INFORMATION AND TECHNOLOGY

Impact of Collaboration and Information Sharing on the Publication Output of Academic Scientists in College of Education in Adamawa State, Nigeria

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Abstract

This paper determined the impact of Collaboration and Information Sharing on the Publication Output of Academic Scientists in College Education in Adamawa State, Nigeria. The study determined the impact of Collaboration and Information Sharing on the Publication Output of Academic Scientists and extent to which the Collaboration and information sharing entails sharing knowledge and ideas and working as a team to achieve a common goal. The goal of collaboration and information sharing is to discover new ideas as to improve knowledge sharing with Academic Scientists in Colleges. Descriptive survey research design was adopted for the study and self-designed questionnaire was used. The target population for this study will one hundred and sixty-two (162) academic scientists of the three tertiary institutions under study. Three (3) objective were formulated to conduct the study. Three research question were raised and answered, Frequency counts and percentages were used in analyzing the data to answer the research question; results were presented in tables while inferential statistics of Pearson product moment Correlation (PPMC) was used to test the null hypothesis at 0.05 level of significance. Using the Statistical Package for the Social Sciences (SPSS) version twenty (20). The finding revealed that majority of the respondent's indication that the extent of collaboration was to a low extent among academic scientists in tertiary institutions in Adamawa State, Nigeria, equally It was also established that the respondents on extent of information sharing activities among academic scientists were to a total low extent among academic scientists in tertiary institutions in Adamawa State, Nigeria. The following among others was recommended that the Collaboration and information sharing on the publication output has significant impact on the teaching activity of the academic scientists in colleges and Polytechnic. Academic library should encourage information sharing on the publication output on academic scientists to publish more in overseas journals so as to promoting familiarization and strengthen relationship among academic scientists.

Keywords: collaboration; information sharing; publication output; academic scientists

1 Introduction

This study examines the impact of Collaboration and Information Sharing on the Publication Output of Academic Scientists in College Education in Adamawa State, Nigeria.

Collaboration and information sharing are generally formed for a common purpose, which benefit those who belong. They may be practice-oriented comprising of individuals who have similar training or professional interests. Collaboration and information sharing entails sharing knowledge and ideas and working as a team to achieve a common goal. The goal of collaboration and information sharing is to discover new ideas as a library or organization to improve knowledge sharing and collaboration. As new issues emerge, scientists and publication output of academic scientists to explore new

approaches dealing with such issues and innovations to chart a course forward. Collaboration and information sharing will be enhancing the sharing of ideas between and among members, can equally provide support and influence publication outcomes, but concerns arise due to lack of awareness and interaction with other people's ideas, knowledge, experience and achievements. Collaboration and information sharing allow one to address common issues much more effectively than working alone (Fari and Ingawa, 2020).

Academic scientists are lecturers in tertiary institutions engaged in teaching and research activities specifically in the field of sciences. Academic scientists are group of lecturers who conducts scientific research to advance knowledge in science area of interest. The conduct of research is one of the basic functions of tertiary institutions, which comprise of universities, polytechnics and colleges of education. The academic staff of these institutions are compulsorily required to carry out research activities as their promotions are primarily based on their research outputs. Academic scientists in this study would be used interchangeably with lecturers and this refer to lecturers in the field of pure sciences and technology in the faculty/schools of science, science and technology and science education in Adamawa State College of Education, Hong. Adamawa State Polytechnic Yola (SPY). Adamawa State College Agriculture Ganye in Adamawa State, Nigeria. Oyedipe et al. (2017) opine that collaboration and information sharing offer several opportunities in education. First, they can be used as a means of preparing the current generation of students for 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. Zugang et al. (2018) affirms that information sharing is considered an important means for enhancing and sustaining institutional development. Data were formerly frequently kept in silos and often not shared among other entities due to its proprietary, non-portable format or the inability to import/export data. Using information sharing techniques to communicate with other scientists on new ideas for research purpose would be a more effective way to manage any institution, organization, government or a business effectively.

Preliminary investigation shows that academic scientist in College Education in Adamawa State, Nigeria seems not to frequently collaborate and share information on their publications. This may be attributed a lack of funds, limited ICT infrastructure, political and cultural issues, a lack of a strong collaborative climate and a lack of understanding the impact of collaboration and information sharing on their publication output or new discoveries and pressure of work on lecturers. Lecturer's time and activities are devoted to teaching and assessing students throughout the year without definite official time for doing research. Consequently, these could likely undermine scientist's publication output in tertiary institutions in Adamawa State, Nigeria.

1.1 Statement of the problem

When multiple academic scientists collaborate and share information together to solve dictated problem in the field of science, the collaboration and information sharing process must be performed jointly and strategically to be successful. The collaboration and information sharing of academic scientists may be able to link scientist to new discoveries, provide different perspectives on reliable facts, and stimulate each other's thinking processes through promoting, enhancing and sustaining research processes.

Olayiwola (2010) observes that there is decline in lecturers' publication output. These may likely be attributed to lack of collaboration and information sharing on new discoveries, as well as pressure of work on lecturers. Lecturer's time and activities are devoted to teaching and assessing students

throughout the year without definite official time for doing research. More also, the high increasing students' population and limited man power in tertiary institutions of the study area, these and other factors may likely undermine lecturer's publication output. Consequently, the need to study the impact of collaboration and information sharing on the publication output of the academic scientists in tertiary institutions in Adamawa State is worth undertaking. It seems that the collaboration and information sharing will help to improve and increase publication outputs of academic scientists under study and the world at large.

Preliminary observation shows that academic scientist in tertiary institutions in Adamawa State, Nigeria seems not to frequently collaborate and share information on their publications. This may be attributed to lack of understanding the impact of collaboration and information sharing on their publication output and pressure of work on academic scientists as a result of higher increasing students' population. Consequently, these could likely undermine scientist's publication output in tertiary institutions in Adamawa State, Nigeria.

However, collaboration and information sharing are vital for quality and frequent publication output, it is therefore, the problem of this study to find out the impact of collaboration and information sharing on the publication output of academic scientists in tertiary institutions in Adamawa State, Nigeria. Therefore, the statement of the problem is stated as thus; does collaboration and information sharing have impact on academic scientist's publication output in tertiary institutions in Adamawa State, Nigeria?

1.2 Objectives of the study

The study was guided by the following objectives:

1. Extent of collaboration in existence among academic scientists in tertiary institutions in Adamawa State, Nigeria.
2. Extent of information sharing activities among academic scientists in tertiary institutions in Adamawa State, Nigeria.
3. Extent of academic scientist's publication output in tertiary institutions in Adamawa State, Nigeria.

1.3 Research questions

The following research questions guided the study:

1. What is the extent of collaboration in existence among academic scientists in tertiary institutions in Adamawa State, Nigeria?
2. What is the extent of information sharing activities among academic scientists in tertiary institutions in Adamawa State, Nigeria?
3. What is the extent of academic scientist's publication output in tertiary institutions in Adamawa State, Nigeria?

2 Literature review

Collaboration entails the development of formal and informal ties between any two or more people, and groups whereby information can be obtained and disseminated. Bryson (1990) defined collaboration as natural coalition, i.e, groups whose joint interests, viewpoints and preferences need to be protected. Thus, within collaborations information is freely and positively given. Collaboration can

also be closed group phenomena, with those belonging to the collaboration having the same predisposition, values and norms. The concept of collaboration, however, manifests itself in the form of, cooperation, connection and association. In scientific community for instance, informal communication regarding research findings, research in progress, and research techniques represents one way in which members of a scientific area are linked to one another. In case of formal collaboration, communication between two or more scientists about their research receives formal recognition in journal publications. This collaboration occurs before the research reaches the stage of formal publication. Another form of collaboration takes place when a student writes a thesis under the direction of one or more teachers. Other teachers not formally directing the thesis may play a role in the development of the thesis. This relationship also represents a kind of collaboration. However, the success of these collaborative collaborations depends on the level of tolerance and cooperation among those involved. Citation references in journal articles are also direct indications of intellectual linkages represented by the influence of one scientist's work upon that of another. The impact of collaboration as observed by Janssen (2014) includes:

- Exposure to new ideas, methodologies, and insights.
- Promoting familiarization and strengthen relationship among members.
- Enhancing productivity among members.
- Develop working relationships outside of committee work.
- Understand the strengths of colleagues.
- Utilize the skill sets of colleagues so as to assist students with research.

The impact of collaboration on publication output has become a key area of concern for both scholars and policy makers interested in assessing the social and economic impact of the engagement of academic scientists.

Study conducted by Aliyu and Camble (2017) in his study on author productivity and collaboration observed that the most productive scientists are also the most collaborative among them. This is because the study revealed that most productive authors have 96.6% of their publication in collaboration during the ten years period the study covers. Collaboration includes both internal and external. Internally means to be visible at your job – don't hide in your office or cubicle, volunteering for projects and making yourself available, expanding partners, meeting and talking with new co-workers, and communicating with them on a regular basis. Scientific collaboration can be defined as interaction taking place within a social context among two or more scientists that facilitates the sharing of meaning and completion of tasks with respect to a mutually shared superordinate goal. Scientists who collaborate may also bring additional, individual goals to collaboration between researchers and institutions of higher learning has long been part of accepted practice (Read, 2010).

Study conducted by Nguyen et al. (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 proportion (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 papers had multiple domestic authors (i.e., domestic 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 8,768 (75%) of this increase was attributable to internationally coauthored papers. There was a slight decrease in the proportion of international collaboration papers. During the period of 2001–2005, almost 80% of Vietnam's scientific output had an international coauthor or coauthors, but this proportion fell to 76% during the period of 2011–2015. 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.

Yang (2017) observes that the biggest advantage of the collaborative process, especially for the new academic would be the exposure to new ideas, methodologies, and insights. Because new doctoral students are trained to be specialized, their backgrounds in areas outside of their area of expertise might be limited. However, faculty members that are actively engaged in their careers can also benefit. By collaborating on research projects, faculty members could be introduced to new ideas and gain a greater understanding of the interconnectedness of subject areas. Likewise, individuals could hone in their skills by becoming the resident expert on certain methodologies, topics, or writing styles. This collaboration would also have a secondary effect. It would allow faculty members to create a collegial environment that could be used to benefit the department or institution in a variety of ways.

- Understand the strengths of colleagues.
- Develop working relationships outside of committee work.
- Utilize the skill sets of colleagues so as to assist students with research.

In addition, when teams of academic scientist work together, there is the possibility of creating large data sets that can be used for multiple publications. This would allow for sustained research over a topic that would foster the development of a research agenda.

Adegbaye et al. (2017) stated that the degree of collaboration among academic scientists refers to the ratio of the number of collaborative published papers to the total number of research paper published in sciences journals during a certain period of time. An academic scientist is any person who is skilled in the practice of scientific profession, having acquired the skills through extensive educational training with the objective of obtaining a minimum of a masters' degree in the field of science or equivalent.

Information sharing can be defined as a set of activities by which information is provided to others, either proactively or upon request, such that the information has an impact on another person's image of the world and creates a shared, or mutually compatible working, understanding of the world. The process of information sharing incorporates two major aspects that is, giving information to others, and receiving information that has been provided by the information giver for present or future use. Information sharing which by definition involves an exchange of information and ideas between two or more parties, is based on the needs and expectations of those involved. Efficient information sharing is only possible if these needs and expectations are made explicit and shared between the parties. Information sharing is essential for scientists and scientific research; advances and achievement in science depend on its success at various levels.

Aliyu and Camble (2016) affirms that a lot of information exchange takes place at conferences and seminars. In outlining the importance of conference in scientific exchange of information, it can be observed that the usefulness of conference in the eyes of scientists lies less in their official intention,

but rather, in the ability to bring scientists with like interests together in one place. Hence scientists who attend conferences derive more benefit from the fact that they make new acquaintances which become useful sources of information in their area of specialization. The importance of information sharing networks is gaining increasing attention from research scientists. These networks play a crucial role in how we acquire information, how we convey information to one another, and how we interact with other people. Many information sharing networks can help normal users with various daily activities, such as reading and recommending news, making or contacting friends and online purchasing. All of those activities are actual electronic transactions and can be recorded. Nowadays, such data are continuously growing and evolving, and are an indispensable source of information for researchers to study the underlying human dynamics that increase by its various patterns. Most of such data has either explicit or implicit link patterns, and these links are potential paths for information to spread over that entire online social environment. Study conducted by Aliyu (2015) on the impact of collaboration and information sharing on the performance of academic scientists indicates that few of the academic scientists 30% out of 100% of his targeted population usually share information with colleagues. Out of the 30% of the academic scientists 27% agreed that sharing information stimulate their thought and action by the injection, and interaction with other people's ideas, knowledge, experience and achievement.

The impact of information sharing as observed by Janssen (2014) includes:

- Enhancing the sharing of ideas between and among members.
- Saving cost and time, which would have been incurred by individualism.
- Bringing about efficiency and avoidance of duplication of efforts.
- Increasing effectiveness and specialization among members.
- Bringing about up-to-datedness among members in their field of interest.
- Facilitating easy and quick information accessibility.

Publication output entails the application of intellectual effort in the investigation of issue of either natural or human origin. That is to say the aim of research is discovery and development of human knowledge. Publication output is a means by which academic scientists contribute new knowledge to the existing body of knowledge. According to Middaugh (2001) cited in Starovoytova (2017), academic scientists conduct research and their research productivity is measured in various ways based on published works, empirical publication, and the impact factor of the publishing output. Oyedipe et al. (2017) posited that scientist publication output and research activities widen the formation and creation of new.

Publication output refers to application of intellectual effort in the investigation of issue of either natural or human origin. In tertiary institutions environment the world over, recognition and advancement of an individual lecturer rested largely on the quality and often, the quantity of his/her publication output, either inform of books, journal articles and conference proceedings. The aim of research is discovery and development of human knowledge. Publication output is a means by which lecturers contribute new knowledge to the existing body of knowledge. The publishing of research findings according to Okafor and Dike (2010) is an act of information transfer between producer and consumer of information and knowledge. According to Okafor (2010) the comparatively lower publication output of tertiary institution lecturers in Nigeria and other developing countries compared to their counterpart in advanced countries as reported by some studies may be due to lack of frequent collaboration. In other words, lack of mutual collaboration and information sharing among lecturers may lead to lower publication output.

3 Methodology

Survey research design was found suitable and adopted for study. Descriptive survey research design was adopted for the study and self-designed questionnaire was used. The target population for this study will one hundred and sixty-two (162) academic scientists of the three tertiary institutions under study; the institutions are Adamawa State College of Education, Hong. Adamawa State Polytechnic Yola (SPY). Adamawa State College Agriculture Ganye. Data was collected from the respondents through the use of a self-designed questionnaire that was administered to the one hundred sixty-two (162) academic scientists of the three tertiary institutions under study. Descriptive statistics of frequency counts and percentages was used in analyzing the data to answer the research question; results were presented in tables while inferential statistics of Pearson product moment Correlation (PPMC) was used to test the null hypothesis at 0.05 level of significance. Using the Statistical Package for the Social Sciences (SPSS) version twenty (20).

4 Results and discussion

4.1 Response rate

Out of the 162 questionnaires distributed to the respondents in the three institution under study, 90 (100%) copies were duly completed, returned and found valid for the analysis. In order to determine the impact of Collaboration and Information Sharing on the Publication Output of Academic Scientists in institution under study, the results were presented in the table below:

Table 1. Distribution of academic scientists (Lecturer I to Chief Lecturer) and questionnaires in the institutions studied.

College	Chief Lecturer	Principal Lecturer	Senior Lecturer	Lecturer I	Sampled population	Questionnaires administered	Questionnaires returned	Questionnaires not returned/invalid
Adamawa State College of Education, Hong	7	18	21	36	82	82	73 (45.1%)	9 (5.6%)
Adamawa State Polytechnic Yola (SPY)	4	9	13	25	51	51	43 (26.5%)	8 (4.9%)
Adamawa State College Agriculture Ganye	3	4	10	12	29	29	27 (16.7%)	2 (1.2%)
Total	14	31	44	73	162	162	143 (88.3%)	19 (11.7%)

The four ranks were included because they are actively involved in research and teaching; the target population was 162. Source: departmental staff lists/MIS records.

Table1 shows the analysis of distribution of questionnaire administered and returned revealed that 82 copies of the questionnaire were administered to sample the staffs of Adamawa State College of Education, Hong, 73(45.1%) respondents were retrieved and found valid for analysis while only 9(5.6%)respondent was not retrieved/not valid, 51 copies of the questionnaire were administered to sample the staffs of Adamawa State Polytechnic Yola (SPY) and 43(26.5%) respondents were re-

trieved and found valid for analysis while 8(4.9%) respondents were not retrieved/not valid, 29 copies of the questionnaires were administered to sample the staffs of Adamawa State College Agriculture Ganye. while 27(16.7%) respondents were retrieved and found valid for analysis. while only 2(1.2%) respondents were not retrieved/not valid.

Based on 162 respondents respond rate of questionnaire, out of the one hundred forty-three 143(88.3%) questionnaire administered were retrieved and found valid for the analysis while only 19(11.7%) questionnaires administered were not retrieved or not valid for the analysis. The respond rate followed directly according to the population of the institution under study. Majority of the retrieved is from Adamawa State College of Education, Hong. 73(45.1%).

4.2 Analysis of research questions

Table 2. Extent of collaboration among academic scientists in tertiary institutions in Adamawa State, Nigeria.

S/N	Items	N	VHE	HE	LE	VLE	Mean	SD	Decision
1	To what extent do you collaborate with colleagues in your field?	143	46 (32.2%)	36 (25.6%)	39 (27.3%)	22 (15.4%)	2.7	18.6	Accepted
2	To what extent do you publish in collaboration with colleagues in other field of science?		39 (27.2%)	40 (27.9%)	33 (23.1%)	31 (21.7%)	2.6	19.0	Accepted
3	How do you rate your years of collaboration in research?		28 (19.6%)	48 (33.6%)	35 (24.5%)	32 (22.4%)	2.5	16.1	Accepted
4	To what extent do you collaborate when it comes to Tetfund sponsorship		40 (27.9%)	29 (20.3%)	36 (25.6%)	38 (26.6%)	2.4	13.5	Rejected
5	To what extent do you collaborate with colleagues outside your field?		39 (27.3%)	35 (24.5%)	37 (25.9%)	28 (19.6%)	2.5	16.6	Accepted

VHE, very high extent; HE, high extent; LE, low extent; VLE, very low extent; N, number of respondents. Decision was taken on the collapsed columns (total high extent and total low extent).

Table 2 revealed the extent of collaboration in existence among academic scientists. The table revealed collaborate with colleagues in your field, published in collaboration with colleagues in other field of science, rate your years of collaboration in research, collaborate when it comes to Tetfund sponsorship and collaborate with colleagues outside your field therefore all items revealed mean scores above the criterion bench mark of 2.50 the grand mean is except the extent of collaboration in existence among academic scientists was 2.4 which result to the grand mean rejected and total grand mean of 2.54. This is an indication that the extent of collaboration was to a low extent among academic scientists under study.

Table 3. Extent of information sharing activities among academic scientists in tertiary institutions in Adamawa State, Nigeria.

S/N	Items	N	VHE	HE	LE	VLE	Mean	SD	Decision
1	To what extent do you share information with colleagues in your field?	143	38 (26.6%)	36 (25.2%)	35 (24.5%)	34 (23.8%)	2.5	16.3	Accepted
2	To what extent do you inform your colleagues before starting research?		46 (32.2%)	33 (23.1%)	29 (20.3%)	35 (24.5%)	2.6	17.9	Accepted
3	To what extent do you maintain scientific data in secret up to the time of publication?		33 (23.1%)	42 (29.4%)	35 (24.5%)	33 (23.1%)	2.5	12.9	Accepted
4	To what extent do you normally distribute to colleagues the pre-prints of your research work?		41 (28.7%)	40 (27.9%)	28 (19.6%)	34 (23.8%)	2.6	17.4	Accepted

VHE, very high extent; HE, high extent; LE, low extent; VLE, very low extent; N, number of respondents.

Table 3 revealed extent of information sharing activities among academic scientists. The table revealed share information with colleagues in your field, colleagues before starting research, maintain scientific data in secret up to the time of publication and distribute to colleagues the pre-prints of your research work that all items revealed mean scores above the criterion bench mark of 2.5 the grand mean were accepted. The analysis revealed that extent of information sharing activities among academic scientists were to a total low extent under study.

Table 4. Extent of academic scientists' publication output in tertiary institutions in Adamawa State, Nigeria.

S/N	Items	N	VHE	HE	LE	VLE	Mean	SD	Decision
1	To what extent: Collaboration promotes familiarization and strengthen my relationship with other scientists	143	39 (27.2%)	37 (25.6%)	37 (25.9%)	30 (20.9%)	2.5	16.9	Accepted
2	To what extent: Collaboration bring about my efficiency and avoidance of duplication of efforts		48 (33.6%)	31 (21.7%)	35 (24.5%)	29 (20.9%)	2.6	18.5	Accepted
3	Collaboration increases my effectiveness and specialization among scientists		40 (27.9%)	42 (29.4%)	36 (25.6%)	25 (17.5%)	2.6	17.8	Accepted
4	To what extent: Collaboration saves cost and time for me, which I would have incurred by individualism		46 (32.2%)	27 (18.9%)	38 (28.6%)	32 (22.4%)	2.6	17.7	Accepted
5	Collaboration enhances the sharing of ideas between myself and other scientists to facilitates easy and quick information accessibility for me		39 (27.3%)	39 (27.3%)	33 (23.1%)	32 (22.4%)	2.5	17.0	Accepted

VHE, very high extent; HE, high extent; LE, low extent; VLE, very low extent; N, number of respondents.

Table 4 showed that statement items had a mean range of 2.5 to 2.6. The means were above the cut-off points of 2.50. The respondent accepted that the identified items were challenges collaboration promotes familiarization and strengthen my relationship with other scientists, Collaboration bring about my efficiency and avoidance of duplication of efforts, Collaboration increases my effectiveness and specialization among scientists, Collaboration saves cost and time for me, which I would have incurred by individualism and Collaboration enhances the sharing of ideas between myself and other scientists to facilitates easy and quick information accessibility for me. This indicated that respondents were unanimous in their responses and total grand mean of 2.6, which is an indication that extent of academic scientist's publication output in tertiary institutions in Adamawa State, Nigeria. This is an indication that the academic scientist's publication output was to a low extent under study.

5 Summary

This study was carried out to determine the impact of collaboration and information sharing on the publication output of the academic scientist in tertiary institutions in Adamawa State, Nigeria. Collaboration and information sharing are generally formed for a common purpose, which benefit those who belong. They may be practice-oriented comprising of individuals who have similar training or professional interests. Collaboration and information sharing entails sharing knowledge and ideas and working as a team to achieve a common goal. The study reviewed some related literatures on the concept of the dilemma investigated. This has become very crucial so as to set the basic upon which the study was developed. collaboration and information sharing on the publication output of the academic scientist under study were used as the population of the study out of whom a simple was purposively drawn. The instrument used for the data collection was questionnaire. Survey method adopted for the study.

5.1 Findings

1. The study revealed that majority of the respondent's indication that the extent of collaboration was to a low extent among academic scientists in tertiary institutions in Adamawa State, Nigeria.
2. It was also established that the respondents on extent of information sharing activities among academic scientists were to a total low extent among academic scientists in tertiary institutions in Adamawa State, Nigeria.
3. The study also revealed that most of the respondents of academic scientist's publication output were to a low extent among academic scientists in tertiary institutions in Adamawa State, Nigeria.

6 Conclusion and recommendations

Collaboration and information sharing are very crucial ingredient that is inevitable for academic scientist's publication output to enhancing productivity and utilize the skill sets of colleagues to develop working relationships and also understand the strengths of colleagues outside of committee work. Finding revealed that majority of the respondent's indication the extent of collaboration was to a low extent among academic scientists in tertiary institutions in Adamawa State, Nigeria. equally revealed that the respondents on extent of information sharing activities among academic scientists were to a total low extent among academic scientists in tertiary institutions. On the other hand, it

revealed that most of the respondents of academic scientist's publication output were to a low extent among academic scientists in tertiary institutions in Adamawa State, Nigeria. It can thus be concluded that impact of collaboration and information sharing on the publication output was to low extents among academic scientist and a determinant of their satisfaction. On the other hand, the study thus recommended the following:

1. Collaboration and information sharing on the publication output has significant impact on the teaching activity of the academic scientists in colleges and Polytechnic in Adamawa State Nigeria.
2. Academic library should encourage information sharing on the publication output on academic scientists to publish more in overseas journals so as to promoting familiarization and strengthen relationship among academic scientists in Adamawa State Nigeria.
3. Tertiary institutions' managements such as NCCE and NBTE should make Publication output available to academic scientists the pre-prints of their ongoing research to enhance the sharing of ideas between and among members to bring about efficiency and avoidance of duplication of efforts.

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