

Influence of Collaboration on the Publication Output of Academics in Tertiary Institutions in Yobe State, Nigeria

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Abstract

This study examines the influence of collaboration on the publication output of the academic in tertiary institutions in Yobe State, Nigeria. Collaboration in tertiary institutions is the group of two or more researchers working together towards sharing educational and research dreams, achieving common goals, and enhancing collective effort in meeting educational needs in focus. Two (2) objectives and one (1) hypothesis were formulated to guide the study. The survey research design was adopted for the study, and data were gathered using a questionnaire. The target population for the survey is 162 academic scientists. Purposive sampling was used for the selection of three institutions (Federal University Gashua, Federal Polytechnic Damaturu, and Federal College of Education Potiskum). One faculty from university, one school each from polytechnic and college of education with science lecturers. Data were analysed using frequency counts and percentage scores. Chi-square was used for the testing of the hypothesis. Findings revealed that the extent of collaboration in existence among academic scientists was moderate, with 257 (210%). In comparison, the influence of collaboration on the publication output of the academic scientists was agreed by respondents with 448(366%). The result for the hypothesis revealed that there is a significant influence of collaboration on publication output of academic scientists in tertiary institutions in Yobe State, Nigeria since the calculated X^2 of 60 is higher than the P-value of 1.149; hence, the hypothesis is rejected. The study recommends, among others, that academic scientists should be encouraged and provided with an enabling environment to promote, enhance, and sustain collaboration to a great extent.

Keywords: Academic Scientists, Collaboration, Publication output, and Tertiary Institutions.

Introduction

Collaboration is the process of two or more people or organisations working together to complete a task or achieve a goal. Collaboration in tertiary institutions is the teaming up of two or more researchers to work together towards sharing educational and research dreams, achieving common goals, and enhancing collective effort in meeting educational needs in focus. Collaboration between researchers and institutions of higher learning has long been part of accepted practice (Read, 2010). Kemp (2013) defined collaboration as the act of working collectively with other individuals for an agreed-upon mission.

Publication output is a means by which academic scientists contribute new knowledge to the existing body of knowledge. The publications of academic scientists can be in the form of journal articles, conference proceedings, technical reports, books, or chapters of a book. The quantity of scholarly scientists' publication output could include publications of being measured according to Popoola (2002), by counting the number of books published or journal articles produced over academic period of a scientist. Abramo and D'Angelo (2013), the objective of research activity is to create new knowledge.

Academic scientists refer to science lecturers or lecturers in the field of sciences who engage in research and teaching activities to solve a societal, national, and global problem and are expected to publish the findings of their studies for the benefits of others. Academic scientists, like every other lecturer, are expected to conduct research and disseminate their research results. In tertiary institution communities, the recognition and advancement of an academic scientist rest mainly on the quantity and often the quality of his/her publication output in the form of books, journal articles, conference proceedings, a technical report in the field of sciences. Academic scientists in this study would be used interchangeably with lecturers. Moreover, this refers to lecturers in the field of pure sciences and technology in the faculty/schools of science, science technology, and science education in Federal University Gashua, Federal Polytechnic Damaturu, and Federal College of Education (Technical) Potiskum in Yobe State, Nigeria. The continued recognition of the National Universities Commission(NUC), National Board for Technical Education (NBTE) and National Commission for Colleges of Education (NCCE) as the regulatory bodies of Nigerian Universities, Polytechnics and Colleges of Education respectively. These regulatory bodies are responsible for constant reviews of programmes to keep pace with and reflect on modern trends in lecturers' activities.

Problem Statement

It is believed that collaboration between or among scholars is necessary for personal, institutional, and national development. This collaboration allows the cross-fertilisation of ideas. For instance, Fei (2011) observed that the significant information source of leading Japanese scientists seems to be through personal collaboration/information sharing with colleagues on discoveries and attendance at meetings. These collaboration and innovations facilitate their breakthrough and productive statuses.

Despite the importance of collaboration in research, it has, however, been observed that academic scientists in Yobe State seem not to frequently collaborate on research activities to interject and interact on new ideas, knowledge, experience for the achievement of breakthrough and publications in their fields. This undermines the academic scientists' publication output in tertiary institutions in Yobe State. A study of this nature is very significant to determine the influence of

collaboration on the publication output of the academic scientists in tertiary institutions in Yobe State, Nigeria

Objectives of the Study

The objectives of the study are to determine:

1. The extent of collaboration that exists among academic scientists in tertiary institutions in Yobe State, Nigeria
2. The influence of collaboration on publication output of the academic scientists in tertiary institutions in Yobe State, Nigeria

Hypothesis

The following null hypothesis of the study was tested:

1. H_{01} : Collaboration has no significant influence on publication output of academic scientists in tertiary institutions in Yobe State, Nigeria

Literature Review

Collaboration in tertiary institutions is when two or more researchers work together to achieve a particular goal. The art of working with another person or group of persons to create or produce scientific work, for example, co-authorship. Collaboration between researchers of higher learning has long been part of accepted practice (Read, 2010). Academic scientists are lecturers in tertiary institutions engage in teaching and research activities, specifically in the field of sciences. Academic scientists are a group of lecturers who conducts scientific research to advance knowledge in the science area of interest. The conduct of research is one of the essential functions of tertiary institutions, which comprised of Universities, Polytechnics, and Colleges of Education. The academic staffs of these institutions are required to carry out research activities as their promotions are primarily based on their research outputs. Apart from the academic staff being promoted through research publications, research activities enhance their credibility, status, and also add value both to their immediate community and the broader global community. The quality of research being carried out by Nigerian academics has been adjudged to be of a low standard when compared to their counterparts in other parts of the world (Nwakpa, 2015). The relevance of collaboration, as observed by Janssen and Tan (2014) includes:

- a. Enhancing productivity among members
- b. Facilitating smooth and quick information accessibility
- c. Promoting familiarisation and strengthen the relationship among members
- d. Enhancing the sharing of ideas between and among members

Recipe, Adekunmisi, and Akinbode (2017) opine that collaboration offers several opportunities in education. First, they can be used as a means of preparing the current generation of students for the future workplace. Today's students live in a global knowledge-based age, and they observe teachers whose practice embraces the bests that collaboration and information sharing can bring to learning.

A study conducted by Nguyen, Ho-Le, and Le(2017) on international collaboration in scientific research in Vietnam: an analysis of patterns and impact reveals that the extent of domestic and international collaborations based on co-authorship in scientific publications. Overall, approximately 7% of papers published between 2001 and 2015 were single-authored. However, the proportion of single-authored papers varied between research areas, with mathematical papers having the highest percentage (25%), followed by business and economics (21%), and social sciences (17%). Experimental sciences such as physics, chemistry, and life sciences had a lower proportion of single-authored papers. Approximately 16% of published articles had multiple domestic authors (i.e., internal collaboration), and 77% had at least one international affiliation (i.e., international collaboration).

In general, experimental science and life sciences had the highest proportion of collaboration. For instance, 90% of papers in earth science, clinical medicine, biomedical science, and public health sciences had at least one overseas affiliation. Between 2001–2005 and 2011–2015, the number of papers was increased by 8768, and 75% of this increase was attributable to internationally co-authored papers. There was a slight decrease in the proportion of international collaboration papers. Between 2001 and 2005, almost 80% of Vietnam's scientific output had an international co-author or co-authors, but this proportion fell to 76% from 2011 to 2015. The reduction was observed mainly in chemistry, biomedical sciences, and physics. Nevertheless, some research areas recorded an increase in international collaboration, mathematics, earth science, business, and economics.

Methodology

The survey research design was adopted for the study. The target population for the survey is 162 academic scientists of the three tertiary institutions under study, namely; Federal University Gashua, Federal Polytechnic Damaturu, and Federal College of Education (Technical) Potiskum. The target population for the study is 162 academic scientists. Purposive sampling was employed for the selection of three institutions. One faculty from university, one school each from polytechnic and college of education with science lecturers. The institutions were selected because they have science-based courses/lecturers and also because the lecturers are actively engaged in teaching and research activities in the field of sciences. The data were gathered through the use of a questionnaire. One hundred and sixty-two (162) copies of the questionnaire were administered, and one hundred and twenty-two (122) copies were returned and considered usable for the study. Data were analysed through frequency counts and percentage scores. Chi-square was used for the testing of the hypothesis.

Data Analysis and Discussion

The response rate indicated that one hundred and sixty-two (162) copies of questionnaire were administered to the academic scientists, and the response rate recorded one hundred and twenty-two (122) representing 75.3%. All were

adequately filled and found usable for analysis. While, 40 copies of the questionnaire were not returned, representing 24.7%, as non-response rate. The response rate of 122 (75.3%) is, therefore, considered to be adequate for data analysis.

This section sought to find out the extent of collaboration that exists among academic scientists. The result of the study is presented in the table below:

Table 1: Extent of Collaboration in Existence among Academic Scientists in Tertiary Institutions in Yobe State, Nigeria

S/N	Statement	HE		ME		LE		NE	
		F	P	F	P	F	P	F	P
1	To what extent do you collaborate with colleagues in your field?	42	34%	57	47%	20	16%	3	3%
2	To what extent do you publish in collaboration with colleagues	45	37%	64	52%	11	9%	2	2%
3	How do you rate your years of collaboration in research	26	21%	33	27%	58	48%	5	4%
4	To what extent do you collaborate when it comes to Tetfund sponsorship	39	32%	54	44%	16	13%	13	11%
5	To what extent do you collaborate with colleagues outside your field?	18	15%	49	40%	53	43%	2	2%
	Total	170	139%	257	210%	158	129%	25	22%

Keys: High Extent (HE), Moderate Extent (ME), Low Extent (LE), and No Extent (NE)

Table 1 showed the extent of collaboration in existence among academic scientists. The degree of collaboration with colleagues in their field (47%), the extent of publication in collaboration with colleagues (52%), and the extent of collaboration when it comes to Tetfund sponsorship (44%) was to a moderate degree. The extent of collaboration in existence among academic scientists, with years of collaboration in research (48%) and the extent of collaboration with colleagues outside their field (43%) were to a low extent. Specifically, the

collaboration in existence among academic scientists was, to a moderate degree in collaboration with colleagues in their field, the extent of published in collaboration with colleagues and extent of collaboration when it comes to Tetfund sponsorship. Generally, the analysis revealed that the degree of collaboration in existence among academic scientists was to a moderate extent.

Findings revealed that the extent of collaboration that exists among academic scientists was generally to an average extent. However, the length of collaboration with colleagues in their field, the scope of publication in collaboration with colleagues, and the extent of collaboration when it comes to Tetfund sponsorship was to a moderate extent. This finding agreed with Aliyu (2011) in a study on author productivity and collaboration, revealed that the most productive scientists are also the most collaborative among them. This is because the survey revealed that most productive authors have 96.6% of their publication in collaboration during the ten years the study covers.

This section of the study sought to find out the influence of collaboration on the publication output of academic scientists. The result is presented in the table below:

Table 2: Influence of Collaboration on the Publication Output of the Academic Scientists in Tertiary Institutions in Yobe State, Nigeria

S/N	Statement	SA		A		D		SD	
		F	P	F	P	F	P	F	P
1	Collaboration promotes familiarisation and strengthens my relationship with other scientists	22	18%	64	52%	29	24%	7	6%
2	Collaboration enhances my productivity	22	18%	44	36%	50	41%	6	5%
3	Collaboration brings about my efficiency and avoidance of duplication of efforts	32	26%	66	54%	14	12%	10	8%
4	Collaboration increases my effectiveness and specialisation among scientists	22	18%	64	52%	28	23%	8	7%
5	Collaboration enhances the sharing	27	22%	71	58%	22	18%	2	2%

	of ideas between myself and other scientists								
6	Collaboration facilitates easy and quick information accessibility for me	31	25%	69	57%	22	18%	0	0%
7	Collaboration saves cost and time for me, which I would have incurred by individualism	27	22%	70	57%	20	17%	5	4%
	Total	183	149%	448	366%	185	153%	38	32%

Keys: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)

Table 2 showed the influence of collaboration on the publication output of the academic scientists, with collaboration promotes familiarisation and strengthen my relationship with other scientists (52%). Collaboration brings about my efficiency and avoidance of duplication of efforts (54%). Collaboration increases effectiveness and specialisation among scientists (52%), collaboration enhances the sharing of ideas between myself and other scientists (58%), collaboration facilitates easy and quick access to information (57%). Additional responses of the respondents include collaboration saves cost and time for me, which I would have incurred as an individual agreed with the statement, collaboration enhances my productivity (41%) of the respondents disagreed with the statement.

Findings revealed that the influence of partnership on publication output of the academic scientists' remark agreed in conjunction, promotes familiarisation, and strengthens my relationship with other scientists. Collaboration brings about my efficiency and avoidance of duplication of efforts. Collaboration increases my effectiveness and specialisation among scientists; It enhances the sharing of ideas between myself and other scientists, collaboration facilitates easy and quick information accessibility for me and collaboration saves cost and time for me, which I would have incurred by individualism. Generally, the analysis revealed that respondents agreed on the influence of cooperation on the publication output of the academic scientists. The findings also corroborate with Shah (2010), which observed the reasons for the partnership to include the diversity of skills, and often people get together because they could not individually possess the required set of skills. For example, co-authorship, where different authors bring a different set of skills to the table. The findings also revealed that collaboration increases their effectiveness and specialisation.

Hypothesis Testing:

The data collected were analysed using chi-square (X^2). The result obtained is presented on tables 3a and 3b below:

Table 3a: Cross Tabulation of the Influence of Collaboration on Publication Output of Academic Scientists

S/ N	Statement	SA		A		D		SD		Total
		Fo	Fe	Fo	Fe	Fo	Fe	Fo	Fe	
1	Collaboration promotes familiarisation and strengthens my relationship with other scientists	22	26.1	64	64	29	26.4	7	5.4	122
2	Collaboration enhances my productivity	22	26.1	44	64	50	26.4	6	5.4	122
3	Collaboration brings about my efficiency and avoidance of duplication of efforts	32	26.1	66	64	14	26.4	10	5.4	122
4	Collaboration increases my effectiveness and specialisation among scientists	22	26.1	64	64	28	26.4	8	5.4	122
5	Collaboration enhances the sharing of ideas between myself and other scientists	27	26.1	71	64	22	26.4	2	5.4	122
6	Collaboration facilitates easy and quick information accessibility for me	31	26.1	69	64	22	26.4	0	5.4	122
7	Collaboration saves cost and time for me, which I would have incurred by individualism	27	26.1	70	64	20	26.4	5	5.4	122
	Total	183		448		185		38		854

Table 3b: Shows a Contingency table for the test of the influence of collaboration on publication output of academic scientists in tertiary institutions in Yobe State, Nigeria.

Option	SA	A	D	SD	Total	Df	X ²	p-value	Decision P<0.05
Observed	26.1	64	26.4	5.4	122	4	60	1.149	S
Expected	30.5	30.5	30.5	30.5	122				

Table 3b shows that the calculated X² is = 60, while the P-value = 1.149 at 0.05 level of significant at 4 degree of freedom. Since the calculated X² of 60 is greater than the P-value of 1.149, hence, the hypothesis is rejected. Therefore, this implies that there is a significant influence of collaboration on publication output of academic scientists in tertiary institutions in Yobe State, Nigeria.

Summary of Findings

Based on the analysis, the findings of this study are presented as follows:

1. The extent of collaboration that exists among academic scientists was the generally moderate extent
2. Influence of collaboration on the publication output of the academic scientists was generally agreed
3. The study revealed that there is a significant impact of cooperation on the publication output of academic scientists in tertiary institutions in Yobe State, Nigeria.

Conclusion

The research findings revealed that the extent of collaboration in existence among academic scientists was generally moderate and highly appreciated. It can be concluded that academic scientists deliberately collaborate to be productive in their various fields of science and to improve their publication output, particularly with their colleagues within their specialized areas in Nigeria. The majority of academic scientists do not collaborate with colleagues outside their field. Academic scientists should be encouraged and provided with a conducive environment within each tertiary institution to promote, enhance, and sustain collaboration to a great extent.

Recommendations

Based on the findings of the study, the following recommendations were made for improvement:

1. Academic scientists should be encouraged to collaborate and share research information with colleagues to compete with peers in the developed world.
2. Management should motivate academic scientists by giving awards and recognition to the top and building scientists.

3. The tertiary institutions' management understudy, NUC, NBTE, and NCCE should provide a more conducive environment for easy and quick establishment of collaboration for quality publication output among the academic scientists. They should also encourage collaboration by scientists. This will enhance their familiarity, avoid duplication of efforts, and stimulate breakthroughs in their various fields of interest.
4. The management of tertiary institutions under study, in conjunction with their regulatory bodies, should provide a more conducive environment for cross-fertilization of ideas and among academic scientists. This will enhance interaction with other people's ideas, knowledge, experience, and achievements.

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