's law.

1.5 OBJECTIVES OF THE STUDY

The objectives of this study are to analyse the publications output and the factors affecting the lecturers of the University of Maiduguri from publishing. In the light of this, the study will:-

1. Determine the differences in the publications output among lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences.
2. Determine the difference among lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences concerning co-authored publications output.
3. Determine the difference among lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences concerning the factors that affect their publications output.
4. Determine the defference in the observed and expected publications output among the lecturers in the Humanities, Social Science, Natural Science and Applied Sciences based on Lotka's law.

1.6 SIGNIFICANCE OF THE STUDY

This study would be useful to the lecturers of the University of Maiduguri in that it would reveal the publications output of lecturers in the faculties and departments for referencing and consultation purposes. The study would also reveal those who have published much and those who

have published less for the benefit of the authorities and experts in their various areas of specialization.

The research will be useful to the University authorities in ascertaining the number of lecturers who have identified themselves with the University's objective regarding publications of research papers.

It would open other areas of further research in the intellectual productivity of the University Lecturers.

It may also serve as a platform for comparative studies in the trends and patterns of pubulications output at inter University level.

The study would also be useful to lecturers themselves, in that it would reveal the extent to which collaborative publications stand as a motivating factor in establishing good spirit of cooperation and understanding for progress in academic profession.

The study is also important in that it would reveal the factors that affect the publications output of lecturers of the University of Maiduguri. The identification of these factors would assist the lecturers and the university authorities in determining high and low productive lecturers.

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1.7 BASIC ASSUMPTIONS

The assumptions made in this study are:

That the responses of lecturers concerning the number of publications output, collaborative publications output and factors affecting publications

output they have in the questionniare are the true numbers.

That all lecturers publish but the research would reveal whether single or collaborative authorship as well as factors affecting lecturers publications would be determined.

1.8 SCOPE AND LIMITATION OF THE STUDY

This study examined the publications output of lecturers of the University of Maiduguri who are presently on the University's payroll. Those who left the University on retirement, study leave, secondment, sabbatical leave, political assignments, Graduate Assistant, Tutors, and Academic Librarians are not part of the study.

The study was limited to the publications output of lecturers of the University of Maiduguri from 1975 up to the academic year 1997/1998 as indicated by them. It is further limited to the publications output of lecturers on the ground during the 1997/98 academic year, and the responses of staff member as collected from the questionnaires they filled regarding their productivity.

1.9 OPERATIONAL DEFINITION OF TERMS

1. Publications Output:Intellectual contribution of an author in the form of books, journal articles and research papers.

2. Bibliometric Analysis: The application of mathematical methods to books and other media of communication.
3. Factors: Contributive elements that hinder lecturers from publishing books, Journal articles or research papers.
4. Lotka's law. The study of productivity distribution among authors.
5. Lecturer: the university academic staff directly involved in the teaching as their primary duty. The tutors, technicians and academic librarians are excluded.
6. Collaborative publications: persons who publish papers jointly.

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CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

The literature on lecturers publications output is very scanty, because not much has been written on the subject. Certainly, there is considerable literature on productivity of authors in specific subject fields or on geographical areas. The chapter reviews literature related to author productivity and collaboration. It is organized under the following sub-headings, namely, concept of author productivity, research publications and collaboration and factors influencing publications.

2.2 CONCEPT OF AUTHOR PRODUCTIVITY

According to the second edition of the Anglo-American Cataloguing Rules, (AACRII) Author is the one who is chiefly responsible for the creation of the intellectual or artistic content of a work. The Bibliometrics Dictionary (1994) defined an author as maker and originator. Aiyepeku (1996:55), stressed the importance of authors as creators of the intellectual output in subject literatures. He further described an author as critical to the cumulative literature of a discipline and warned that the study of the characteristics of subject literatures would be incomplete if it did not

include a study of the quantity and the rates at which authors published in the subjects. Authors are the backbone to the cumulative literature of any discipline. No matter what editors and publishers add to or subtract from manuscripts, the output results remain the author's contribution. Aiyepeku's work is related to the present study in the sense that lecturers who have published papers are referred to as authors . Some lecturers in the University of Maiduguri have published papers in order to advance the growth of knowledge in their respective fields.

The rationale for analysing lecturers productivity in this study lies in the fact that one of the hypotheses being tested concerns the publications output of lecturers from the Humanities, Social Sciences, Natural Sciences and Applied Sciences.

Infact, studies devoted to the publications rates and productivity patterns of authors have become topical in bibliometrics since Bradford (1953). Studies by Zuckerman (1967), Subbaiah (1984), Barko-Ampen (1993), on Analysts of the literature of crop science in Ghana, 1977 - 1992. These studies though not specifically on lecturers in one university are related to the present study in the sense that the productivity patterns of the publications output of lecturers in Humanities, Social Sciences, Natural Sciences and Applied Science was determined. In the same vein, studies by Bottle (1993) discussed the publications rate of British chemists . The relevance of this publications rates to the present study is that the

KASHIM IBRAHIM LIBRARY

lecturers publications output in the Natural Sciences, Applied Sciences, Social Sciences and Humanities were analysed. Shailendra and Sen (1992), Maclean and Janagap (1993) developed bibliometric measures for evaluating the quality of research centres and scientific output respectively using author productivity data. The relevance of these studies to the present one is that this study examined and evaluate the quality of lecturers publications output in the Humanities, Social Sciences, Natural Sciences and Applied Sciences by application of statistical techniques.

Borgman (1989:589) reported that in an earlier study he found that Science teachers are more productive in productivity output than non Science teachers. But is the assertion that the productivity output of Science teachers are more than non Science teachers true among lecturers of Humanities, Social Science, Natural Sciences, and Applied Sciences of University of Maiduguri. This study will provide the answer.

Apart from studying the patterns and rates at which authors published, bibliometric law will be used for quantifying author productivity. An example is Lotka' s inverse square law which has been used by Schorr (1975:189), to quantify author productivity in librarianship. According to him, a search through the literature revealed that Lotka' s inverse law has not received the required attention in the direction of quantifying author productivity. The study by Schorr is relevant to the present study in that the present study quantified the productivity of the University of

Maiduguri lecturers.

The study by Coile (1977:368) sought to examine the impact of Lotka's frequency distribution on scientific productivity. He used the Lotka's law to determine the applicability of inverse law on chemists and physicists. He found that the law was applicable. This study is relevant to the present study in that the lecturers publications output of the Humanities, Social Sciences, Natural Sciences and Applied Sciences was used. The study of Kermizan (1979:52) sought to examine the impact of Lotka's law on computer science literature. He used the law to determined whether Lotka's law conforms to computer science subjects. He found that there was no significant difference. His study is relevant to the present study in that the present study determined the Lotka's law conformity to Natural Sciences Social Science and Humanities lecturers.

In the study by Murphy (1973:459) observed that the Lotka's law on the Humanities was not appropriate. According to him, the law is only applicable on science and technology. The present study also examined the suitability of lotka's law on Humanities lecturers.

2.3 RESEARCH PUBLICATIONS AND COLLABORATION

The study examined the research publications and collaborations in publications output of University of Maiduguri lecturers.

A study by Tahir (1996:80) observed that writing for a group of people who have never grown up in the culture of writing is a harrowing exercise. Supporting this view Nababa (1995:7) has noted, rightly too, that writing is an onerous task. He reiterated that even accomplished writers never claimed that writing is a simple undertaking. He further found that publications and research are difficult business because it engages an individual not only physically but, most importantly, mentally. The study is relevant to the present research in that the present research determines the output of the lecturers in terms of the publications and research.

In a similar vein, Tahir (1996:72) observed that writing is crucial to academic excellence. According to him an academician writes primarily as a custodian of knowledge, to advance human understanding and to enrich the entire human civilization. From the aforementioned facts, writing requires grandeur and in depth analysis. The most demanding feature in this kind of writing is research as well as constructive arguments.

In a related study, Subramanyam (1983:38) quoting Price and Beaver, noted that patterns of authorship should reflect the degree of collaboration. He further noted that co-authorship practice varies widely and depends on the attitude and perception of the individuals involved, as well as the policies and tradition of the organisation.

Certainly, Patterson (1985:32) also observed that publications in a referred journal is often used for seeking tenure and advancement in the

professional ranks. He further revealed that a scholarly referred journal usually aids in publishing the best research and it speaks well for review performance and attempt to correct faults that become apparent.

In another related study Haiqi (1996:116), in the bibliometric study on basic literature of acupuncture in Medicine reported that the number of authors per article increased: 12.27% of the articles have one author, 15.11% have two authors, 21.96% have three authors, 18.86% have four authors and 15.76% have five authors. The mean number of authors was 2.68, a figure that is lower than that of Chewis's (1988:233) on study of co-authorship in Radiology with a mean number of authors of 3.53 in 1980. Xia's (1993) on Bibliometric analysis Authors and Key Authors reveals a mean number of authors of 4.40 in 1989 to 1991. This research examined the contributions of lecturers towards collaborative work in percentages, as well as the mean differences among lecturers in University of Maiduguri.

Recent research such as Karki (1996), on author co-citation analysis, White (1990), on author co-citation analysis, overview and defense, McCain (1990), on mapping authors in intellectual space, Bellardo (1982) on the co-authorship in the study of science and Halperin (1992), on multiple authorship have consistently shown differences in collaborative works. They observed that co-authorship in science was a useful research methodology. Their research was relevant to the present study in that the extent of collaborative output of University of Maiduguri lecturers was to

be determined. The bibliometric analyses employed in this study and the mode of sequence in collaborative work done by the lecturers revealed which discipline carried out collaborative work and to what extent.

In a study by Subramanyam (1983:37) suggested that bibiometric method is the most unobstrusive, less arbitrary and more objective approach to the study of research collaboration. It is easily quantifiable and invariant. The present study of collaboration among lecturers of the Humanities, Social Science and Applied Sciences represents an effort to analyse collaborative publications among lecturers of the University of Maiduguri.

In the same vein, Lawani (1980:94) observed that the proportion of quality papers increases as the number of authors per paper decreases. In the same vein, Umar (1993:57) confirmed that papers authored by two or more scholars tend to be more qualitative than those authored by single authors. These studies are relevant to the present study in that the quantity of publications by the university of Maiduguri lecturers will be analysed and determined.

In the developed countries, science oriented discipline have more collaborative work than non science disciplines. Zuckerman (1967) confirmed that the bibliographies of Nobel laureates in science reflect a greater extent of collaborative research. Afolabi (1987) made a comparative study of author collaboration in the periodical literature of library and

information science on Nigeria, India, United Kingdom and U.S.A. He found that author collaboration was generally low in the four countries he studied. The research finding of the study was important to the present study in that the present study comprises Faculties of Sciences, Social Science and Humanities, for the low and high productivity output of collaboration will be determined.

Indeed, collaborative authorship is an important issue that has frequently been studied in bibliometrics. The extent of collaboration among authors in a discipline is a measure of research quality and nature of the subject matter being dealt with. Schrader (1985) also asserted that in most fields of the Natural and Human Sciences, collaboration was taken to be a sign of development and maturity. Lawani (1980:95) noted that the collaborative or team approach was preferred research strategy of many organisations. For example, all the international agricultural research centres supported by the Consultative Group on International Agricultural Research are organised on a multi-disciplinary basis and expected to conduct their research collaboratively. The present study also examined the extent of collaborative spirit among the faculty members of the University of Maiduguri.

It is worth noting that the most productive authors identified in an earlier study by Clarke (1971:823) were found to be highly collaborative. This agree with White and Griffith (1982:257) and Darton (1983:534). Their

research findings revealed that the most productive members amongst scientist are the most collaborative in their publications and research.

The observations made by Pau (1981:330) that co-authorship establishes a relation among authors which measured of the extent to which they communicate directly. Collaborative in effect strengthens the relationship between the collaborators.

Similarly, Beaver (1979:234) observes that collaborative among Scientists makes Science to be richer, more specialized, larger, more productive, more popular, more visible, and more influential at all times. This applies to the present and future as it was in the past. In a similar vein, Cole (1973) found that the diffusion of the work of a co-author of low status occurs more rapidly when coupled with the name of a higher status scientist. He further lamented that authors of little or no scientific repute therefore benefit from having high repute collaborators.

However, Aminu (1986) revealed that publications and research promote universities to fully develop as centres of competent thought, lofty behaviour and places where a genius blooms best. He further re-iterated that universities expand the frontiers of knowledge and advance civilization. He further observed that a University is an avenue for transmitting culture and values, for training the in heritors of the society to manage the future, stressing that they are is a seat of learning where achievements are recorded through research and publications. This is why publications and

research are very important in any given University.

2.4 FACTORS INFLUENCING PUBLICATIONS

Inspite of the under funding of universities and devaluation of the Naira, publishing of papers is imperative for the lecturers self development, higher status, promotion and salary. Aminu (1986) revealed that funding is very important in any anticipated development. In this regard, the researcher will examine the extent of funding provided for the lecturers of the university to facilitate research and publications. Seavey (1996:12) agrees with Jenkins and Morley (1991) when they pointed out that funding for academic institutions which emphasize research will put pressure on the management to supply the institutional library with money to acquire serial titles and bibliographic search facilities, to aid the lecturers in publishing.

Infact, Darton (1983:535) reasoned with Richardson (1977) that many articles submitted for publications have been written by non professionals. Most people would never write about a recent experience. Khandwall (1983:67) reasoned with Darton (1983) and Richardson (1977:23) that publications was generally an act of creativity. He further noted that creativity is not one's ability but a whole cluster of abilities which include fluency, flexibility and originality. The researcher opined that creativity and intelligence are the bed-rock for the presentation of

qualitative intellectual output. These studies are relevant to the present study in that it examines the extent to which the University of Maiduguri lecturers exhibit their creative talents and intellegence in their research publications. Stinchcombe (1994:290) revealed that scientific work is intended to produce new knowledge or innovation. Its quality can not be judged using routine procedures but requires evaluation by a designated audience. The aforementioned assertion is relevant to the present study in that this research examined the frequencies of new knowledge or innovation and its quality through analysis of lecturers publicationsoutput.

It was observed by, Zuckerman (1967:391) observed that referees help to maintain quality in articles. Journals that do not use referees are viewed with suspicion. Rex (1988:145) confirmed that referring does not only aid editoral decisions but also serves as a factor that contributes to the education of the author. These studies are relevant to the present study in that the study to examines whether lack of referee affects publishing manuscript

It was in, Clemen (1995:258) revealed that publications was a means of conveying information to a larger public. Similarly, Ladele (1992:122) quoting Osofisan (1991) and Aguda (1991) observed that "life would be stifled out of creative work and that a nation would die intellectually if publishers in Nigeria refuse to publish or shy away from the publication of trade books. These works are relevant to the present research in that the

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study examined whether publishers are among the factors militating against publications of manuscripts submitted.

In the same vein, Lang (1994:268), revealed that publishers and authors wanted the integrity of publications and the rights of copyright holders to be preserved. He further noted that politics in publications hinder the authors contribution to knowledge. As a result, the authors are encountered with a lot of problem in publications. This study supports Aguolu and Aguolu (1998:122) that politics between publishers and authors hinder manuscripts from being published.

Similarly, Jaygbay (1998:114) observed that the selection of papers for publications by some University Presses is increasingly based not only on scholarly merits but on political considerations as well. He further lamented that the presence of this situation has created a lot of in-fighting among scholars in African University campuses and consequently led to some lecturers unproductive in research and publications. This study is relevant to it in that the present study examined whether the lack of publications by some lecturers is caused by politicization by presses.

It was also observed by, Herbert (1993:293) that scholarly publications is the achievement of academic credit. The researcher through bibliometric analysis determined the publications output of the lecturers of the University of Maiduguri in the Humanities, Social Sciences, Natural Sciences and Applied Sciences, in respect to such factors as academic

credit, status or monetary reasons.

Similarly, Duran (1995:517) observed that researchers and scholars must identify with their audience with whom they intend to communicate. He further re-iterated that articles that are difficult to read and cannot be comprehended may not be published.

In a study by Olsgaard (1984:29) examined success among academic librarians in U.S.A. by using their publications output. His research finding showed that there was no significant difference between men and women in publications output. However, Edem (1995:25) disagreed with Olsgaard (1984:38) in the assertion that male and female librarians are about the same in relation to publications output. Infact, this result is similar to such studies and at the same time dissimilar to those of other studies. For instance, Nwafor (1987) revealed that female librarians published more than male librarians. Bozimo (1988) revealed that the "publish or perish" syndrome are contributory factors to the activities of productive authors. She further asserted that some productive language authors are not cited in proportion to their rate of productivity, while some of the averagely productive authors appear to have got the highest citations. This assertion is of interest to the present study in that the research examined the productivity pattern of the lecturers of Applied and Natural sciences, Social sciences, and Humanities of the University of Maiduguri.

It was also revealed by Chakava (1996:14) revealed that the

University as an institution has been largely politicised, and a majority of University Professors are absorbed into the system. He also noted that creativity is stifled through the curtailment of literary seminars, journals and writers workshops, and a general lack of facilities or incentives to promote and reward academic excellence. The present study seeks to determine whether lack of facilities and incentives was a factor constraining research and publications.

Similarly, Emovon (1996:482) observed that there are a number of problems that beset research. He indicated that most scientists mention lack of funds as one of the primary constraints in scientific research. The present study seeks to determine whether funds was a factor constraining research and publications.

The World Bank (1990) observed that many Universities are having great difficulty in maintaining their financial integrity let alone achieving much by way of purposive level in widening access and furthering research. The relevance to the present study is that finance was examined as a factor in publication and research.

Infact, Umar (1993:66) observed that the absence of research and industrial laboratories and the poor state of the financial stand of Nigerian Universities are factors that contributed to the low extent of collaboration. This finding is relevant to the present study in that the study seeks to determine the factors that hinder publications output.

In the same vein, Tahir (1996:73) revealed that the general rise in the cost of stationaries and typing of manuscripts for publications has further compounded the inherent problems of academic excercise. He further found that assessment and acceptance costs, especially for locally published journals, could be frustrating. The finding is relevant to the present study which seeks to determine whether high cost of publications and assessment hinder lecturers from publishing.

A study by Aguolu and Aguolu (1998:126) revealed that since universities attach much importance to research and publications in the appointment and promotion of their academic staff, it is incumbent upon these institutions to develop their publishing programmes by adequately subsidizing their presses and their departmental and faculty publishing efforts. They further lamented that lack of funds is the general problem that hinder lecturers from publishing. The finding is relevant to the present study which seeks to determine whether lack of subsidy to the presses hinders lecturers from publishing.

2.5 Summary of Literature Review

From the literature review above, it is clear that no systematic inquiry had been conducted on Nigerian University lecturers to determine their publications output, and whether the core of productive lecturers' publications output comforms to Lotka's law. These are what the study set

out to do using the University of Maiduguri lecturers as a case study. There has been also few studies that have examined the factors affecting the pbulications output of the University of Maiduguri.

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CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

Chapter one of this thesis established the problem statement and justified its significance while chapter two reviewed the literature related to the area of investigation. The present chapter describes the methodology adopted to solve the problems identified. In this chapter the following specific aspects are discussed: The Research Design, the description of the population, the instruments for collecting data, the administration of the questionnaire, validity of the instruments, reliability of the instruments, administration of the interview and observation of documents. It also discusses the method of analysing the data. Frequency distribution, and percentages were generated from the data: Lotka's law of distribution and Kruskal Walli's Statistical test were employed in the analysis of data.

3.2 RESEARCH DESIGN

Nworgu (1991), explained that a research design is a plan, a structure, or a strategy of investigation conceived, so that answers are to be obtained from the research project involved through a variety of approaches. He held that the design provides the procedural outline for the conduct of any given investigation.

For the purpose of this research, a survey research design was adopted. This entails gathering of data about the target population through survey. Downie and Health (1994) defined this design as one in which a group of people or items are studied by collecting and analysing data from only a few people or entire population. They further explained that survey employs a variety of data gathering instruments or techniques such as questionnaires, interview and observation etc. If adequate steps are therefore not taken in the development of the instruments to ensure their validity and reliability, the data collected may be questionable.

This study therefore involves collecting and analysing data from the target population.

3.3 DESCRIPTION OF THE POPULATION

The target population for this study consisted of 583 University of Maiduguri teaching staff ranging from those in the category of assistant lecturers to professors. These are persons currently on the University of Maiduguri's payroll and on seat in the following broad areas of knowledge; Humanities, Social Sciences, Natural Sciences and Applied Sciences.

TABLE 3.1 DISTRIBUTION OF LECTURERS AND RESPONSE RATE BY BROAD AREAS OF KNOWLEDGE.

Broad Area of Knowledge	Number of Lecturers	Lecturers Response Rate	Percentage of Resp rate
Humanities	110	68	61.81
Social Science	118	76	66.60
Natural Science	117	75	48.72
Applied Science	238	190	79.83
TOTAL	583	409	70.13

(Sources) University of Maiduguri Academic Planning Record of 1997.

3.4 INSTRUMENTS FOR COLLECTING DATA

The instruments that were used for collecting data in this study were questionnaire, interviews, and documentary, analysis of records. The questionnaire was employed in order to gather relevant data on the publishing output of lecturers. According to Imoisilli (1996), research interview and questionnaire represent a direct method of collecting information and are considered first. Peretomode and Ibeg (1992), explained that questionnaire and interview are used by researchers specifically to convert into research data the information provided by respondents in an investigation. In determining the lecturers publications output and factors affecting their publications, questionnaire related to these aspects was

administered in the target population at the University of Maiduguri. The questionnaire was designed in such a way that individual lecturers wrote the number of his or her publications and indicated the factors that prevented them from publications.

3.4.1 ADMINISTRATION THE QUESTIONNAIRE

One set of questionnaire was administered on the University of Maiduguri lecturers within the targeted population. The questionnaire composed of items relating to the research questions and the hypotheses formulated for the purpose of the study. Respondents were required to answer in writing as well as tick in the box provided after every question. In the arrangement the questionnaire is divided into three sections as follows:

A) - Publications output.

B) - Collaborative publications output.

C) - Factors affecting publications output.

The questionnaire is very important to this study because it was converted into research data. The information provided by respondents determined what a respondent knows, what he thinks, and his experiences in his areas. Then, the information gathered was coded on to computer data sheet. Later analysis was carried out with a computer, using Statistical Package for Social Sciences (SPSS) which was transformed into quantitative

data. The raw scores obtained in the frequency distribution were converted to percentages. Raw scores in the various items from the computer output formed the basis for the data interpretation.

3.4.2 VALIDITY OF INSTRUMENTS USED

In order to have valid results, the instruments used for collecting data were tested. According to Oppenhein (1992), validity indicates the degree to which an instrument measures what it is supposed to measure. In fact, the validity of the questionnaire was established in this manner. First, the questionnaire items were given to the researchers supervisor. Some corrections were made. Items found to be vague were deleted or reconstructed.

Then, the modified questionnaire was given to five experts, one in each group of academic rank (Professor, Reader, Senior Lecturer, Lecturer 1, Lecturer 11). To give their ratings. The results were analysed through the application of Kendall's Coefficient of Concordance (W) (1948). The result was found to be W = 0.82 which shows that the questionnaire constructed is valid since its reliability is close to one (1).

3.4.3 RELIABILITY OF INSTRUMENT

The reliability coefficient of the data collected was statistically analysed. Daramola (1992:34) observed that reliability refers to stable,

consistent and dependable research methods, instruments and results. Indeed, this reliability test is important because the data are only as good as the instruments which collects them. The reliability of a test is the consistency with which it measures what is intended to measure. So the analysis was done through the application of the Pearson Moment Correlation Coefficient (PPMC) and Spearman Brown formula. This gave a correlation coefficient of 0.7015 and Spearman Brown reliability Coefficient was found to be 0.8245. These shows that the instrument has internal consistency and is reliable since the correlation reliability coefficient are all close to unity (or 1). Thus the questionnaire is suitable to be used for the study.

3.4.4 ADMINISTRATION OF INTERVIEW

Interviews were conducted with the lecturers after they have filled questionnaire for further clarifications.

Before the interview, the researcher identified the predecessors and successors of those who held the post of provost, deans, and head of department, and established cordial and good rapport so that essential report were given to the researcher. The structured interview schedule was used because it facilitates data analysis and estimation of validity and reliability of the instruments. Mikkelson (1995), observed that scheduled interviews spelt out the objectives of a research in terms of specific question

(1992), recommends the use of Kruskal Wallis H. test for testing an ordinal and independent variables from two or more groups either from same or different populations. Gupta and Gupta (1995) also recommend the H.test because it provides a non-parametric method in the analysis of variance for a one way classification.

Chi-Square goodness of fit was also used to test the significant difference between the observed lecturers publications output and the Lotka's Law of expected frequency. Lotka (1926) recommends the chi-square test to determine whether or not the frequencies observed in the sample differ significantly from expected frequencies.

3.5.1 FREQUENCY DISTRIBUTION

Frequency distribution was useful in that it aids in presenting data in a relatively organised and compact manner and gives a good overall picture. Frequency distribution tables and bar charts were used to organise and analyse data of lecturers in Humanities, Social Sciences, Natural Sciences and Applied Sciences.

3.5.2 PERCENTAGES

Percentages were used mainly in analysing data from the questionnaire. Akuezuilo (1990) suggested the use of percentages, because the percentages reduce different sets of numbers to a comparable set of a

common base. The lecturers' publications output was analysed and compared in percentages.

3.5.3 LOTKA'S LAW OF DISTRIBUTION

Alfred Lotka, an insurance company statistician, suggested a formula to measure scientific productivity in the discipline of chemistry and physics in 1926. He discovered that 60% of authors in a data set contribute a single article. As a result he formulated the bibliometric pattern known as "Lotka's Law".

The fundamental point of the law is that the number of scientific authors who wrote a given number of paper is inversely proportional to the square of the number of papers. Basically it is assumed that few authors contribute the most and most of them contribute a few number of papers. Based on this, he also hypothesized that the number of authors making n contributions would be approximately $1/n^2$ of the number making a single contribution. In other words, the number of authors making two contributions would be 3 of those making one; The number of authors making three would be 1/9 of those making one; the number of authors making four would be 1/16 of those making one; e.t.c.

The Lotka's Law was applied to the present study in order to determine the conformity of the law with the publications output of the University of Maiduguri lecturers. The formula given by Narin and Moll

(1977:36) was also used in order to determine the Lotka's expected frequency.

($P(n) = k/n^2$)

Where p = the number of authors producing n papers

n = the number n paper 1, 2, 3, 4, ... etc

k = the constant characteristic of a particular subject area.

Therefore, to determine the expected value of Lotka's n papers the relation was employed

$$p(n) = \frac{60}{n^2} \text{ of } \frac{2135}{100}$$

$$1 = \frac{60}{1^2} \text{ of } \frac{2135}{100} = 1281$$

$$2 = \frac{60}{2^2} \text{ of } \frac{2135}{100} = 320$$

$$3 = \frac{60}{2^3} \text{ of } \frac{2135}{100} = 142 \text{ e.t.c}$$

Then, the Lotka's expected frequency is calculated and compared with observed lecturers publications output through the application of chi-square (x^2) goodness of fit to test the hypotheses.

3.5.4 KRUSKAL-WALLIS STATISTICAL TEST

In determining the hypotheses, the Kruskall Wallis H. test (1952) was employed. The formula for H.test is given below.

$$H = \frac{12}{N(N+1)} \sum \frac{Rj^2}{Nj} - 3(N+1)$$

Where k = the number of groups in the analysis

Nj = the number of observation in the jth group

N = Σnj, the total number of observations in the analysis.

Rj = The total of the ranks in the jth group (column).

Σ = Directs one to sum over the k groups (column).

The degree of freedom for H. test is k-1. Thus, if the value of H observed is greater than or equal to 5.99 the null hypothesis will be rejected. But when the value of H observed is less than 5.99 the null hypothesis is accepted.

If H obs < 5.99, accept HO:)

If H obs $ 5.99, reject HO:)

The reason for using a non-parametric statistics of this nature is because the conditions underlying the use of parametric statistics are not fulfilled. For instance the variables to be tested are not normally distributed and the data are ordinal. The Kruskal Wallis H. test was used for determining significant differences among lecturers of Humanities, Social

Sciences, Natural Sciences and Applied Sciences with respect to the frequency of their publications output, collaborative publications output as well as factors affecting publishing.

3.6 SUMMARY AND CONCLUSION

This chapter explains in detail the research design, describes the population, and the kind of instruments used for collecting data. It also shows how the questionnaire was administered, how interview was administered, and how documents were observed. It also explains that the method used for the analysis of the data was through percentages, as well as Lotka's Law and Kruskal Wallis test to examine the hypotheses.

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CHAPTER FOUR

ANALYSIS OF DATA AND INTERPRETATION OF FINDINGS

4.1 INTRODUCTION

The chapter is concerned with the analysis of data and interpretation of the findings. These are based on data collected on the publications output of lecturers of the University of Maiduguri. It begins with a brief description of the respondents by Broad areas of knowledge namely, lecturers of the Humanities, Social Science, Natural Sciences and Applied Sciences who constitute the target population of the study.

Frequency tables, cross tabulation charts and results of the test which led to the rejection or retention of the hypotheses for the study are reported. A probability H. value of 5.99 and chi-square significance value of 0.05 were adopted as the basis for the rejection or acceptance of the hypotheses.

A total of 409 lecturers completed and returned copies of the questionnaire sent out to a total of 583 lecturers. This gives a response rate of 70%. This study was therefore based on a total of 409 respondents from the following broad areas of knowledge. Calculating from the base number of 409, the response rate was Humanities sixty eight or 16.60% respondents, Social Sciences seventy-six or 18.60% respondents, Natural

Sciences seventy five or 18.30% respondents and Applied Sciences one hundred and ninety or 46.5% responddents.

Table 4.1 DISTRIBUTION RATE OF RESPONDENTS BY BROAD SUBJECTS AREAS

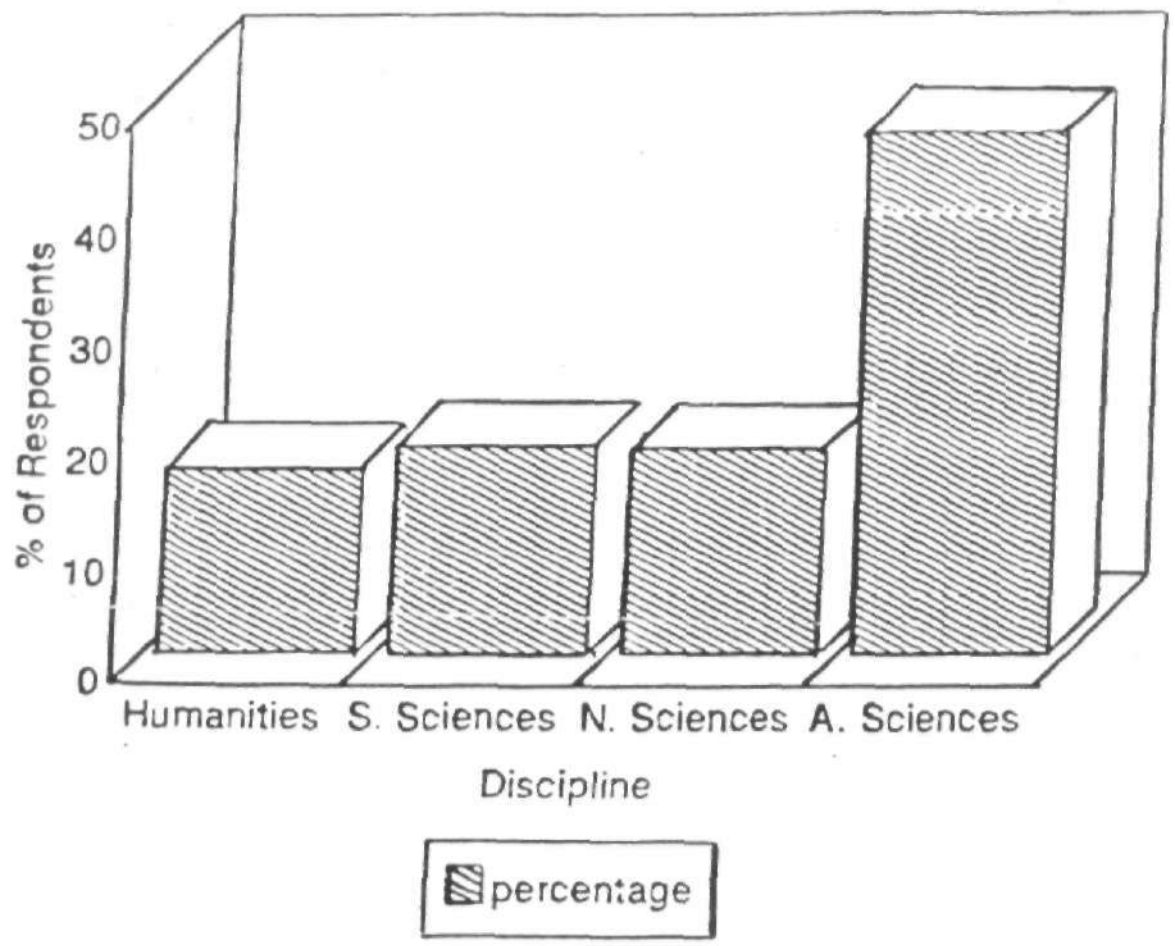
Broad Areas of Knowledge	Frequency	Percentage
Humanities	68	16.60
Social Sciences	76	18.60
Natural Sciences	75	18.30
Applied Sciences	190	46.50
TOTAL	409	100

An examination of table 4.1 shows that the lecturers in the Applied Sciences formed the majority (190 or 46.5%), followed by the lecturers in the Social Sciences (76 or 18.60%). The lecturers in the Natural Sciences were 75 (or 18.30%) while those in the Humanities were the least with 68 (or 16.60%). See fig 4.1

From an informal interview held with the Head of Department of Gynaecology it was revealed that the University of Maiduguri's second Vice-Chancellor, Professor Jibril Aminu, employed three quarter of the first set of MBBS graduates and some Science students as graduate assistants.

This probably helps to account the high number of academic staff in the Applied Sciences.

Fig. 4.1: Distribution of Respondents by their Discipline



4.2 ANALYSIS OF DATA AND DISCUSSION OF FINDING

4.2.1 DIFFERENCE INPUBLICATIONS OUTPUT

A matter of interest to the study is the difference in publications output of lecturers in four broad areas of knowledge.

Table 2 DISTRIBUTION OF RESPONDENTS SHOWING RATE AND QUALITY OF CONFERENCE PUBLICATIONS OUTPUT

Rate of Respondents Publications Output	Applied Science		Natural Science		Social Science		Humanities	
	Freq.	%	Freq	%	Freq.	%	Freq.	%
Non Respondent	22	11.6	1	1.3	31	40.8	19	27.9
1 - 4	114	60.0	37	49.3	25	32.9	20	29.4
5 - 8	20	10.5	4	5.3	9	11.8	10	14.7
9 - 12	6	3.2	2	2.7	8	10.5	8	11.8
13 -16	9	4.7	1	1.3	-	-	10	14.7
17 above	19	10.0	30	40.0	3	3.9	1	1.5
Total	190	100	75	100	76	100	68	100

An examination of table 2 reveals that within the range 1 to 4 the Applied Sciences recorded the highest number of conference publications output (114 or 60.0%). The least are the lecturers in the Humanities (20 or 29.4%). Then interestingly within ranges 5 to 8, 9 to 12 and 13 to 16

respectively the Humanities respondents topped the majority in conference publications output. In range 17 and above the Natural Scientists had the highest output: (30 or 40%). See figure 4.2.

In view of the above analysis, the reasons for low productivity by Social Science respondents could be in part adduced to the absence of external aids support from charitable organizations. This supports an interview held with the Deans of Social Sciences that the Social Scientist are not getting external research grant as the scientist lecturers do. This is also in line with Stinchcombe (1994:290) that scientific works are heavily sponsored by charitable organization because scientific research produce new knowledge and innovations than the other branches of knowledge.

Fig 4.2 Distribution of respondents showing their conference publications output

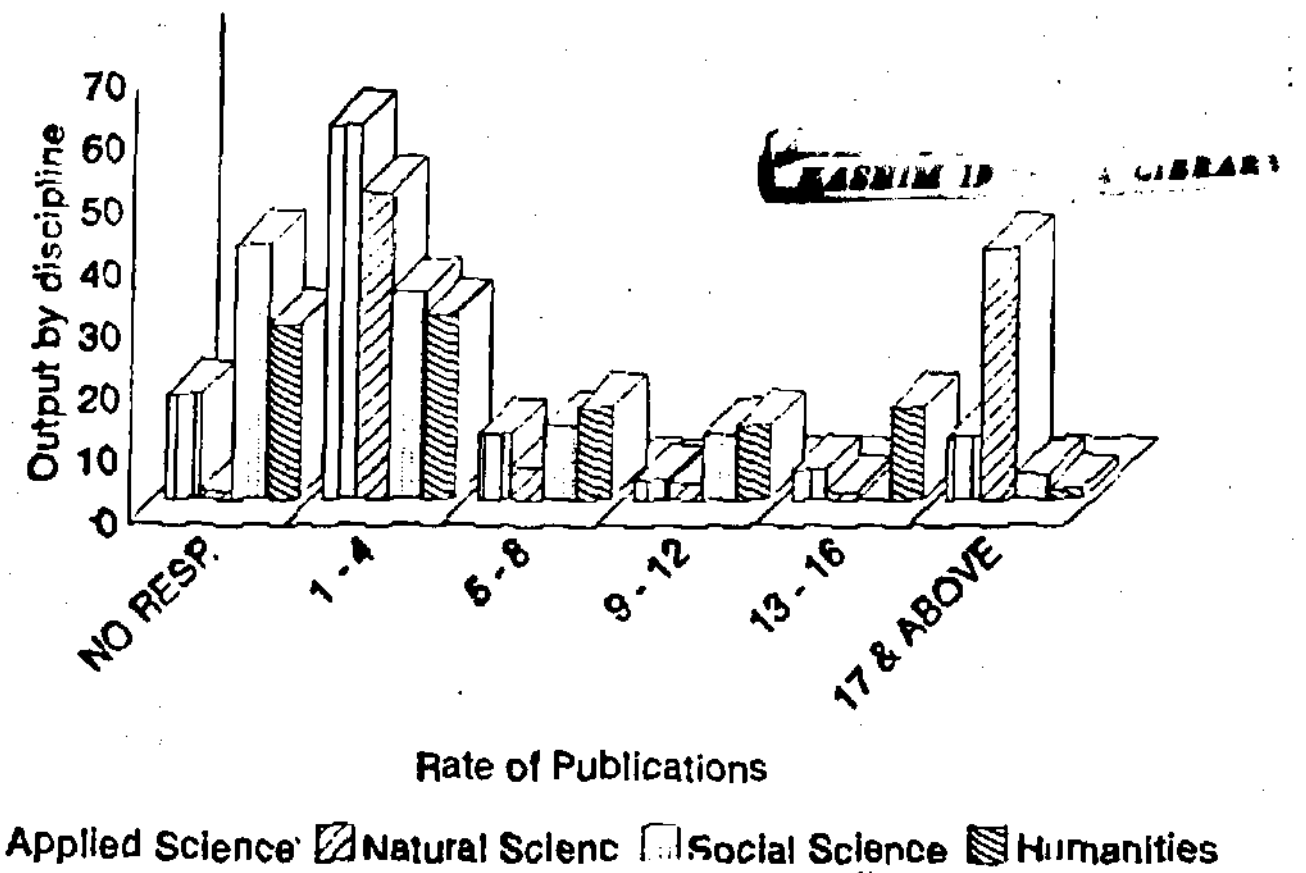


Table 3 Distribution of Respondents showing Rate and Quantity of Journal Publications Output.

Rate of Respondent Publications Output	Applied Sciences Freq.	%	Natural Sciences Freq	%	Social Sciences Freq.	%	Humanities Freq.	%
Non Respondent	17	8.9	-	--	9	11.8	20	29.4
1 - 4	100	52.6	40	53.3	34	44.7	14	20.6
5 - 8	30	15.8	2	2.7	4	5.3	4	5.9
9 - 12	8	4.2	2	2.7	14	18.4	24	35.3
13 -16	15	7.9	2	2.7	7	9.2	1	1.5
17 above	20	10.5	29	38.7	8	10.5	5	7.4
Total	190	100	75	100	76	100	68	100

An observation of table 3 of journal productivity output, showed that the Applied Science respondents formed the overall majority in ranges 1 to 4 with 100 (or 52.6%), range 5 to 8, with 30 (or 15.8%), and range 17 above with 2 (or 10.5%). Similarly Humanities respondents produced the least output as indicated from ranges 1 to 4 with 14 (or 20.6%), range 13 to 16 with 1 (or 1.5%). (See fig. 4.3).

The problem of low publications output by the Humanities respondents would be infered as strains and stresses involved in the writing of papers with books that are probably not available in the University

Library. Nababa (1995:7) observed that publication is an act that requires grandeur, indepth analysis as well as constructive arguments that are only enjoyed by those who are grown in the nature and 0culture of writing. This also was supported by the Deans of Arts through an interview conducted that lecturers face stress in writing papers. As a result only few lecturers publish.

Fig 4.3 Distribution of respondents showing their Journal publications output

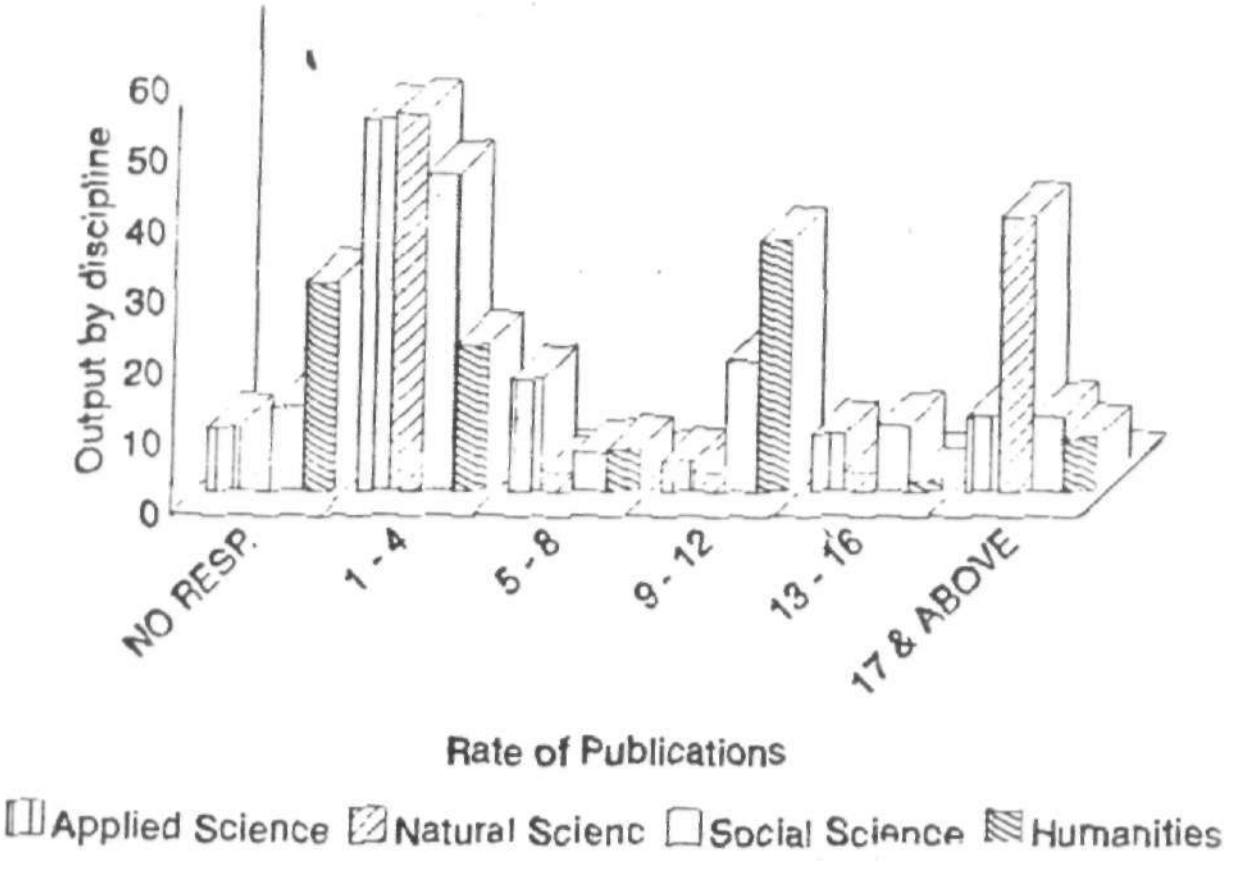


Table 4 Distribution of Respondents showing Rate and Quantity of Monograph Publications Output.

Rate of Respondent	Applied Science		Natural Science		Social Science		Humanities	
Publications Output	Freq.	%	Freq	%	Freq.	%	Freq.	%
Non Respondents	139	73.2	24	32.0	43	56.6	33	48.5
1 - 4	14	7.4	30	40.0	22	28.9	32	47.1
5 - 8	17	8.9	4	5.3	-	--	-	--
9 - 12	-	----	--	--	8	10.5	1	1.5
13 -16	8	4.2	1	1.3	--	--	-	-
17 above	12	6.3	16	21.3	3	3.9	2	2.9
Total	190	100	75	100	76	100	68	100

The analysis of Table 4 shows that the Applied Sciences respondents in range 1 to 4 recorded the highest rate of productivity output in monographs with 32 (or 47.1%). The Natural Sciences respondents came second with 30 (or 40.0%). This is followed by Social Sciences with 22 (or 28.9%). In ranges 17 and above only Natural Sciences respondents has high publication output. (see fig 4.4).

The analysis implies that Monograph publication involves a great deal of cash flow investment and risk. That is probably reason the for the high rate of non productivity within the four areas of knowledge. This supports Swigger contention (1995:108) that monograph involves a great deal of cash

flow, and expensive inventory. He further lamented that unsold copies, particularly concerning subjects for which information changes rapidly have virtually no value.

Fig 4.4 Distribution of respondents showing their Monographs publications output

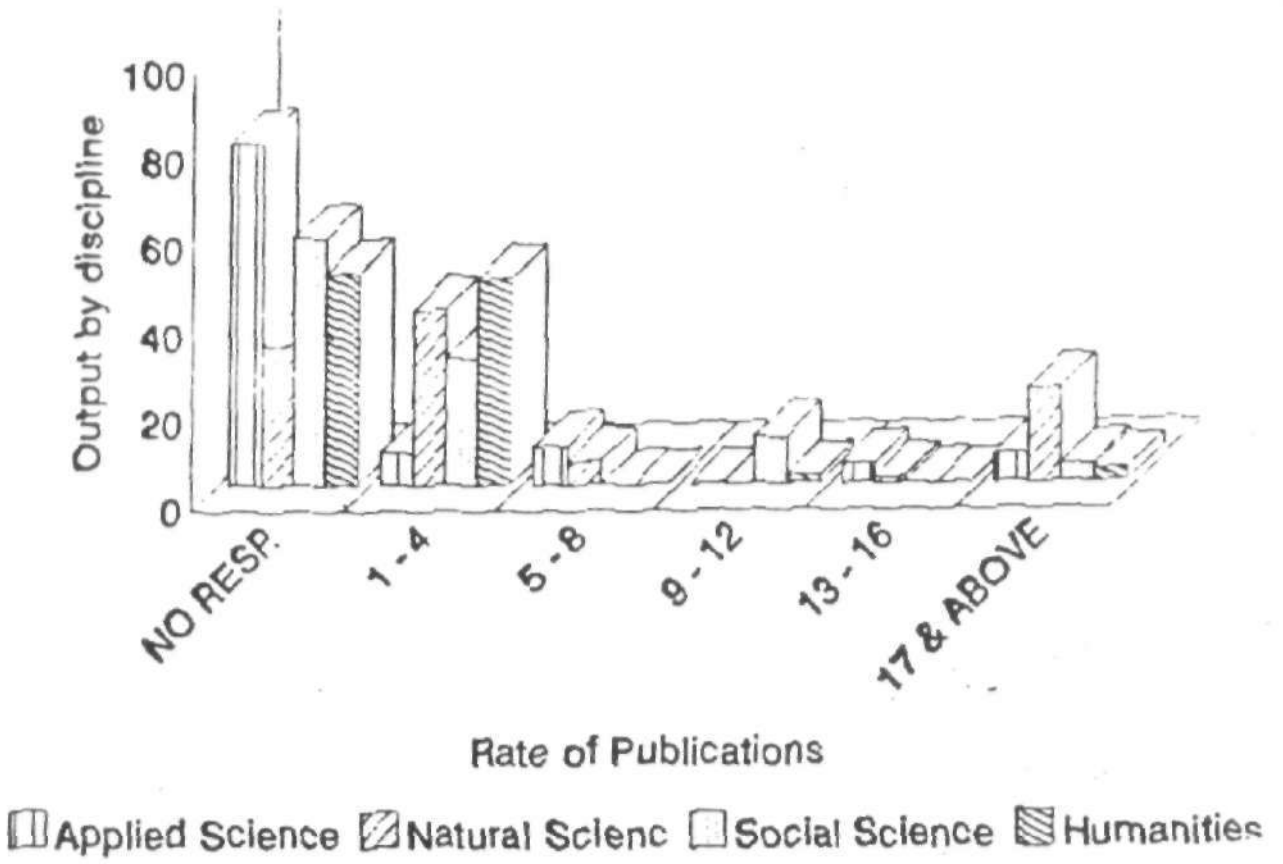


Table 5 Distribution of Respondents Showing Rate and Quantity of TextBooks Publications Output.

Rate of Respondent Publications Output	Applied Sciences Freq.	%	Natural Sciences Freq	%	Social Sciences Freq.	%	Humanities Freq.	%
Non Respondent	123	64.7	25	33.3	60	78.9	50	73.5
1 - 4	22	11.6	18	24.0	7	9.2	4	5.9
5 - 8	24	12.6	21	28.0	2	2.6	8	11.8
9 - 12	1	0.5	--	-	-	-	-	-
13 -16	3	1.6	1	1.3	-	-	-	-
17 above	17	8.9	10	13.3	7	9.2	6	8.8
Total	190	100	75	100	76	100	68	100

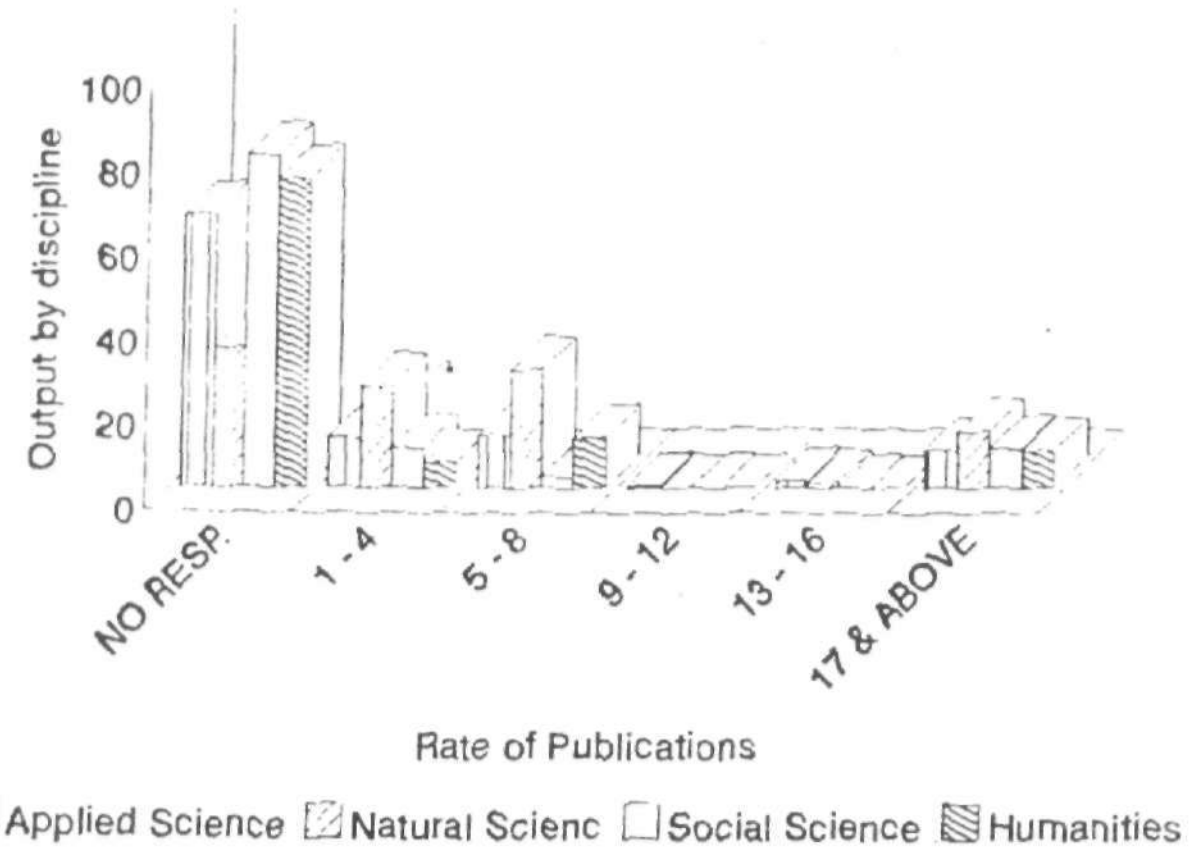
Table 5 shows the respondents textbooks productivity output among natural Scientists is evident in range 1 to 4 with 18 (or 24.0%) and in range 5 - 8 with 21 (or 28.0%). The non productivity output in textbooks by respondents is high. Certainly, only Natural Science repondents had the least number of non productivity rate of 25 (33.3%). (See figure 4.5).

The non participation in textbook publications by respondents of Scientists and non Scientists, could be infered as a result of the high cost of publications.This supports the work reported by Tahir (1996:73) that the general rise in the cost of stationaries and typing of manuscripts for publicationshas further compounded the inherent problems of academic

exercise.

Similarly, the University Authority may give preference to books and Journal Articles more than conference and Monographs. These are however, situations where the department may sponsor such a publication as occassional papers.

Fig·4.5 Distribution of respondents showing their Text Books publications output



4.2.2 DIFFERENCE IN COLLABORATIVE PUBLICATIONS OUTPUT

An important aspect of this investigation is the determination of the the differences in collaborative publicationsoutput in the four broad areas of knowledge; namely, Natural Sciences, Applied Sciences, Social Sciences and Humanities.

Table 6 Distribution of Respondents showing are Rate and Quantity of Conference Collaborative PublicationsOutput.

Rate of Respondent PublicationsOutput	Applied Science Freq.	%	Natural Science Freq	%	Social Science Freq.	%	Humanities Freq.	%
Non Respondent	23	12.1	1	1.3	39	51.3	42	61.8
1 - 4	118	62.1	55	73.3	24	31.6	17	25.0
5 - 8	22	11.6	9	12.0	9	11.8	5	7.4
9 - 12	2	1.1	2	2.7	-	-	-	---
13 -16	11	5.8	5	6.7	1	1.3	1	1.5
17 above	14	7.4	3	4.0	3	3.9	3	4.4
Total	190	100	75	100	76	100	68	100

An examination of Table 6 shows Applied Sciences respondents formed the majority with 118 (or 62.1%) from range 1 to 4. Then, followed by the Natural Sciences with 55 (or 73.3%) from range 1 to 4. While the respondents of Social Sciences (24 or 31.6%) and Humanities with 17 (12

or 25.0%) recorded the least output (see figure 4.6).

From the analysis of the data, the Applied Sciences and Natural Sciences respondents are more collaborative in conference publications than Social Scientist and Humanities respondents. This contradicts the work reported by Beaver and Rosen (1979:235) that collaboration enhances productivity output and increases recognition among Science and non Science lecturers. Hurd (1992:283) also reveals that collaborative work is a widespread practice among Sciences base scholars.

Fig.4.6 Distribution of respondents showing their conference collaborative publications output

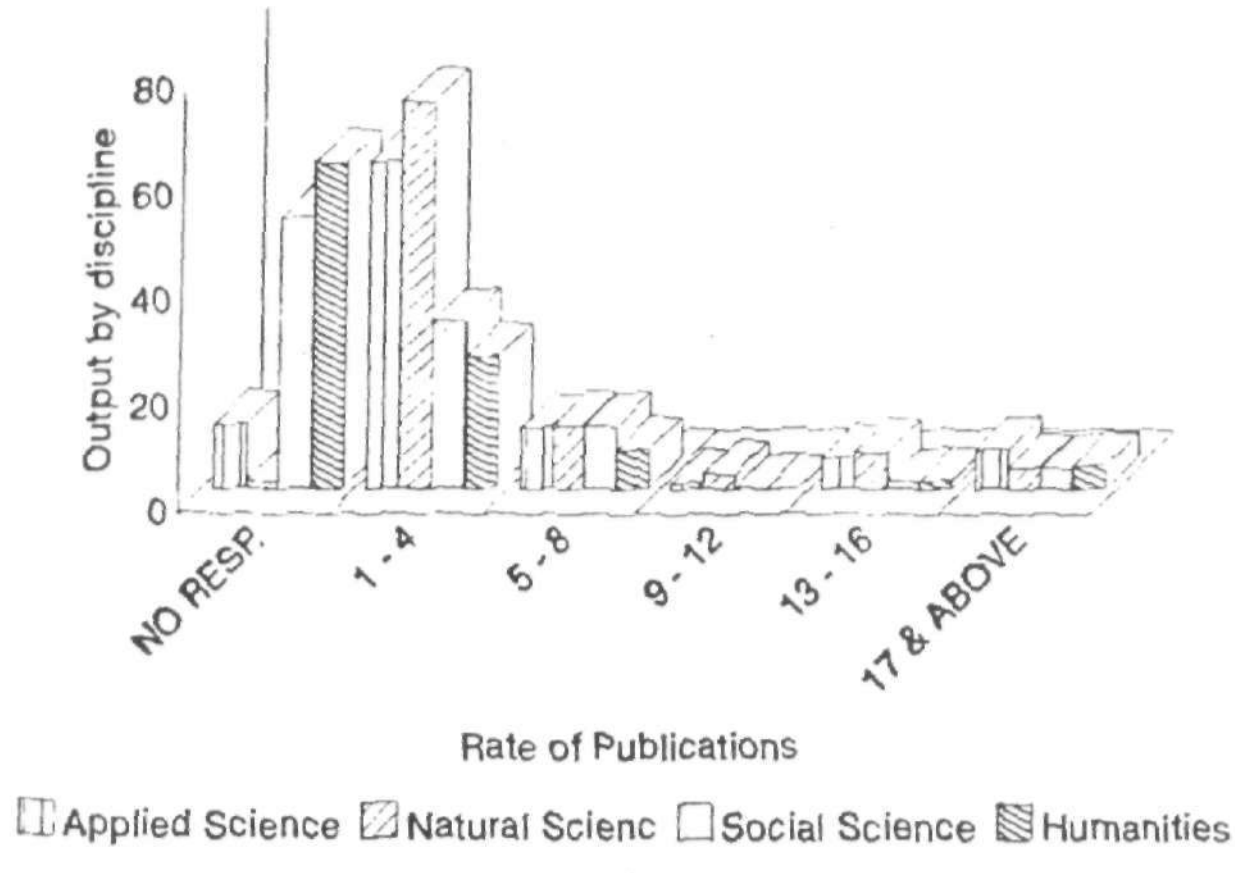


Table 7 DISTRIBUTION OF RESPONDENTS SHOWING RATE AND QUANTITY OF JOURNAL COLLABORATIVE PUBLICATIONS OUTPUT.

Rate of Respondent Publications Output	Applied Science		Natural Science		Social Science		Humanities	
	Freq.	%	Freq	%	Freq.	%	Freq	%
Non Respondent	14	7.4	3	4.0	26	34.2	22	32.4
1 - 4	123	64.7	59	78.7	39	51.3	31	45.6
5 - 8	20	10.5	5	6.7	7	9.2	7	10.3
9 - 12	5	2.6	--	-	-	-	-	--
13 -16	20	10.5	4	5.3	4	5.3	8	11.8
17 above	8	4.2	4	5.3	-	-	-	-
Total	190	100	75	100	76	100	68	100

Table 7 indicates that the Applied Science respondents of Journal collaborative output account for the highest percentages for range 1 to 4 (123 or 64.7%). This is followed by the Natural Science respondents (59 or 78.7%). Certainly, the Journal productivity output from ranges 1 to 17 are topped by Applied Sciences and Natural Sciences respondents. The Social Sciences and Humanities respondents recorded low Journal productivity output as the frequency of collaboration increases. (see figure 4.7)

This implies, that the Social Sciences and Humanities respondents collaborate very little. Similar observations was made by Umar (1993:46)

who reported that joint authorhip is a common feature of Scientific publications. It further collaborates Krausse (1985:127) who asserts that "in most field of the Natural and Applied Sciences, collaboration is taken as a sign of development and maturity.

Fig. 4.7 Distribution of respondents showing their Journal collaborative publications output

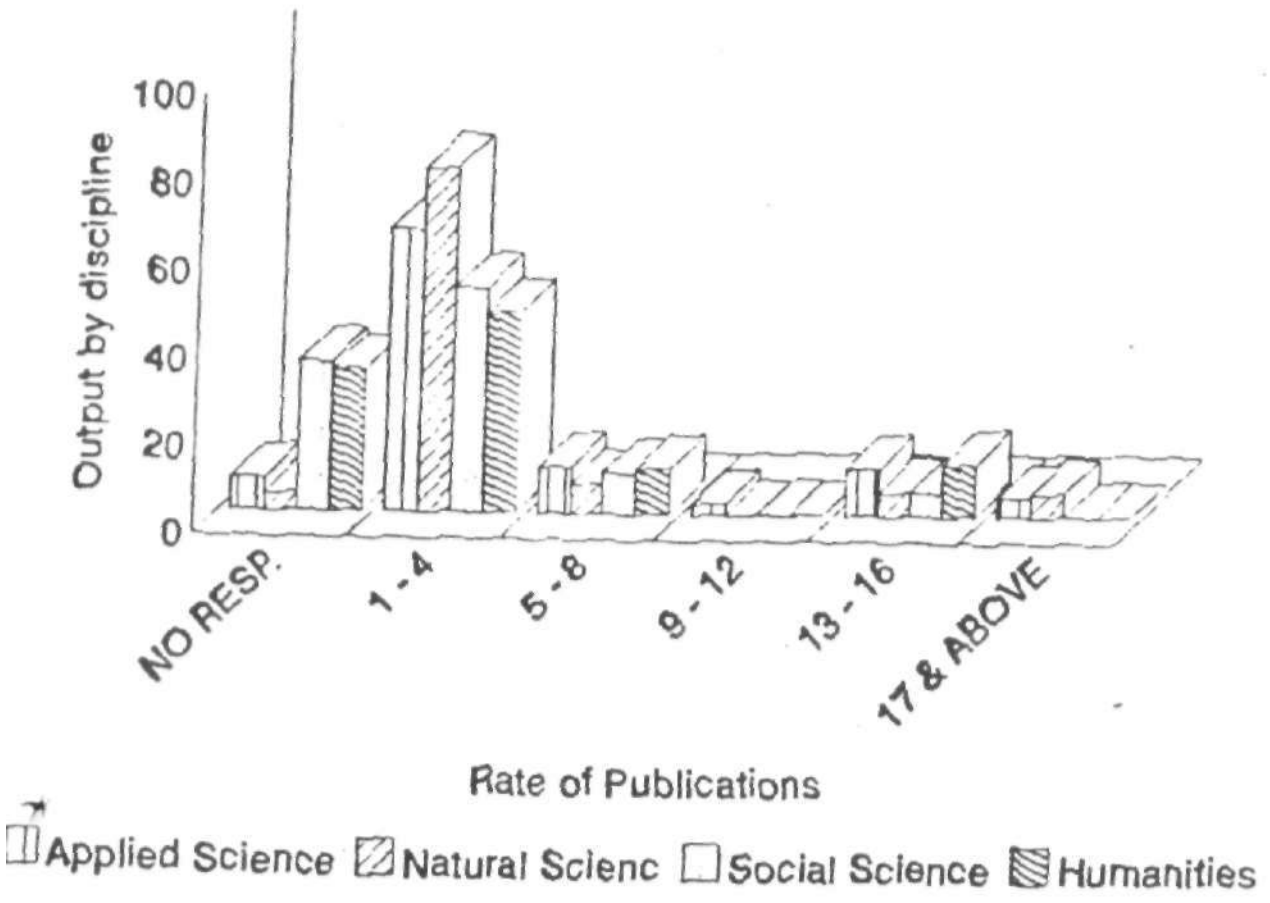


Table 8 DISTRIBUTION OF RESPONDENTS SHOWING RATE AND QUANTITY OF MONOGRAPHS COLLABORATIVE PUBLICATIONS OUTPUT.

Rate of Respondent Publications Output	Applied Science		Natural Science		Social Science		Humanities	
	Freq.	%	Freq	%	Freq.	%	Freq.	%
Non Respondent	110	57.9	16	21.3	47	61.8	44	64.7
1 - 4	60	31.6	51	68.0	27	35.5	21	30.9
5 - 8	2	1.1	-	-	-	-	1	1.5
9 - 12	10	5.3	2	2.7	-	-	-	-
13 -16	4	2.1	-	-	-	-	-	-
17 above	4	2.1	6	8.0	2	2.6	2	2.9
Total	190	100	75	100	76	100	68	100

An examination of Table 8 shows the Natural Sciences topped the group of those with a collaborative productivity output (51 or 68.0%) from range 1 to 4. This is followed by Applied Sciences respondents whose productive output is evident in ranges 1 to 4 and up to 17 and above (see figure 4.8).

The spirit of collaborativeness is a common feature among the science lecturers. The findings supports the investigation of Hagston (1995:29) who observed that scientists who dominated "big Science" provided scholarly interest in collaboartive works. Allen and Ben (1993:50) also observed that

collaboration among subject specialists can help to assure an appropriate balance of materials in library collections.

Fig. 4.8 Distribution of respondents showing their Mongraphs collaborative publications output

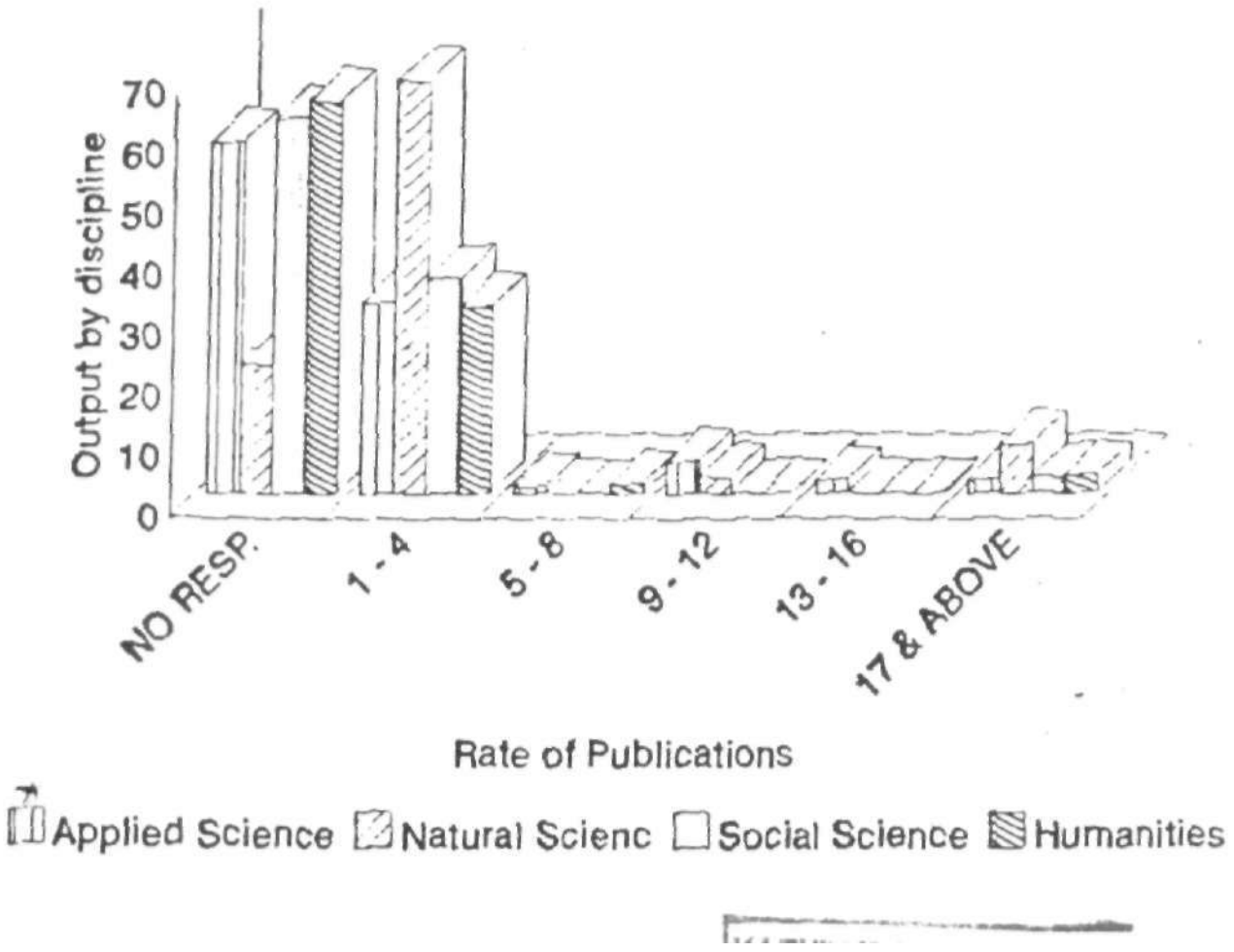


Table 9 DISTRIBUTION OF RESPONDENTS SHOWING RATE AND QUANTITY OF TEXTBOOKS COLLABORATIVE PUBLICATIONS OUTPUT.

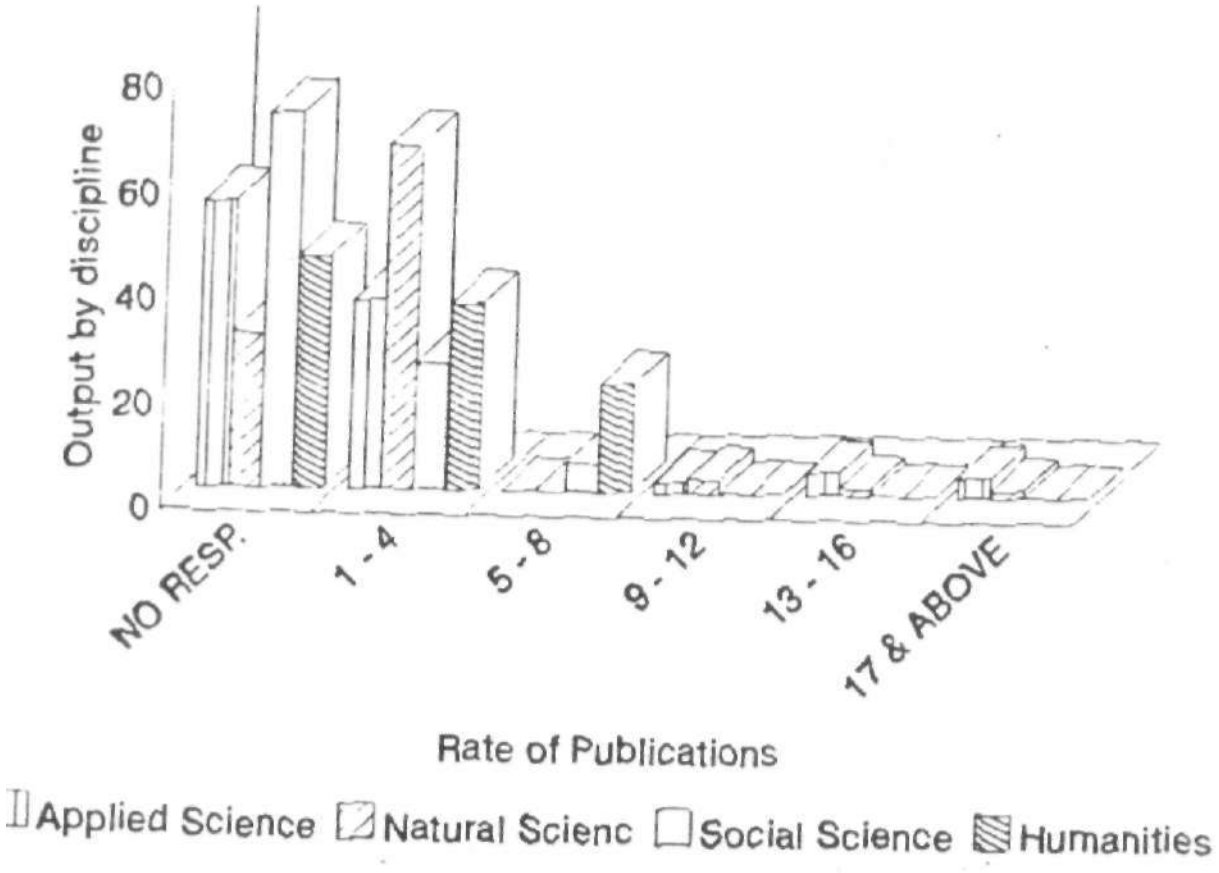
Rate of Respondent Publications Output	Applied Science		Natural Science		Social Science		Humanities	
	Freq.	%	Freq	%	Freq.	%	Freq.	%
Non Respondent	103	54.2	22	29.3	54	71.1	30	44.1
1 - 4	68	35.8	49	65.3	18	23.7	24	35.3
5 - 8	-	-.	-	-	4	5.3	14	20.6
9 - 12	4	2.1	2	2.7	-	-	-	-
13 -16	8	4.2	1	1.3	-	-	-	-
17 above	7	3.7	1	1.3	-	-	-	-
Total	190	100	75	100	76	100	68	100

Table 9 reveals that the Applied Sciences respondents recorded high in books collaboartive productivity output with 68 (or 35.8%). Then, followed by Natural Science, (49 or 63.3%) Similarly, The the respondents of non collaborative books publications output accounted for high percentages (103 or 54.2%). Then, followed by Social Science respondents (54 or 71.1%). See figure 4.9.

The analysis also shows that overall of the science respondents collaborate more than the non science respondents. This is in comformity with the work reported by Umar (1993:59) that joint authorship in publications is a very common feature of scientific enterprise. Zuckerman

(1988:128) further supported the view that science publications reflect a greater extent of collaboration.

Fig.4.9 Distribution of respondents showing their Text Books collaborative publications output



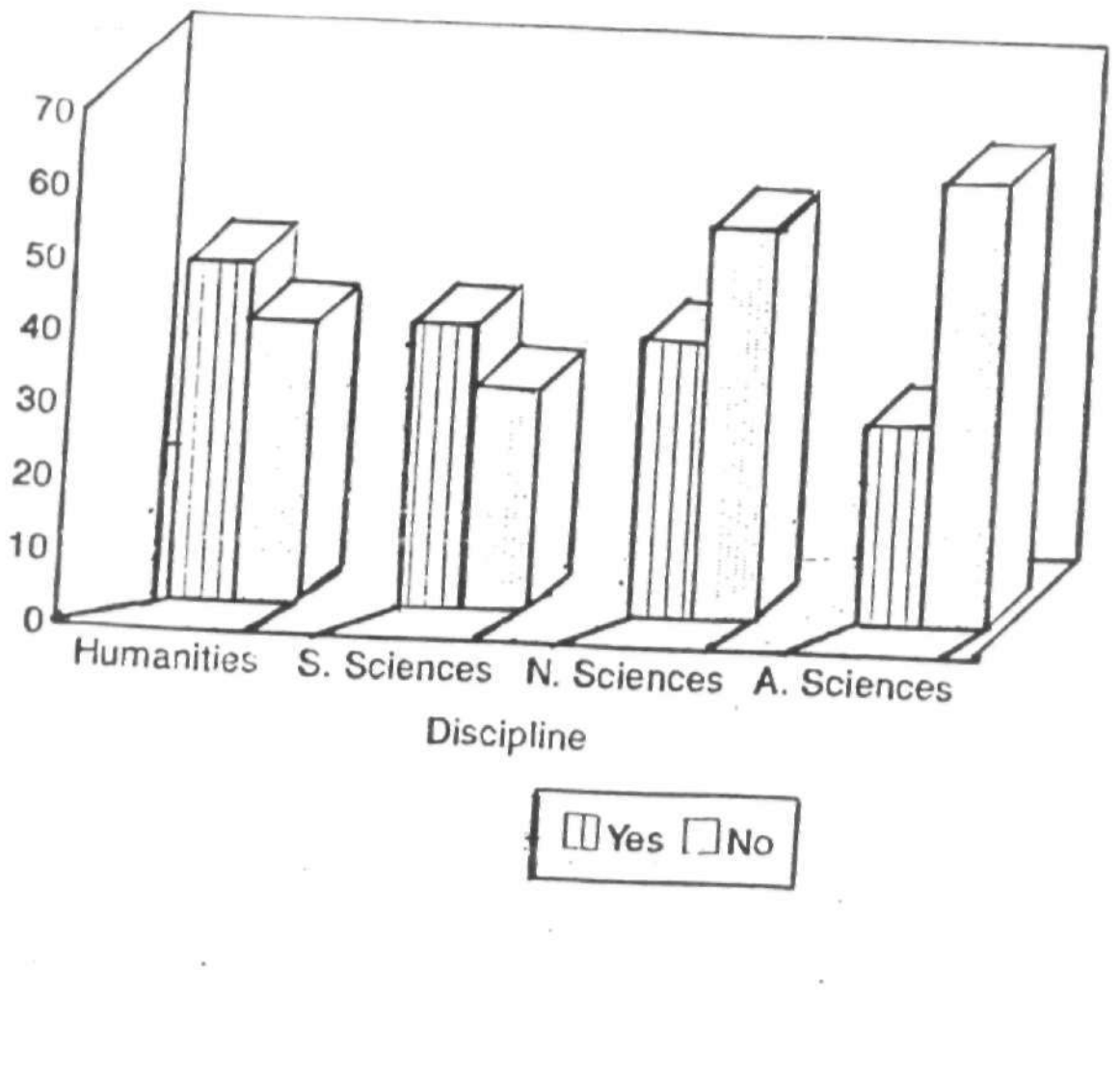
4.2.3 AN IMPORTANT FEATURE OF THE INVESTIGATION OF THE DIFFERENCES IN THE FACTOR AFFECTING RESPONDENTS PUBLICATIONSOUTPUT IN THE FOUR BROAD AREAS OF KNOWLEDGE; NAMELY HUMANITIES, SOCIAL SCIENCES, NATURAL SCIENCES AND APPLIED SCIENCES

Table 10: Distribution of Respondents on Factors Affecting Publicationsoutput according to four broad classes of knowledge.

FACTORS	HUMANITIES N = 68		Social sciences N =76		Natural Sciences N =75		Applied Science N = 190	
	Yes	No	Yes	No	Yes	NO	Yes	NO
1. Lack of current lit. In the Library	58 85.3%	10 14.7%	70 92.1%	06 07.9%	60 80%	15 20%	61 32.1%	129 67.9%
2. High cost of publication manuscript	55 80.9%	13 19.1%	67 88.2%	09 11.8%	65 86.7%	10 13.3%	130 68.4%	60 31.6%
3. Publishers abandoned manuscript	42 61.8%	26 38.2%	38 50%	38 50%	11 14.7%	64 85.3%	73 38.4%	117 61/6%
4. Lack of encouragement by mgt.	29 42.6%	39 57.4%	38 50%	38 50%	15 20%	60 80%	79 41.6%	111 58.4%
5. Lack of research familiarity	35 51.5%	33 48.5%	26 34.2%	50 65.8%	15 20%	60 80%	18 09.5%	172 90.5%
6. No relevant research materials	50 73.5%	18 26.5%	66 97.1%	10 02.9%	66 88%	09 12%	119 62.6%	71 37.4%
7. No adequate lab. facilities	43 63.2%	25 36.8%	65 85.5%	11 04.5%	18 24%	57 76%	111 58.4%	79 41.6%
8. No adequate research grant	20 29.4%	48 70.6%	06 07.9%	70 92.1%	68 90.7%	07 09.3%	141 74.3%	49 25.8%
9. No research able topics	33 48.5%	35 51.5%	21 27.6%	55 72.4%	23 30.7%	52 69.3%	46 24.2%	144 75.8%
10. Research able areas has been exhausted.	41 60.3%	27 39.7%	16 21.1%	60 78.9%	16 21.3%	59 58.7%	60 31.6%	130 68.4%
11. No encouragement from senior colleagues	37 54.4%	31 45.6%	57 75%	19 25%	20 26.7%	55 73.3%	76 40%	114 60%
12. Library lacks current lit. in my subject area	66 97.1%	12 02.9%	57 75%	19 25%	25 33.3%	50 66.7%	77 40.5%	113 59.5%
13. Lack of harmony between lec. and pub.	23 33.8%	45 66.2%	21 27.6%	55 72.4%	20 26.7%	55 73.3%	84 44.2%	106 55.8%
14. No Journal for publication	41 60.3%	57 39.7%	55 72.4%	21 27.6%	26 34.7%	49 65.3%	19 65.3%	171 90%
15. Lack of ref. to manuscript	08 11.8%	60 88.2%	10 13.2%	66 86.8%	30 40%	45 60%	20 10.5%	170 89.5%

Analysis of Table 10 reveals that for "lack of current literature" the Social Sciences respondents topped with 92.1%, while Applied Sciences give the respondents with only 32.1%. This is a clear indication that Social Sciences have dominated the scene in terms of publications output. The respondents in Social Sciences (88.2%) Natural Sciences (86.7%) and Humanities (80.9%) indicate that "high cost of publications fees" is a severe impediment to publication as against the 68.4% for respondents in Applied Sciences. In the same vein, respondents of Humanities topped with 61.8% for "publishers abandoned manuscripts", while only 14.7% was observed among the respondents in the Natural Sciences. As per "lack of encouragement by management" the respondents in the Social Sciences constitute the majority with 50%, while the respondents in the Natural Sciences scored 20%. The afore mentioned fact could be likened to the lack of difficulty faced by the Natural Sciences in the areas of publication. The respondents in Humanities 51.5% have out weighed the 09.5% respondents in Applied Sciences in terms of "lack of research familiarity" See figure 4:10.

4.10 Distribution of respondents on factors affecting their publications output according to four broad classes of knowledge



However, the 97.1% respondents in Social Sciences for "lack of relevant research materials" showed a significantly high response, as against the 62.6% in the Applied Sciences. Lack of adequate laboratory facilities among the respondents of Social Sciences (88.5%) could be attributed to as a militating factor in publications output, while the respondents in the Natural Sciences 24% firmly hold to the fact that their laboratories are some what satisfactory. In the same vein, Umar (1993:66) observed that the absence of research laboratories, the poor state of financial stand of Universities and research Institutes are factors that constituted the low extent of productivity output.

Similarly, the respondents for "inadequate research grant" in the Natural Sciences accounted for 90.7% while in the Social Sciences only 07.9% was observed. Respondents in the Applied Sciences 24.2% constituted the least in terms of "lack of researchable topics", while their counterparts in the Humanities recorded 48.5%. This observation could imply that lack of adequate materials in the Applied Sciences retards the zeal of most intending researchers. Problems associated with exhausted research areas adversely affect the Humanities 60.3%, while the Social Sciences 21.1% and Natural Sciences 21.3% are dynamic with the course of events.

Most of the respondents or 75% reported that there is "no encouragement from their senior colleagues" in the Social Sciences, whereas

in the Natural Sciences 26.7% as being the least. Respondents in the Humanities for "lack of current literature in subject area" topped with 97.1%, while in the Natural Sciences 33.3% was observed. This research reveal that only Humanities and Social Sciences that are seriously affected. Generally, there is no concordance between lecturers and publicationswith respect to the four based classes of knowledge.

However, respondents in the Social Sciences i.e 72.4% and Humanities 60.3% experienced serious problem of lack of journal for publication as against their counterparts in the Applied Sciences with 10% and the Natural Sciences 34.7%. All the broad classes of knowledge suffer in terms of "lack of references to manuscript", with the worst affected as the Applied Sciences with 10.5% while the Natural Sciences fared with 40% (See fig. 4.10).

It was interesting to note that apart from the Factors indicated on the questionnaire, an interview conducted with the lecturers it was revealed that "inadequate teaching facilities, instructional materials, poor conditions of services, and poor environmental factors, are the remote causes of lack of publication and research among the University of Maiduguri lecturers. In additions, lack of funds, infrastructures and poor administrative measure are also some factors that prevent lecturers from publishing. This supports the finding of Umar (1993) that the absence of research laboratories and the poor state of the financial stand of Nigeria Universities and research

institutes are the contributory factors to the low extent of productivity output.

Academic reputation rest on research and publications of books and journals, yet with various constraints. These includes, economic, social and political. This supports the observation made by Tahir (1996:73) that apart from the high cost of producing manuscripts, assessment and accpetance costs, especially for locally published journals, publishing could be frustrating. He further noted that in the past authors of journals articles were usually paid honorarium in form of token sums of money or free off-prints of their articles by editors of some journals.

The report of World Bank (1986) on the financing the third World Universities revealed that many Universities are having great difficulty in maintaining their financial integrity let along achieving much in the way of purposive development, in widening access and furthering research. In the similar vein, Emovon (1988) observed that funds are the major problems that beset research in the third World Countries. He further lamented that the one which most scientists used to mention as the primary constraints are the scientific materials and equipments.

An interview with Aguolu, Chairman Senate Publications Committee of the University of Maiduguri revealed, the main factors that hinder publication by lecturers is the lack of funds and irregular publications by lecturers is that lack of funds and irregular publications by the publishers.

He also revealed that creativity is stifled through the curtailment of academic, seminars, journals, workshops and general lack of facilities or incentives to promote and reward academic excellence.

4.2.4 DIFFERENCE BETWEEN OBSERVED PUBLICATIONS OUTPUT OF HUMANTIIES LELCTURERS WITH LOTKA'S EXPECTED INVERSE LAW FREQUENCY.

A matter of interest to the investigation is the determination of the difference between the observed publications output of Humanities lecturer with Expected Lotka's inverse law.

Table 11 Distribution of the Observed Respondents Frequencies in the Humanities with the Expected Frequencies of the Lotka's Law.

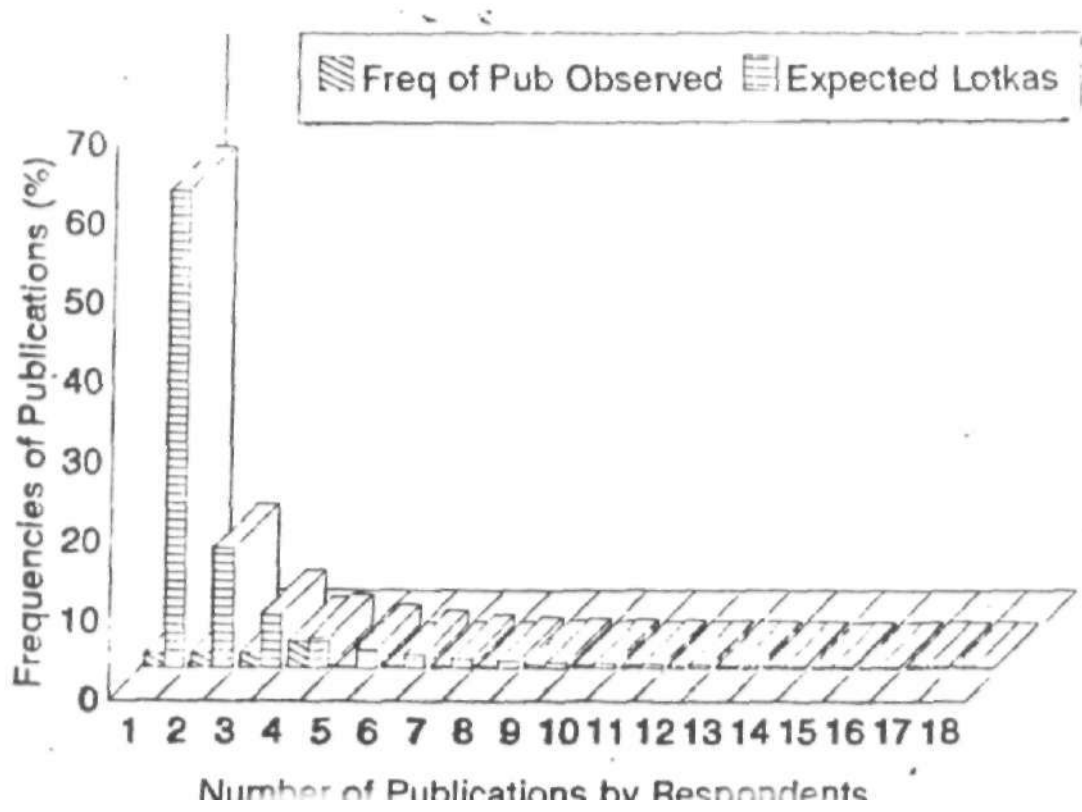
No of Publication by Respondents	Freq. of authors Observed	%	Lotka's freq. of authors Expected	%	$\Sigma(O-E)^2$ / E
1	39	1.83	1281	60.00	89.99
2	41	1.92	320	15.00	0.05
3	42	1.97	142	6.67	21.85
4	70	3.28	80	3.75	176.7
5	5	0.23	51	2.40	0.43
6	5	0.23	36	1.67	0.01
7	6	0.28	26	1.22	1.52
8	6	0.28	20	0.94	3.23
9	9	0.42	16	0.74	14.22
10.	8	9.37	13	0.60	14.09
11	8	0.37	11	0.50	16.93
12	8	0.37	9	0.42	20.48
13	8	0.37	8	0.36	2.56
14	2	0.09	9	0.31	4.95
15	3	0.14	6	0.27	4.06
16	3	0.14	5	0.23	5.13
17	8	0.37	5	0.21	31.13
18	6	0.28	4	0.19	22.49

X^2 =504.09

An examination of Table 10 indicate that Lecturers with single publication accounted for 1.83%, instead of 60% of Lotka's expected percentage publication. It was evident that lecturers with two publications account for 1.92% instead of 15.0% (see figure 4.11).

However, the prediction of observed authors from $x/n^4 = 3.28\%$ which is quite close to Lotka's expected Law (i.e $x/n^4 = 3.75\%$. Also the prediction from $x/n^{13} = 0.37\%$ was as well close to Lotka's expected Law (i.e $x/n^{13} = 0.36$). From this, it could be inferred that out of 18 numbers publication output frequencies, was in conformity with Lotka's Law. Observation by Murphy (1973:461) revealed that Lotka's law was only applicable to physical science. This supports Coile (1977:366) that "Law" to humanities and map librarianship does not conforms Lotka's Law.

Fig. 4.11 Distribution of respondents of Humanities based on Lotka's law



4.2.5 DIFFERENCE BETWEEN OBSERVED PUBLICATIONS OUTPUT OF SOCIAL SCIENCES LECTURERS WITH LOTKA'S EXPECTED INVERSE LAW FREQUENCY.

An important feature of the investigation is the determination of the difference between the observed publications output of social sciences lecturers with Expected Lotka's in verse law.

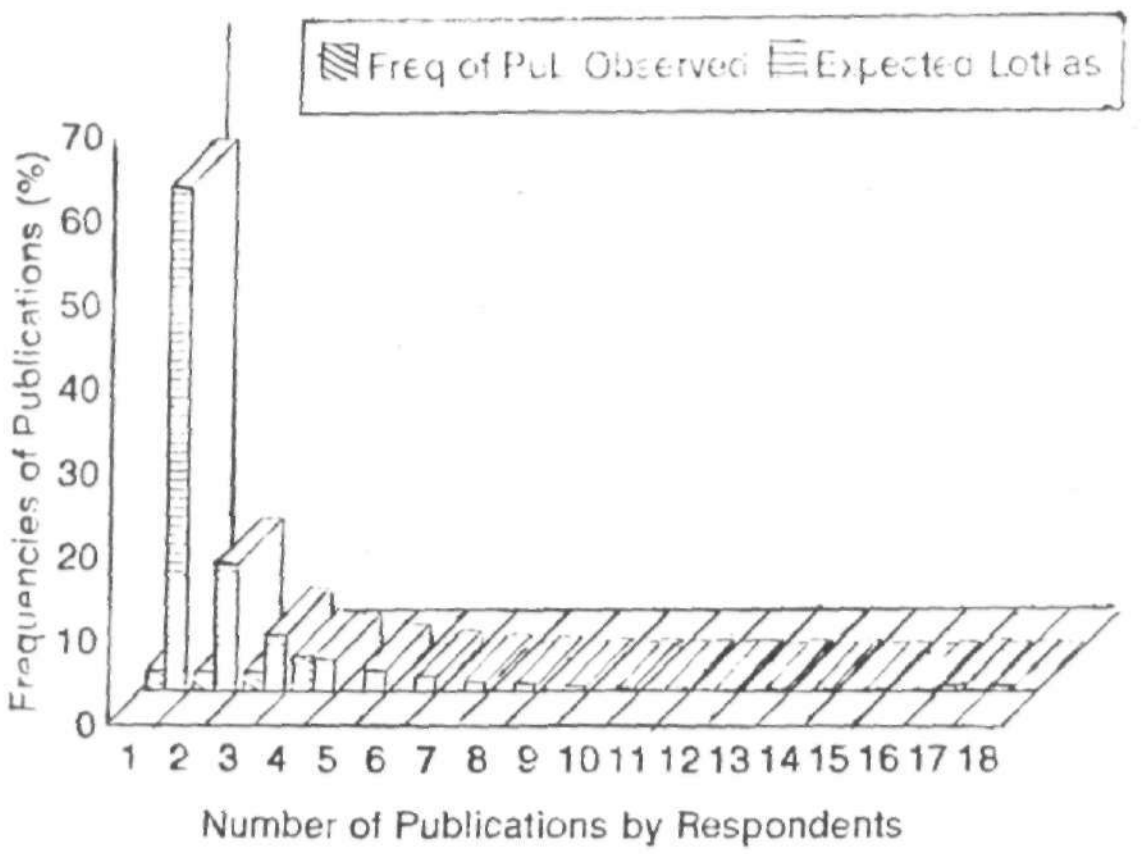
Table 12: Distribution of the Observed respondents Frequencies in the Social Sciences with expected frequencies of the Lotka's Law.

No of Publication by Respondents	Freq. of authors Observed	%	Lotka's freq. of authors Expected	%	$\Sigma(O-E)^2$ / E
1	47	2.20	1287	60.00	104.95
2	47	2.20	320	15.00	0.00
3	49	2.30	142	6.67	27.23
4	88	4.12	80	3.75	232.08
5	4	0.19	51	2.40	1.56
6	3	0.14	36	1.67	0.95
7	3	0.14	26	1.22	0.17
8	5	0.23	20	0.94	1.10
9	7	0.33	16	0.74	6.25
10	7	0.33	13	0.60	8.65
11	8	0.37	11	0.50	14.36
12	8	0.37	9	0.42	17.57
13	2	0.09	8	0.36	0.45
14	2	0.09	7	0.31	0.69
15	2	0.09	6	0.27	1.03
16	1	0.04	5	0.23	0.07
17	12	0.56	5	0.21	50.17
18	9	0.42	4	0.19	36.58
					X^2 =504.09

An examination of Table 11 indicate that lecturers with single publication constituted about for 2.20% instead of 60% of Lotka's expected percentage publication. It was observed that lecturers with two publications constituted about 2.20% instead of 15%, while those with up to five publications constituted about 0.19% instead of 2.40%. These differences applied to lecturers having up to eighteen publications. Certainly 0.42% could be the observed frequencies instead of 0.19% of Lotka's ideal law. (See Figure 4.12).

The findings in this study showed that the application of Lotka's law among Social Sciences respondents do not conformed with Lotka's law. Bookstein (1977:213) stated that Lotka's law has been very fruitful in pure Sciences rather than in other disciplines. This was also in concordance with Murphy observations (1973:861) that Lotka's law was originally only applicable in physical sciences, specially in chemistry and physics.

Fig. 4.12 Distribution of respondents of Social Sciences based on Lotka's law



4.2.6 DIFFERENCE BETWEEN OBSERVED PUBLICATIONS OUTPUT OF NATURAL SCIENCES WITH LOTKA'S EXPECTED INVERSE LAW FREQUENCY.

A matter of interest to the study is the difference between the observed publications output of National Sciences lecturers with Expected Lotka's inverse Law.

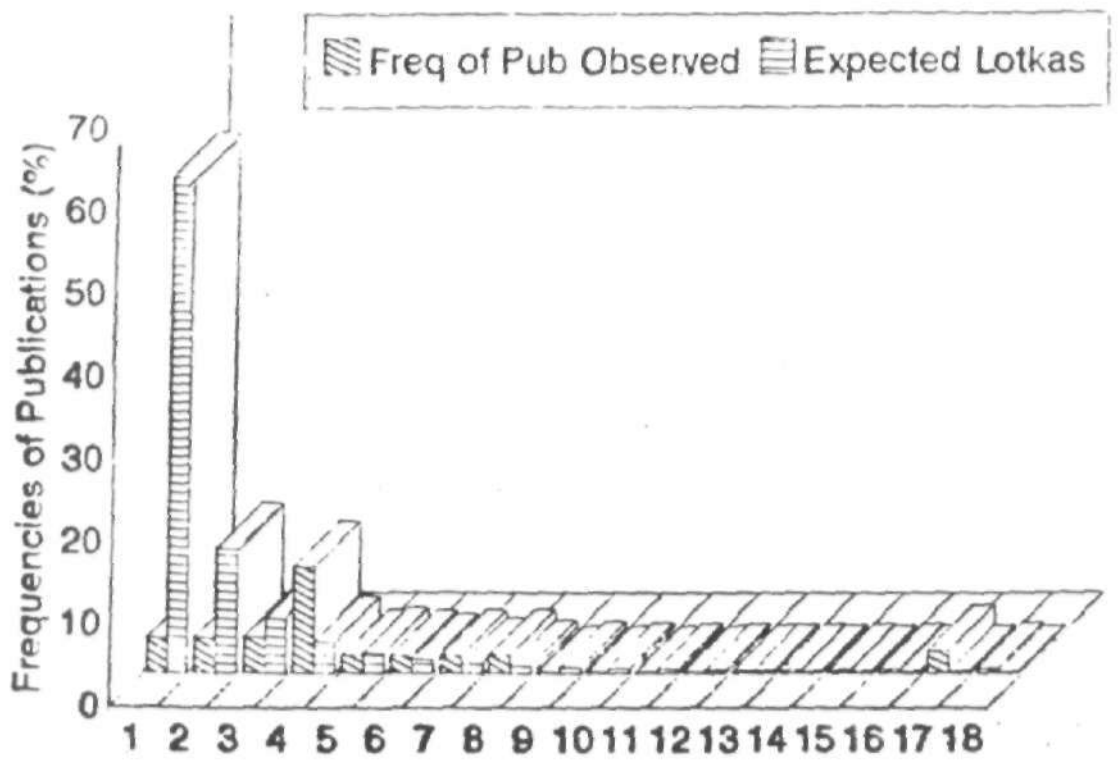
TABLE 13: DISTRIBUTION OF THE EXPECTED FREQUENCIES BASED ON LOTKA'S LAW AND THE OBSERVED FREQUENCIES OF THE RESPONDENTS IN NATURAL SCIENCES.

No of Publications by Respondents	Freq. of authors Observed	%	Lotka's freq. of authors expected	%	$\Sigma(O-E)^2$ / E
1	90	4.22	1287	60.00	346.8
2	91	4.26	320	15.00	10.44
3	93	4.36	142	6.67	11.73
4	274	2.77	80	3.75	392.97
5	45	2.11	51	2.40	14.12
6	45	2.11	36	1.67	26.7
7	46	2.15	26	1.22	41.26
8	48	2.25	20	0.94	55.58
9	4	0.19	16	0.74	0.85
10	4	0.19	13	0.60	0.28
11	3	0.14	11	0.50	0.43
12	3	0.14	9	0.42	0.11
13	7	0.33	8	0.36	2.15
14	9	0.42	7	0.31	5.55
15	9	0.41	6	0.27	6.77
16	10	0.47	5	0.23	10.04
17	59	2.76	5	0.21	121.15
18	12	0.56	4	0.19	16.03
					$X^2 = 1063.37$

The comparison of the data on publications output in the Natural Sciences with Lotka's inverse law of expected values in Table 12 indicated that the number of respondents that produced one to three publications is less than the recommended Lotka's percentage expectation. The publications base on $x/n^5 = 2.11\%$, $x/n^6 = 2.11\%$ and $x/n^{13} = 0.33\%$ are quite close to Lotka's expected law from $x/n^5 = 2.40\%$, $x/n^6 = 1.67\%$ and $x/n^{13} = 0.36\%$. It was only 16.7% close to Lotka's expected law (See Figure 4.13).

The findings indicated that the Natural Sciences lecturers productivity output does not support Lotka's law. These contradict Murphy (1973), and Bookstein (1973:213), when they concurred that Lotka's law is only applicable in Natural Sciences Authors Productivity.

Fig. 4.13 Distribution of respondents of Natural Sciences based on Lotka's law



4.2.7 DIFFERENCE BETWEEN OBSERVED PUBLICATIONS OUTPUT OF APPLIED SCIENCES LECTURERS WITH LOTKA'S EXPECTED LAW FREQUENCY.

An important feature of the investigation in the determination of the difference between the observed publications output Applied Sciences lecturers with Expected Lotka's inverse law.

Table 14: Distribution of the expected Frequencies Based on Lotka's Law and the Observed Frequencies of the Respondents in Appliedd Sciences.

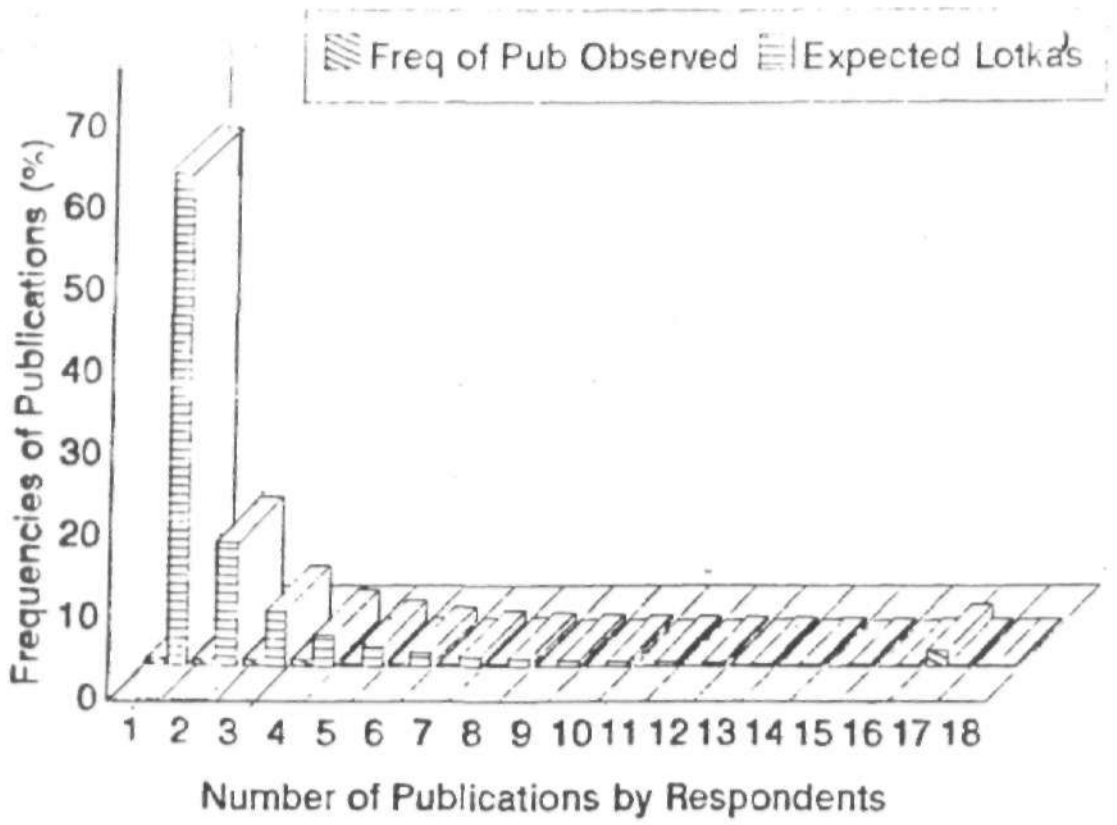
No of Publications by respondents	Freq. of authors Observed	%	Lotka's Freq. of authors expected	%	$\Sigma(O-E)^2$ / E
1	17	0.79	1287	60.00	154.21
2	16	0.75	320	15.00	19.4
3	17	0.80	142	6.67	0.63
4	125	5.85	80	3.75	426.83
5	8	0.37	51	2.40	0.03
6	8	0.37	36	1.67	1.15
7	7	0.54	26	1.22	2.1
8	8	0.37	20	0.94	6.25
9	2	0.09	16	0.74	0.05
10.	2	0.09	13	0.60	0.00
11	0	0.00	11	0.50	1.62
12	0	0.00	9	0.42	1.32
13	4	0.18	8	0.36	4.54
14	1	0.04	7	0.31	0.00
15	0	0.00	6	0.27	1.88
16	0	0.00	5	0.23	0.73
17	42	1.96	5	0.21	247.11
18	43	2.00	4	0.19	261.03
					$X^2 = 1127.88$

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An examination of Table 12 indicated that lecturers with single publications accounted that for 0.79% instead of 60% of Lotka's expected percentages. It was also observed that lecturers productivity output from one to eighteen publications do not conform with Lotka's expected law. This shows that Lotka's law do not conforms with those of Applied Sciences lecturers productivity output. (See Figure 4.14).

It was interesting to note that Lotka's law seems unsuitablle when subjected to Applied Sciences lecturers productivity output. These findings contradicted Murphy's (1973:161) observation that Lotka's law was only as good as when in Natural Sciences subjects. It also corroborated the observation made by Coile (1977:124) that Lotka's law was originally only applicable and specifically in the Physical Sciences specifically.

Fig.4.14 Distribution of respondents of Applied Sciences based on Lotka's law



4.3 TESTING THE NULL HYPOTHESES.

This section tests the null hypotheses that were stated in chapter 1. For acceptance or rejection of the Null hypotheses, a level of significance was set at α (alpha) = 0.05. Singificane level.

4.3.1 HYPOTHESIS 1

There is no significant differences between lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences concerning the frequency of their publications output.

Kruskal Wallis H test was used to test the differences in the publications output of the Humanities, Social Sciences, Natural Sciences and Applied Sciences lecturers of the Uniuversity of Maiduguri.

Table:15 Test of Hypothesis on the Respondents publications output

VARIABLES	MEAN RANK	SAMPLE SIZE	H.TEST	P VALUE
1	193.0	190	9.3991	0.0244
2	233.6	75		
3	189.8	76		
4	224.0	68		
TOTAL	205.0	409		

Kruskal Wallis H.Test = 9.3991

Probability value = 0.0244

Null hypotheses is therefore rejected.

Kruskal-Wallis H.Test was used to analyse the data collected. H. value of 9.3991 was obtained. With p. value = 0.0244 which is greater than 0.05, (p value = 0.0244 > 0.05). The null hypothesis was therefore rejected. Hence, there is significant differences among lecturers of the Humanities, Social Sciences, Natural Sciences and Applied Sciences concerning their publications output.

From the statistical analysis, it was clear that the respondents vary in their publications output. Some lecturers published more frequently than others. The study observed that the Applied Science lecturers published more books and monographs than others. The Humanities lecturers published more Journals than books and monographs. It was likely that certain factors affected the publications output of the respondents who had been less productive. It was observed by Goudy (1980:120) that Universities were highly politicised, and generally lack facilities or incentives to promote and reward academic excellence. Also Neave (1995:20) observed that the University is a place where creativity is one of the basic tools, for intellectual development. Infact, due to some prevailing factors very few lecturers are creative which accounted for the variation in their publications and research output.

4.3.2 Hypothesis 2.

There is no significant difference among lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences concerning the frequency of their collaborative publications output.

Kruskal Wallis H.test was used to test the difference of the lecturers collaborative publicationsoutput in the Humanities, Social Sciences, Natural Sciences and Applied Sciences of the University of Maiduguri.

Table 16: Test of hypothesis 2 on the respondents collaborative publications output.

VARIABLES	MEAN RANK	SAMPLE SIZE	H.test	P VALUE
1	218.0	190	52.0042	0.0000
2	266.7	75		
3	144.0	76		
4	167.7	68		
TOTAL	205.0	409		

Kruskal Wallis H. Test = 52.0045

Probability value = 0.0000

Null hypothesis was therefore rejected.

Kruskal Wallis H.test was used to analyze the data collected. A H.value of 52.0042 was obtainedd. With P. value = 0.0000 which is greater than 0.05, (p value = 0.0000 > 0.05). The null hypothesis was therefore rejected. Hence, there was significant difference between lecturers of

Humanities, Social Science, Natural Science and Applied Science with respect to their collaborative publications output.

The findings indicated that the collaborated works produced by the lecturers in the Applied Sciences were more than those produced in other areas of knowledge. The analysis supported the views of Hagston (1995:29) who observed that male scientists who dominated Abig science provided scholarly interest in collaborative work. Umar (1993:66) also expressed the same view, that joint authorship in publication is a very common feature of scientific enterprise.

4.3.3 Hypothesis 3.

There is no significant difference among lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences concerning the factors that affect their publication output.

Kruskal Wallis H.test was used to test the difference concerning the factors affecting lecturers publications output in the Humanities, Social Sciences, Natural Science and Applied Sciences of the University of Maiduguri.

Table 17: Test of hypothesis 3 on the respondents factors affecting their publication output.

VARIABLES	MEAN RANK	SAMPLE SIZE	H.test	P VALUE
1	155.8	68	66.3185	0.0000
2	129.7	76		
3	226.1	75		
4	244.4	190		
TOTAL	205.0	409		

Kruskal Wallis H. Test = 66.3185

Probability value = 0.0000

Null hypothesis was therefore rejected.

A H.value of 66.3185 was obtained. The value was used to analyse the data collected. With p. value = 0.0000 which was greater than 0.05 (p. value = 0.0000 > 0.05). The null hypothesis was therefore rejected. There was a significant difference among lecturers of the Humanities, Social Sciences, Natural Sciences and Applied Sciences regarding factors affecting their publications output.

From the statistical analysis conducted, it was observed that out of the fifteen (15) factors enumerated by Applied Sciences lecturers, it was "no adequate laboratory facilities" that was not identified as an obstacle. Some factors were identified in the Natural Sciences. These were "lack of current literature" for consultation in the library, "high cost of publication fee" and "publishers tendency to abandon manuscripts meant for publication". Three

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major factors were also identified by the Social Sciences lecturers which were "lack of encouragement by the University authorities, in adequate research grant" and "lack of encouragement by senior colleagues". The Humanities lecturers identified the following factors; lack of current literature for consultation in the University library" and "high cost of publications fees".

The findings indicated that lecturers were facing many factors that hinder them from publications. All these factors were in agreement with Umar (1993:66) . He stated that the absence of research laboratories and industrial laboratories, the poor state of the financial basis of Universities and research institutes are factors that contributed to the low level of collaborative publications output.

In a study by Tahir (1996:73) revealed that the general rise in the cost of stationeries and typing of manuscripts for publications had further compounded the inherent problems of academic exercise.

4.3.4 Hypothesis 4.

There is no significant difference between the observed publications output by the lecturers of Humanities with the expected publications output based on Lotka's law.

The chi-square test was used to test the difference between the observed publications output by the lecturers in the Humanities with the

expected publications output based on Lotka's law. (See table 11).

Table 18: The chi-square test of the observed humanities publication output and the expected Lotka's inverse law.

Variable tested	Total Freq.	Chi-Square Value	Chi-Square Critical Value	Degree of Fr.	Level OF Sign	Remarks
Humanities	272	134.19	27.6	17	0.05	434.83 >27.6

Chi-square test = 434.83 > 27.6

Chi - square critical value = 27.6

Null hypothesis is rejected.

Since the chi-square calculated value of 134.19 is greater than chi-square critical value of 27.6, the null hypothesis is therefore rejected. There is significant difference between the lecturers of the Humanities with the expected publications output based on Lotka's law.

It was observed that the lecturers that had single publications had lower percentage values than those in Lotka's expected law. As was indicated in table 11, the lecturers with multiple contributions accounted for percentage values that were lower than those of Lotka's expected values. The findings indicated that the values on the publications output of lecturers in Humanities did not conform with Lotka's inverse expected value. This supports Bookstein's (1977:213) observation that Lotka's law was only applicable in physics and chemistry not in other fields of

knowledge.

4.3.5 Hypothesis 5

There is no significant difference between the observed publications output by the lecturers of the Social Sciences with the expected publications output based on, Lotka's law.

The chi-square test was used to test the difference between the observed publications output by the lecturers in the Social Sciences with the expected publicationsoutput based on Lotka's law (See table 12).

Table 19: The chi-square test of the observed Social Sciences publications output and the expected Lotka's inverse law.

Variable tested	Total Freq.	Chi-Square Value	Chi-Square Critical Value	Degree of Freedom	Level of Sign.	Remarks
Social Sciences	304	504.08	27.6	17	0.05	504.88 >27.6

Chi-square test = 504.08

Chi - square critical value = 27.6

Null hypothesis is rejected.

Since the chi-square calculated value of 504.08 is greater than the chi-square critical value of 27.6, the Null hypothesis is therefore rejected. There is significant difference between the lecturers of the Social Sciences,

with the expected publications output based on lotka's law.

From the analysis in table 12, it was revealed that lecturers that produced one publication were less than 60% as proposed by Lotka. The lecturers that had multiple papers had less percentages as required by Lotka's inverse law. However, further analysis from table (12) indicates that the Social Sciences publications by the lecturers of the University of Maiduguri does not conform with Lotka's law. This finding supports that of Schorr (1975 : 190) who observed that authors with multiple contributions fall below the numbers expected by Lotkas law; that authors with two articles account for 19.5% of single author entries instead of 25%; authors with five articles comprise 1.2% instead of 4%.

4.3.6 Hypothesis 6

There is no significant difference between the observed publications output by the lecturers in the Natural Sciences with the expected publications output based on Lotka's law.

The chi-square test was used to test the difference between the observed publications output by the lecturers of the Natural Sciences with the expected publicationsoutput based on Lotka's law (See table 13).

Table 20: The chi-square test of the observed natural sciences publications output and expected Lotka's inverse law.

Variable tested	Total Freq.	Chi-Square Value	Chi-Square Critical Value	Degree of Freedom	Level of sign.	Remarks
Natural Sciences	852	1065.37	27.6	17	0.05	1063.37 >27.6

Chi-square test = 1063.37

Chi - square critical value = 27.6

Null hypothesis was rejected.

Since the chi-square calculated value of 1063.37 is greater than chi-square critical value of 27.6, the Null hypothesis is therefore rejected. There is significant difference between lecturers in the natural sciences and the expected publications output based on Lotka's law.

The comparison of the data on publications output in the Natural Sciences with Lotka's law of expected value revealed that the number of lecturers that produced one to three publications is less than Lotka's recommended expected values.

The findings indicates that the distribution of the publications output does not conform with Lotka's inverse square law in its original form. However, Murphy's (1973:24) observed that Lotka's law in only as good as when applied in science subjects.

4.3.7 Hypothesis 7

There is no significant difference between the observed publications output by the lecturers of the Applied Sciences with the expected publications output based on Lotka's law.

The chi-square test was used to test the difference between the observed publications output by the lecturers of the Applied Sciences with the expected publications output based on Lotka's law (See table 14).

Table 21: The chi-square test of the observed Applied Sciences publications output and the expected lotka's inverse law.

Variable tested	Total Freq.	Chi-Square Value	Chi-Square Critical Value	Degree of Freedom	Level of Sign.	Remarks
Applied Sciences	300	1127.88	27.6	17	0.05	1127.88 >27.6

Chi-square test = 1127.88

Chi - square critical value = 27.6

Null hypothesis was rejected.

Since the chi-square calculated value of 1127.88 is greater than chi-square critical value 27.6, the Null hypothesis was therefore rejected. There was significant difference between lecturers of the Applied Sciences, and the expected publications output based on Lotka's law.

The analysis from table 14 revealed that the publications output of the Applied Sciences based on Lotka's inverse law is given by $x/n^2 = 0.79\%$

instead of 60.00% up to x/n18 = 2.00% instead of 0.19. These contradicts Lotka's expected inverse law.

This indicates that Lotka's law is not applicable to the publications output of lecturers in Applied Science as suggested by Murphy (1973:24) who stated that Lotka's law is only as good as when applied to publications output in the Natural Sciences subjects such as Chemistry and Physics.

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CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS.

5.1 INTRODUCTION.

This chapter is presented under the following sub-headings: summary of findings, conclusion, recommendations and suggestion for further research.

5.2 SUMMARY OF FINDINGS.

This study was undertaken to analyse the publications output, collaborative publications output and factors affecting publications output of lecturers in the University of Maiduguri. Questionnaire was the major instrument adopted for data collection. Data were collected and analyzed using frequency distribution and percentages. Kruskal Wallis H.test was used for determining the publications output, collaborative publications output, and factors affecting publications output. Chi-square test was used to test the hypotheses on the difference between Lotka's expected inverse law with the observed publications output of lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences.

From the distribution rate of the target population the science Lecturers are more than the non science lecturers. The non science

lecturers consist of (228 or 39.1%) and the science lecturers are (355 or 60.9%). The difference was accounted as a result of the second Vice Chancellor of University of Maiduguri to employed the first set of MBBS and Science oriented students as lecturers. This was Reported by Head of Department of Gynaecology Dr. Idris Audu through an interview held with him.

The first hypothesis which stated that "there is no significant difference among lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences concerning the frequency of their publications output" was tested and the result showed that there is a significant difference in the publications output of the lecturers. Therefore, the null hypothesis was rejected.

The second hypothesis which stated that "there is no significant difference among lecturers in the Humanities, Social Sciences, Natural Sciences and Applied Sciences concerning the frequency of their collaborative publications output" was tested and the result showed that there is a significant difference in the collaborative publicationsoutput of the lecturers. Therefore, the null hypothesis was rejected.

The third hypothesis which stated that "There is no significant difference among lecturers in the Humanities, Social Science, Natural Sciences and Applied Sciences concerning the factors affecting their

publications output" was tested and the result showed that there is significant difference in the factors affecting their publications output. Therefore the null hypothesis was rejected.

The fourth hypothesis which stated that AThere is no significant difference between the observed publications output by the lecturers of Humanities and the expected publications output based on Lotka's law was tested and the result showed that there is significant difference between the observed publications output by the lecturers of the humanities and Lotka's expected inverse law. Therefore, the null hypothesis was rejected.

The fifth hypothesis which stated that Athere is no significant difference between the observed publications output by the lecturers of the social sciences and the expected publications output based on Lotka's law A was tested and the result showed that there is significant difference between the observed publications output by the lecturers of the social sciences and Lotka's inverse expected law. Therefore, the null hypothesis was rejected.

The sixth hypothesis which stated that Athere is no significant difference between the observed publications output by the lecturers of the Natural Sciences and the expected publications output based on Lotka's law was tested and the result showed that there is significant difference between the observed publications output by

the lecturers of the Natural Sciences and Lotka's inverse law. Therefore, the null hypothesis was rejected.

The seventh hypothesis which stated that Athere is no significant difference between the observed publications output by the lecturers of the Applied Sciences and the expected publications output based on Lotka's law was tested and the result showed that there is significant difference between the observed publications output by the lecturers of the Applied Sciences and Lotka's inverse law. Therefore, the null hypothesis was rejected.

5.3 CONCLUSION

Based on the findings of the study, it was concluded that lecturers in the four broad areas of knowledge, namely, Humanities, Social Sciences, Natural Sciences and Applied Sciences in the University of Maiduguri have been contributing to knowledge through the publications of papers. However, there are variations in their publications output.

The study determined that the respondents in the Applied Sciences were the most productive while the least productive were the Social Science lecturers. Additionally, this study determined author collaboration among the lecturers who published papers. There is evidence of co-operation of communication among the

lecturers. This study determined that lecturers in Applied Sciences were the most collaborative. This validates the generalization that whereas scientists collaborate, humanities scholars hardly do.

Furthermore, this study also determined the factors affecting publications output of the lecturers. Several factors were identified as affecting the publications output of lecturers among which are lack of adequate materials, laboratory equipment lack of current journals and inadequacy of resources in the library.

However, through the interview conducted with the lecturers, it was found that lecturers were experiencing additional factors outside those enumerated in the questionnaire. The lecturers expressed their concern at poor environment for research in the University. The University of Maiduguri lacks research centers which consequently hinders intellectual enterprise. The absence of academic freedom creates fear of free research and expression as well as promoting isolation from academic creativity. The tendency to engage in destructive criticism and lack of appreciation for good-research work has created an environment that discourages publications.

There is no doubt that many University of Maiduguri lecturers are actively publishing papers. However, the factors identified in this study affect their productivity which has led to some of them not

being promoted. If these factors could be checked, a favourable atmosphere for publications in the University of Maiduguri will be realised. The recommendations put forward in the sub-heading that follows, if implemented, would provide a favorable publishing climate.

5.4 RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made.

1. For the promotion of publications of papers among the lecturers of the Humanities, Social Sciences, Natural Sciences and Applied Sciences of the University of Maiduguri, there is need for providing physical as well as non physical resources. Physical resources comprises funds, infrastructures, equipment, materials and a responsive management. Non physical resources include environment for creative research e.g. well equipped library, laboratory and offices.
2. Since University of Maiduguri attaches much importance to research and publications in the appointment and promotion of its academic staff, it is recommended for the Institution to develop its publishing programs that will help to subside cost of publications.
3. The University management should establish administrative

measures to co-ordinate research and publication among lecturers.

4. The University lecturers should organise workshops on securing funds from local, regional, national and international funding agencies as sources of financial assistance for viable research and publications.

5. The University management through N.U.C should organize a better regional campaign on how to promote Research and Publication in University of Maiduguri. This will help lecturers to undertake theoretical, applied, or developmental projects.

6 Lecturers should publish research based papers and relate research findings to the academic work ,in the University of Maiduguri. It should be made in such a way that the public will see the practical importance and value of their contribution to knowledge and the environment they belong.

7. The University of Maiduguri Management should develop a programme of inter-University exchange of research and publication to boost the morale of the lecturers.

5.5 SUGGESTIONS FOR FURTHER RESEARCH.

This study examined the publication output, collaborative publications output and factors affecting publications output of the

lecturers of the University of Maiduguri. It is hoped that this study will stimulate further research.

One of the major shortcomings of this study is that the subjects of the study were limited to the University of Maiduguri lecturers. The findings of the study apply to the lecturers of the University of Maiduguri. The results of the study can therefore, be hardly generalized to the lecturers in other Nigerian Universities, for the growth and development of knowledge, the following suggestion have been proffered for further investigation.

Similar studies should be conducted in other Nigerian Universities, Federal Colleges of Education and Polytechnics to determine their publications output, collaborative publications output and factors affecting their publications output.

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APPENDIX II

QUESTIONNAIRE ON PILOT STUDY

DATA

1. Department/Faculty .....

SECTION A

PUBLICATIONSOUTPUT

2. Please Tick Number of contribution by type.

Seminar	Conference workshop	Journal	Newspaper	Books
2-5 [ ]	2-5 [ ]	2-5 [ ]	2-5 [ ]	1 [ ]
6-10 [ ]	6-10 [ ]	6-10 [ ]	6-10 [ ]	2 [ ]
11-15 [ ]	11-15 [ ]	11-15 [ ]	11-15 [ ]	4 [ ]

3. Does your employer provide you with Research Grant?

Yes [ ] No [ ]

4. If yes, how manytimes have you benefitted

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6 [ ]

5. Have you ever benefitted from External Research Grant?
Yes [ ] No [ ]

6. If yes, how many times have you benefitted

1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6 [ ]

7. Were you able to publish the research result of items 8 and 10 above?

Yes [ ] No [ ]

8. If No why .....

9. How many conferences, meetings, workshops, seminars or exhibition have you attended.

None [ ]

1 - 2 [ ]

3 - 4 [ ]

5 - 6 [ ]

7 and above [ ]

SECTION B

COLLABORATIVE PUBLICATIONS

10. Do you jointly publish papers with colleagues?

Yes [ ] No [ ]

11. Do you jointly publish papers with

(a) Male collegues Yes [ ] No [ ]
(b) Female collegues Yes [ ] No [ ]

12. How many papers have you jointly published with colleagues

(a) 1 - 5 papers [ ]
(b) 6 - 16 papers [ ]
(c) 11 - 15 papers [ ]
(d) 16 - 20 papers [ ]
(e) 21 - papers and above [ ]

SECTION C

FACTORS AFFECTING PUBLICATIONS OUTPUT

Which of the following factors hinder you from publishing? please tick appropriate.

(a) Lack of inadequate literature for consultation in University library.

(b) High rate of publications fee

(c) Publishers tend to abandon manuscripts

(d) Lack of encouragement by the management

(e) Lack of familiarity with researchable areas.

(f) There is no adequate materials in library for research

(g) In adequate laboratory facilities

(h) Inadequate research grant by the University

(i) No research topics to write on.

(j) My area of specialization has not been researched.

(k) lack of encouragement by senior colleagues

(l) Library lacks current literautre in my subject area.

(m) Lack of journal to publish manuscript.

(n) Lack of harmony between lecturers and publishers.

(o) Lack of referees to manuscript are not published

(p) Any other factors, please specify.....

APPENDIX III

THE QUESTIONNAIRE ON THE FIELD STUDY.

Department of Library and
Information Sciences
Faculty of Education
Ahmadu Bello University,
Zaria.

7th August, 1998

Dear Sir,

TRENDS AND PATTERNS OF PUBLICATIONS OUTPUT OF UNIVERSITY OF MAIDUGURI LECTURERS

I am a post graduate student of Ahmadu Bello University Zaria, under going a research on the aforementioned topic for my Masters of Library and Information Science degree. You are requested to kindly complete this questionnaire. The information needed is purely for research on the above topic. The study is important in that, it will analyses lecturers publications output as well as identify factors affecting lecturers publications output. Useful suggestions, and recommendations will be made after the research has been accomplished.

On the completion of the research copies will be kept in the University Library, Faculty Library/Department Library of the University.

Thank you for sparing your limited time to complete this questionnaire.

Yours faithfully,

ABBA BUBA
Postgraduate Student
EDUC/MIS/10028/95/96

TITLE: PUBLICATIONS OUPUT OF THE UNIVERSITY OF MAIDUGURI LECTURERS:

QUESTIONNAIRE

1. Department/Faculty .....

SECTION A:PUBLICATIONS OUTPUT

2. Please tick the number of your publications by type since you started teaching.

Conference Proceedings	Journal Article	Monographs	Books
1-4 ( )	1-4 ( )	1-4 ( )	1 ( )
5-8 ( )	5-8 ( )	5-8 ( )	2 ( )
9-12( )	9-12( )	9-12( )	3 ( )
13-16( )	13-16( )	13-16( )	4 ( )
17 above ( )	17 above( )	17 above ( )	5 ( )

3. How many conference proceeding, seminars, and workshop have you attended

Confernce Proceeding	Seminars	Workshop
1 ( )	1 ( )	1 ( )
2 ( )	2 ( )	2 ( )
3 ( )	3 ( )	3 ( )
4 ( )	4 ( )	4 ( )
5 ( )	5 ( )	5 ( )

Others (Specify) .....

4. Have you ever benefitted from internal research Grant by your employer?

   Yes ( ) No ( )

5. If yes, How many Times have you Benefitted?

   1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 - above ( )

6. Have you ever benefitted from external Grant? yes or No

   Yes ( ) No ( )

7. If yes, How many times have you benefitted?

   1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 - above ( )

8. Were you able to publish the grant result of items 13 and 15 above Yes ( ) No ( )

9. If no state the reasons in brief.....

SECTION B: COLLABORATIVE PUBLICATIONS OUTPUT

10. Do you jointly publish papers with colleagues?

    Yes ( ) No ( )

11. If yes tick reasons for collaborative publications.

    i) Due to academic recognition ( )
    ii) Due to Environmental Support ( )
    iii) Due to organizational Policy ( )
    iv) Due to maintaining Scholarly Tradition ( )
    v) Due to peer Influence ( )

    Others (specify) .....

12 If No, Tick Reasons for None Collaborative Publications.

    i) Is a Lazy Man's work
    ii) I don't want to be unproductive
    iii) Is academic Cheating
    iv) Non of the above

Others specify

13. How many publications have you jointly published with colleagues?

Conference Proceedings	Journal Article	Monographs	Text Book
1-4 ( )	1-4 ( )	1-4 ( )	1 ( )
5-8 ( )	5-8 ( )	5-8 ( )	2 ( )
9-12( )	9-12( )	9-12( )	3 ( )
13-16( )	13-16( )	13-16( )	4 ( )

14. Indicate the range of papers you have published jointly since you joined University.

1-4 ( ) 4-6 ( ) 7-9 ( ) 10-12 ( ) 13-14 ( )

16 - above

SECTION C: FACTORS AFFECTING PUBLICATION OUTPUT

15. Which of the following Factors Hinders you from Publishing?
Please tick where appropriate. (Tick as many as Appropriate)

1. Lack of current literature for consultation in the University Library.
Yes ( ) No ( )

2. High cost of publication Fares. Yes ( ) No. ( )

3. Publishers tend to abandon Manuscripts. Yes ( ) No ( )

4. Lack of Encouragement by the Management. Yes ( ) No ( )

5. Lack of Familiarity with researchable areas. Yes ( ) No ( )
6. There is no relievant materials in libarary for research yes ( ) No ( )

7. There is no Adequate Laboratory Facilities
Yes ( ) No ( )

8. There is in-adequate resarch grant by the University.
Yes ( ) No ( )

9. No Research topics to write on Yes ( ) No ( )

10. My area of specialization has been over researched
Yes ( ) No ( )

11. Lack of encuragement by senior Colleagues
Yes ( ) No ( )

12. Lib Lacks current literature in my subject area.
Yes ( ) No ( )

13. Lack of Harmony Between Lectuers and Publishers.
Yes ( ) No ( )

14. Lack of journals to publish manuscripts Yes ( ) No ( )

15. Lack of references to manuscript prevents papers being publish.
Yes ( ) No ( ).

16. (Others specify) _____

APPENDIX IV

An introduction letter for an interview

Department of Library,
and information sciences
Faculty of Education
Ahmadu Bello University,
Zaria.

10th August, 1998.

Dear Sir,

Request for an interview

I shall be grateful if it would be convenient for you to grant me an interview focusing on some issues regarding the publicationS output of University of Maiduguri Lecturers. Such information will provide the basis for data to be used in my Masters thesis (MLS) titled: Trends and patterns of Publications output of the University of Maiduguri Lecturers.

I herewith attached the issues focused for the discussion.

Thank you.

Yours faithfully,

ABBA BUBA
Postgraduat Student
EDUC/MLS/10028/95/96

APPENDIX V

Interview questions

1. How is the nature of publications generally since you joined the University?
2. . o you prefer publications alone or jointly with colleague?
3. W iat problems do most lecturers encounter in their publications?
4. What advise do you have to offer to your colleagues so as to enhanced their publications?
5. How do you see the general output of lecturers with regards of their publications?
6. Does lack of publications hinder lecturers promotions?
7. Does poor academic conditions of service affect publications and research?
8. What factors do publishers have on lecturers publications output?
9. What measures would the University adopt in order to improve publications and Research among lecturers?