

An Investigation into the Extent of Promotion of Innovation and Development through Inter-Tertiary Collaborations Among Academic Staff In Tertiary Education In Delta State

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ABSTRACT

Education is perhaps the most vital tool for socio-economic, cultural and political development in Nigeria. It is the fulcrum on which the development of any society hangs. Given the roles and benefits obtained through education, it is an instrument for both human development and environmental sustainability. It is an instrument 'par excellence' as identified by the Federal Republic of Nigeria (2013) in the National Policy on Education (NPE) document. Therefore, for the Nigerian tertiary institutions to continually maintain their roles in human capacity development for innovations, educational development and overall national developments in the country, calls for the Nigerian academics within the tertiary institutions to collaborate through inter-tertiary collaborations in the areas of research, institutional conferences, workshops and seminars, institutional staff training, development and mentorship e.g sabbatical, inter-institutional supervision, and ICT collaborations. This is the main thrust of the present study which investigated academic staff extent of promoting innovation and development in tertiary education in Delta State through inter-tertiary collaborations. A descriptive survey research design was employed in order to conduct the study. From the findings of the study, which indicated that academic staff extent of promoting innovation and development through inter-tertiary collaborations in activities and areas of research, domestic and international co-authorship, staff training and development, collaborative technologies and inter-institutional collaborative supervision was to a low extent, recommendations were proffered. Among these recommendations included that: the Federal and State Government in Delta State should support and encourage academic staff research collaborations through adequate funding and budgetary allocations to tertiary institutions. Obviously, such activity can only be encouraged where there is effective implementation of national policy on education that will promote inter-tertiary collaborations among tertiary education institutions. Management and leadership of various institutions should organize and create a forum where constant orientation will be given to academic staff of various institutions concerning the importance of domestic and international co-authorship in promotion innovations and development at the tertiary education institutions.

Keywords: Promoting, Innovation, Development, Education, Inter-Tertiary, Collaborations, Academic Staff, Delta State, Nigeria

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1. BACKGROUND TO THE STUDY

Education has long been the main instrument for national development. It is an important tool for socio-economic growth and sustainability in the country given that the Federal Republic of Nigeria – FRN (2013) referred to education as an aggregate tool for empowerment and national transformation. Education is perhaps the most vital tool for socio-economic, cultural and political development in Nigeria. It is the fulcrum on which the development of any society hangs. Given the roles and benefits obtained through education, it is an instrument for both human development and environmental sustainability. It is an instrument ‘par excellence’ as identified by the FRN (2004) in the National Policy on Education (NPE) document. As a way of accommodating the Transformation Agenda and achieving the goals of tertiary education specifically, the FRN (2013) in the policy document stressed the importance of ensuing strategic plans in education given its expanded roles in developing competent and intelligent work force for the 21st century societies. One of these strategic plans which will assist the present day educational institutions – e.g tertiary institutions achieve their objectives as pointed out by the FRN (2013) is through collaborative partnerships of different stakeholders in education.

Collaborations in education as a matter of fact not only aid to improve the quality of education provision and service delivery, but as well assist in improving teacher quality. According to the FRN (2013), better institutional coordination, collaboration and networking of activities, programmes and interventions of all stakeholders in the Nigerian education sector will create opportunities to eliminate overlaps, achieve and sustain synergy. To effectively address the persistent gaps existing in the tertiary education system including Delta State as regards to quality improvement, the process of Inter-Tertiary Collaborations of various institutions of higher learning should be taken into consideration and highly adopted. Inter-Tertiary Collaborations according to Chien, Wan and Chen (2012) is a term used by scholars and practitioners to describe a process that can emerge as organizations interact with one another to create new organizational and social structures. In recent years, institutional collaboration has begun to emerge as a distinct focus of scholarly and empirical research. It is a key mechanism for linking distributed knowledge and competencies into novel ideas and research avenues which can produce significant changes in practice, and stimulate substantive growth in individual, team and organizational capability (Robertson, 2013).

Inter-Tertiary Collaboration is based on sharing ideas and strategies in a professional manner with a focus on meeting the diverse and unique needs of all students among institutions. The teachers must be able to productively communicate and work together with the teachers from other institutions so as to create innovations and developments in the classroom. Citing an example Brandenburg (1997) observed that the use of collaborative teaching in the tertiary institutions exposes students to a variety of teaching styles and approaches, which increases the potential for the team to meet the various learning styles of students. Esomonu, Akudolu & Ezenwosu (2015) opined that collaboration can have powerful effects on students’ learning/academic achievements, particularly for low-achieving students. However, quite a number of factors may have necessitated the adoption of inter-tertiary collaboration for student learning, this include student characteristics, group composition and task characteristics. According to Honeyfield, Breen, Protheroe and Fester (2015), inter-tertiary collaborations are necessitated based on the fact that organizations need to promote increased opportunities and new capabilities for themselves. Inter-tertiary collaborations will aid sharing of resources and outcomes which creates efficiencies. It provides collegial networks such as communities of practice, which enhances individual and institutional capacity and capability. Its benefits include; creating innovations and developments that will improve quality of instructions among institutions.

Therefore, for the Nigerian tertiary institutions to continually maintain their roles in human capacity development for innovations, educational development and overall national developments in the country, calls for the Nigerian academics/teaching staff within the tertiary institutions to collaborate through various means of inter-tertiary collaborations. When academic staff of different institutions collaborates, this leads to promoting innovations and development in instructions among tertiary institutions. Institutions collaborate in order to keep up to date access to new expertise, teaching methodology, knowledge, skills and ideas, among others.

To Fraser, Honeyfield, Breen, Protheroe and Fester (2015), inter-tertiary collaborations have been useful for building capability, learning and confidence, and a strong sense of satisfaction among members of various institutions. This process have enable workers to develop practical and fit-for-purpose resources for their own workplace use, to achieve professional outputs (example: through conference presentations and invitations, publications and subsequent funding grants), and to develop or extend valuable professional networks and communities of practice. Such collaboration may also allow for more ambitious projects, completed to a higher level than might be achieved by individuals (Honeyfield & Fraser, 2012). It also has a focus on developing teachers' skills, experiences and providing resources and kits which they will surely impact back on the students' learning. Inter-tertiary collaborations are also more likely to ensure that the resources developed have application across the tertiary sector.

Other organizational benefits as further highlighted by Fraser, Honeyfield, Breen, Protheroe and Fester (2015) include; showcasing organization credibility, aids to bring in money into an organization, and building longer term inter-institutional relationships. Innovations on the other hand according to Thompson (2004), refer to the ability to use new ideas from outside the organization, adapting those ideas to implement change in the management system of the organization or in the relationship between the system's components. It involves the adoption of new or significantly improved elements to create added value to the organization directly or indirectly for its customers. Innovation refers to improving products, services and the existing processes. Innovation is therefore associated with creating new changes, ideas, developments and improvement in any organization including in tertiary education.

The concept of development according to Shah (2017) simply means improvement in organization's economic and social conditions. More specially, it refers to improvements in way of managing an area's natural and human resources, in order to create wealth and improve people's lives. Development in its simplest definition and perhaps in its common usage can be considered as the objective of moving to a state relatively better than what previously existed: 'good change' as defined by Chambers cited in Shah (2017). Areas in which innovations and developments can be created in education through Inter-Tertiary Collaborations in Delta State include such areas like domestic and international research, book co-authorship, institutional staff training and development e.g through institutional conferences, workshops, seminars, mentorship and sabbatical, inter-institutional supervision, and technology collaborations. According to the European Commission (2007) domestic and international collaboration in research and/or development is assumed to be 'a good thing' and thus it should be encouraged among academic staff of tertiary institutions. Inter-tertiary research collaborations as defined by the European Commission (2007) is a process in which different individuals or institutions work together on a research project throughout its duration or for a large part of it, or who make frequent or substantial contribution. In the process of research collaborations one of parties will be responsible for one or more of the main elements of the research (e.g. the experimental design, construction of research equipment, execution of the experiment, analysis and interpretation of the data, among others).

It also refers to projects where written works are created by multiple people together (collaboratively) rather than individually. Inter-tertiary research collaboration could be organized by academic staff of different tertiary institutions within or outside the country to come together and contribute their different expertise towards executing a project. Katz and Martin (1997:14-15) cited in European Commission (2007) outlined five different types of benefits of research collaboration and they include: sharing of knowledge, skills and techniques; transfer of knowledge or skills; stimulating effects and source of creativity; networking effects; and enhancing the potential visibility.

Book co-authorship which is another means of promoting inter-tertiary collaborations is also seen as co-publication. In the tertiary institutions, two or more academic staff can collaborate to produce articles, textbooks and journals. According to Melin and Persson (1996), a document is co-authored if it has more than one author. It is institutionally co-authored if it has more than one author address suggesting that the authors come from various institutions, departments or other kinds of units. Co-authorship can be domestic or international. Domestic co-authorship as further described by Melin and Persson (1996) is when all the authors are from within the same country, while international co-authorship means that authors are from different institutions from several countries. Studies like Glänzel 2001, Wagner-Döbler 2001 and Sun 2006, found that international collaboration in paper co-authorship has grown significantly during the last two decades and the number of internal papers co-authored has rapidly increased.

Data on international co-authorship is highest in Switzerland and lowest in India and Japan, but also for the USA the share is comparably low. Hinze, Tang and Gauch (2007) also pointed out that the share of internationally co-authored papers for Switzerland recently amounts to about 58%, following are Denmark (about 56%), Austria (about 55%), Norway (about 52%) and Sweden (about 50%). Similar levels as identified for Germany can be found for France (43%), the UK and Canada (42%). USA are at the lower end with about 25% and thus, at a level comparable to that of Korea and slightly above Japan. Co-authorship is very essential because most times, its results and information can be used in a research policy perspective (Melin & Persson, 1996).

Institutions can also collaborate in areas of staff training and development to promote innovations and development. This process can be organized both locally (within the country) and at the international (outside the country) level as well. Naris and Ukpere (2012) defined staff training and development as a process of updating knowledge, skills and abilities of employees to improve their job performance and productivity. It is a process of aligning workers to their working environment to make them realize their full potentials to the advantage of the individual and the organization. Vroom and Yetton cited in Naris and Ukpere (2012) have argued that training and development of workers can increase workers efficiency, effectiveness of organizations, and can also reduce turnover and workers alienation.

At the individual level staff training, seeks to keep employees abreast of new developments in their fields of activity, in government aims and strategy, and in national and world-wide conditions that affect their work. It helps to equip them for higher responsibilities or to diversify their skills. The objective for tertiary education and training is to improve the effectiveness and productivity of academic staff in terms of research and teaching competencies which is also achieved through staff training and development programmes (Republic of Namibia cited in Naris & Ukpere, 2012). Abiodun cited in Olaniyan and Ojo (2008) submitted that staff training and development is a systematic development of the knowledge, skills and attitudes required by employees to perform adequately on a given task or job. It can take place in a number of ways, on the job training/coaching or off the job, in the organization or outside organization.

Others include; induction/orientation, apprenticeship, demonstration, vestibule/industrial attachment, training through conferences, seminars, workshop, mentorship, sabbatical leaves and formal training by universities, polytechnics and professional institutes (Olaniyan & Ojo, 2008; Ezugoh, 2017). From the foregoing, shows that institutional staff training and development is a process which enables academic staff to promote innovations and development in their institutions, thus domestic and international inter-tertiary collaborations is a necessity.

Inter-tertiary collaborative technology is another means of promoting innovations and development in tertiary education. According to Araujo (2009) and Khosrow-Pour (2001), collaborative technologies can be broadly defined as technologies that enable collaboration among individuals to engage in a common task. They are support tools that help in the work of networks organizations. Hardware and software equipment are used to facilitate information sharing, communication and coordination. They are technologies enabling individuals and groups to communicate, collaborate, and interact to share knowledge and information, focusing on those to facilitate dispersed interaction across time and space. They include technologies that allow people to interact effectively in virtual environments. There are many collaborative technologies designed to help groups work with computer-based information in the meeting room. Examples of such technologies are Web-based chat tools, Web-based asynchronous conferencing tools, e-mail, collaborative writing tools, group decision support systems, among others.

By using these collaborative technologies, widely dispersed work teams can easily share information, whether they are located across the country or around the world (Khosrow-Pour, 2001). Other examples as identified by Araujo (2009) include social platforms/networking, messaging and discussion forums, audio and video conferencing facilities, knowledge portals, pod casts, twitters, Blogs, Wikis, Social bookmarking, Skype, Web cams and desktop conferencing. Inter-tertiary collaborative technologies has added advantage which enable individuals and professionals at different workplaces from various institutions to relate and communicate with each other using any computer device in order promote efficiency at their different organizations. Such collaborative technological activities need to be highly promoted among tertiary institutions in Delta State.

Inter-institutional collaborative supervision is another means of academic staff inter-tertiary collaboration for promoting innovations and development in tertiary education. On the other hand, supervision according to Nwaham (2008) and Zlatev (2015) is an integral part of every institution which is a complex process that involves working with teachers and other educators in a collegial, collaborative relationship to enhance the quality of teaching and learning within schools and that promotes the career-long development of teachers. Supervision means the act of overseeing or management by overseeing the performance or operation of a person or group. Supervision oversees the subordinates at work to ensure that they are working according to plans and policies of the organization.

It involves direct face-to-face contact between the supervisor and his subordinates. The aim of supervision is to ensure that subordinates work efficiently and effectively to accomplish the organizational objectives. It involves inter-personal relationship in day-to-day work. In this regards, institutional supervision supports teaching and professional development, enhances personal and collaborative enquiry, promotes critique, and contributes to an evolving pedagogy. Institutional supervision just as educational supervision is the provision of guidance and feedback on matters of personal, professional and educational development (Zlatev, 2015).

Inter-tertiary collaborative supervision according to Zlatev (2015) refers to the extent to which the different supervisor and supervisee(s) from various institutions mutually agree and work together on the processes and activities of supervision. Therefore, Egwunyenga (2006) and Nwaham (2008) opined that there are various techniques involved in institutional supervision, but the most acceptable and commonly practiced in tertiary education of them are: mentoring, clinical supervision, team teaching, coaching, classroom observation and visitation, inter-school visitation, workshop, external supervision and micro-teaching. For the inter-tertiary collaborative supervision it gives opportunity to various categories of teachers to visit other teachers in the classroom. Thus, helping the beginner teachers to learn how to organize and manage students in the classroom and to plan effectively. The weak teacher can also be helped through observation of classroom management, good methods and effective utilization of resources in his field.

In regards, academic staff in tertiary institutions should be supported through inter-institutional collaborative supervision in order to put them on track and enable them establish and maintain open and productive relations between institutions (Osakwe, 2013). From all the foregoing shows that inter-tertiary collaborations should be highly promoted among academic staff of different tertiary institutions in Delta State. However, the bone of contention is whether academic staff of various tertiary institutions still utilizes these opportunities in order to promote innovations and development at their different institutions, given the present economic situation of the country. This is what the present study intends to find out as to determine academic staff extent of participation in promoting innovations and development in tertiary education in Delta State through inter-tertiary collaborations, looking at their collaborations in research, domestic and international co-authorship, staff training and development, technologies and inter-tertiary/institutional collaborative supervision.

1.1 Statement of the Problem

Academic staff of different tertiary education institutions are one of the important human resources that promote innovation and development at the various education tertiary institutions. Given their dispositions, proficiency and productiveness in their various academic endeavours in such areas of research, book co-authorship, technology applications, staff training and development, and institutional supervision, impacts positively on their competences, knowledge, intellect and skills enabling them to develop and create new ideas that will bring about changes in their various institutions. All the same, improvement in academic staff endeavours and task can also be strengthened by creating opportunities for promoting inter-tertiary collaborations. Most times academic staff low performance, inefficiency and unproductiveness in their lecturing activities and tasks seems to be attributed to their lack of and inconsistency to collaborate with others from other institutions and this has consequences in attaining quality standards at the tertiary institutions.

Lack of inter-tertiary collaborations among academic staff of tertiary institutions have been evident in areas of institutional inefficiency, dichotomy and struggling over admission and autonomy, discriminates amongst themselves within their profession and certificate variations, poor students' enrolment in most cadre, among others. This situation has also affected students' career choice in choosing tertiary institutions by seeing one cadre (e.g University) as the only place where quality education is promoted. Students' crave and yield more for university education than other levels of Polytechnics and Colleges of Education (Ofojebe, Enueme & Chukwuma-Ezugoh, 2015). These problems which has created a gap which needs to be filled by the present study calls for synergy by tertiary institutions through inter-tertiary collaborations including in Delta State tertiary education. This gap has equally warranted the need to conduct the current investigation in order to examine academic staff extent of promoting innovation and development in tertiary education in Delta State through domestic and international inter-tertiary collaborations.

1.2 Objectives

The main objective of this study was to examine academic staff extent of promoting innovation and development in tertiary education in Delta State through inter-tertiary collaborations. Specifically, the study aimed at determining extent of:

1. Academic staff participation in promoting innovation and development in tertiary education in Delta State through inter-tertiary research collaborations.
2. Academic staff participation in promoting innovation and development in tertiary education in Delta State through inter-tertiary domestic and international co-authorship.
3. Academic staff participation in promoting innovation and development in tertiary education in Delta State through inter-tertiary staff training and development collaborations.
4. Academic staff participation in promoting innovation and development in tertiary education in Delta State through inter-tertiary collaborative technologies.
5. Academic staff participation in promoting innovation and development in tertiary education in Delta State through inter-tertiary collaborative supervision.

1.3 Research Questions

The following under listed research questions guided the study:

1. To what extent does academic staff participate in promoting innovation and development in tertiary education in Delta State through inter-tertiary research collaborations?
2. To what extent does academic staff participate in promoting innovation and development in tertiary education in Delta State through inter-tertiary domestic and international co-authorship?
3. To what extent does academic staff participate in promoting innovation and development in tertiary education in Delta State through inter-tertiary staff training and development collaborations?
4. To what extent does academic staff participate in promoting innovation and development in tertiary education in Delta State through inter-tertiary collaborative technologies?
5. To what extent does academic staff participate in promoting innovation and development in tertiary education in Delta State through inter-tertiary collaborative supervision?

2. METHODOLOGY

2.1 Research Design

The study adopted a descriptive survey research design. It also utilized a cross-sectional approach which sought the opinions of the academic staff across the various tertiary institutions in Delta State concerning their extent of promoting innovation and development in education through inter-tertiary collaborations in Delta State. The design was used in observing and finding out the reality of things, through a field investigation, on what was happening to the sample subjects - i.e lecturers at their different tertiary institutions which enabled to generate necessary primary data for the study.

2.2 Area of Study

The area of study where this study was conducted is Delta State, which has 25 Local Government Areas. The State is among the oil-producing State, also rich in agriculture and mineral resources. The educational system in Delta State is structure to operate at both formal and non-formal education levels. At the formal level, the State also has tertiary education system which constitutes two Universities, three Polytechnics and four Colleges of Education and this has justified choosing the State for conducting the study.

2.3 Population

Population of the study cut across 2,533 academic staff from tertiary institutions in Delta State, which included one University, three Polytechnics and four Colleges of Education. The details consisted of 897 academic staff from two of the Universities in Delta State, 629 academic staff from three Polytechnics, and 1007 academic staff from the four Colleges of Education in Delta State.

2.4 Sample and Sampling Technique

The sample size of the study comprised 507 academic staff across the various tertiary institutions selected for the study through a purposive sampling technique. Here, the academic staffs were grouped into three according to their different broad elements (institutions) of university, polytechnics and colleges of education, thereafter samples drawn from each of these elements at 20%. The breakdown for the samples included; 179 academic staff from two of the Universities in Delta State, 126 academic staff from three Polytechnics, and 202 academic staff from the four Colleges of Education in Delta State.

2.5 Instrument

A questionnaire personally developed by the researchers which contained 39 items and titled: Academic Staff Extent of Promoting Innovation and Development in Tertiary Education through Inter-Tertiary Collaborations Questionnaire (ASEPIDTEITCQ), was used to collect data for the study. This research instrument was arranged into five clusters and designed on a 4 point scale of Very Great Extent - VGE (4), Great Extent - GE (3), Low Extent - LE (2) and Very Low Extent - VLE (1). Cluster A whose items were raised to answer research question one contained 5 items. Cluster B contained 10 Items which were raised to answer research question two. Thirteen (13) Items were raised to answer research question three in Cluster C, and 7 items were also raised to answer research question four under Cluster D. Cluster E contained 4 Items which were raised in order to answer research question five.

2.6 Validity of Instrument

The instrument was validated by two experts from the Department of Educational Management and Policy, and one expert from the Department of Educational Foundations via Measurement and Evaluation Unit, Nnamdi Azikiwe University, Awka, Anamabra State, who were requested to determine the face, content and construct validity of the research instrument. These experts made useful corrections that led to the modification of the instrument before the final distribution.

2.7 Reliability of Instrument

Reliability of the instrument was determined through a pilot-test conducted by the researcher, selecting 15 academic staff from three tertiary institutions in Anambra State. The result was found to have a reliability coefficient of 0.74 using the Cronbach alpha coefficient measurement which indicated that the instrument was trustworthy to collect the necessary data for the study.

2.8 Method of Data Collection

The research instrument was administered to the respondents by the researcher with the help of eight research assistants who were academic staff of various tertiary institutions selected for the study. These research assistants received briefings on how to administer the instrument on the respondents. Method of data collection also involved a personal, hand delivery and face to face contact with all the respondents. An on the spot method was employed in order to collect necessary information for the research instrument where applicable, if not such respondent was given extra two days to fill and return the instrument. Distribution of the instrument took a period of three weeks and thereafter computation was done. All copies of the questionnaire were retrieved and this gave a return rate of 100%.

2.9 Method of Data Analysis

Mean score at 2.50 rating and Standard deviation were used to analyze the research questions. Any mean that rated above the bench mark of 2.50 was regarded as agreeing with the statement and referred to as 'Great Extent' while mean rated below the bench mark (2.50) was regarded as disagreeing with the statement therefore referred to as 'Low Extent'.

3. DATA PRESENTATION

Data collated were computed and entered into excel sheet and statistical package for social sciences (SPSS). The representations were done in tables on the following arrangements below.

Analysis of the results from Table 1 showed that the respondents' (academic staff) responses from items from 1-5 rated below the accepted mean score of 2.50 indicating disagreements with all the items in the table. None of the items rated above the accepted mean score of 2.50. The grand mean of 1.82 with standard deviation of 0.89, indicating high negative reactions from the respondents concerning the extent to which the academic staff participated in promoting innovations and development in tertiary education in Delta State through inter-tertiary research collaborations. This result indicated that academic staff extent of participation in research collaborations was to a low extent.

Table 1: Mean Scores and Standard Deviation on Academic Staff Participation in Promoting Innovation and Development in Tertiary Education in Delta State through Inter-Tertiary Research Collaborations
N = 507

S/N	ITEMS	VGE	GE	LE	VLE	MEAN	STD	DECISION
	Please indicate the extent of your participation in collaborating with other academic staff in inter-tertiary research collaborations							
1.	Participation in research collaborations with academic staff from the same field of study but outside ones' own tertiary institution within the country	72	90	186	159	2.15	1.02	Low Extent (LE)
2.	Participation in research collaborations with academic staff in a different field of study from a different tertiary institution within the country	60	78	193	176	2.04	0.99	Low Extent (LE)
3.	Participation in a joint research collaboration where many academic staff from various tertiary institutions within the country are involved	44	53	188	222	1.84	0.93	Low Extent (LE)
4.	Research collaboration with an academic staff in the same field of study from a different tertiary institution outside the country	5	9	227	266	1.51	0.59	Low Extent (LE)
5.	Participation in a joint research collaboration involving several academic staff from different tertiary institutions outside the country	7	12	231	257	1.54	0.61	Low Extent (LE)
	Overall Mean Score and Standard Deviation -					1.82	0.89	Low Extent (LE)

Table 2: Mean Scores and Standard Deviation on Academic Staff Participation in Promoting Innovation and Development in Tertiary Education in Delta State through Inter-Tertiary Domestic and International Co-Authorship
N =507

S/N	ITEMS	VGE	GE	LE	VLE	MEAN	STD	DECISION
	Please indicate the extent of your participation in collaborating with other academic staff through inter-tertiary domestic and international book co-authorship							
6.	Participation in domestic textbook two persons book co-authorship with academic staff in the same field of study but from a different tertiary institution within the country	27	49	227	204	1.80	0.82	Low Extent (LE)
7.	Participation in domestic two persons journal publications with academic staff in the same field of study but from a different tertiary institution within the country	37	57	210	203	1.86	0.89	Low Extent (LE)
8.	Participation in a multi-joint domestic book chapter contributions whereby several academic staff of the same field of study but from different tertiary institutions are involved	31	49	228	199	1.83	0.84	Low Extent (LE)
9.	Participation in a multi-joint domestic journal publications involving several academic staff from the same field of study but from different tertiary institutions	123	203	89	92	2.70	1.03	High Extent (LE)
10.	Participation in a multi-joint domestic book chapter contributions whereby several academic staff from different fields of study and from various tertiary institutions are involved	33	52	203	219	1.80	0.87	Low Extent (LE)
11.	Participation in a multi-joint domestic journal publications with several academic staff from various fields of study from different tertiary institutions involved	146	157	95	109	2.67	1.11	High Extent (HE)
12.	International co-authorship in writing a textbook with academic staff of the same field of study in a tertiary institution outside the country	14	22	223	248	1.61	0.70	Low Extent (LE)
13.	International co-authorship in journal publication with academic staff of the same field of study in a tertiary institution outside the country	11	38	218	240	1.64	0.71	Low Extent (LE)
14.	International paper co-authorship with academic staff from a different field of study in a tertiary institution outside the country	18	20	228	241	1.64	0.72	Low Extent (LE)
15.	Participation in international book chapter co-authorship where several academic staff from various tertiary institutions are involved	8	19	233	247	1.58	0.64	Low Extent (LE)
Overall Mean Score and Standard Deviation -						1.91	0.93	Low Extent (LE)

Analysis of the results presented in Table 2 revealed that academic staff responses from items from 6-8, 10 and 12-13 rated below the accepted mean score of 2.50 indicating disagreements with only these items in the table. Only items 9 and 11 rated above the accepted mean score of 2.50, indicating agreement with the statements. The grand mean of 1.91 with standard deviation of 0.93, indicated negative reactions from the respondents concerning many of the statements relating to the extent to which the academic staff participated in promoting innovations and development in tertiary education in Delta State through inter-tertiary domestic and international co-authorship. This result indicated that academic staff extent of participation at both domestic and international paper co-authorship was to a low extent.

Table 3: Mean Scores and Standard Deviation on Academic Staff Participation in Promoting Innovation and Development in Tertiary Education in Delta State through Inter-Tertiary Staff Training and Development Collaborations - N = 507

S/N	ITEMS	VGE	GE	LE	VLE	MEAN	STD	DECISION
	Please indicate the extent of your participation in collaborating with other academic staff through inter-tertiary staff training and development							
16.	Attending domestic conferences organized outside your own institution within the country	174	224	62	47	3.04	0.91	HE
17.	Participation at domestic workshops organized outside your institution within the country	82	103	146	176	2.18	1.08	LE
18.	Attending seminars organized by another institution within the country	104	118	137	148	2.35	1.11	LE
19.	Taking sabbatical leave to work with other academic staff in different institutions within the country	203	243	34	27	3.23	0.79	HE
20.	Participating in off-the-job/industrial attachment training programmes organized by experts in other tertiary institutions within the country	55	65	209	178	1.99	0.96	LE
21.	Formal education training offered at the University within the country for award of a certificate	285	205	10	7	3.51	0.61	HE
22.	Formal education training offered abroad at the University for award of a certificate	52	108	210	137	2.15	0.93	LE
23.	Participation in short term training courses abroad	24	46	222	215	1.76	0.80	LE
24.	Attendance at international conferences organized outside the institution abroad	38	65	209	195	1.89	0.90	LE
25.	Participation at international workshops organized outside the institution outside the country	44	51	212	200	1.88	0.91	LE
26.	Attendance at seminars organized by an institution abroad	30	44	253	180	1.85	0.81	LE
27.	Taking sabbatical leave outside the country to other institutions abroad	29	54	213	211	1.80	0.84	LE
28.	Participation at industrial attachment training programme within a certain period of time in an institution outside the country	17	28	217	245	1.64	0.74	LE
	Overall Mean Score and Standard Deviation =					2.25	1.06	Low Extent

Analysis of the results from Table 3 showed that academic staff responses from items from 17-18, 20 and 22-28 rated below the accepted mean score of 2.50 indicating disagreements with these items in the table. Only items 16, 19 and 21 rated above the accepted mean score of 2.50, indicating agreement with the statements. The grand mean of 2.25 with standard deviation of 1.06, indicated negative reactions from the respondents concerning many of the statements relating to the extent to which the academic staff participated in promoting innovations and development in tertiary education in Delta State through inter-tertiary staff training and development collaborations. This result indicated that academic staff extent of participation at domestic and international staff training and development was to a low extent.

Table 4: Mean Scores and Standard Deviation on Academic Staff Participation in Promoting Innovation and Development in Tertiary Education in Delta State through Inter-Tertiary Collaborative Technologies
N = 507

S/N	ITEMS	VGE	GE	LE	VLE	MEAN	STD	DECISION
	Please indicate the extent of your participation in collaborating with other academic staff through inter-tertiary collaborative technologies							
29.	Participation in video conferencing with academic staff of other tertiary institutions	7	11	232	257	1.54	0.61	LE
30.	Participation in audio conferencing with academic staff of other tertiary institutions	21	33	207	246	1.66	0.78	LE
31.	Communication with other academic staff from other tertiary institutions through emails	153	226	60	68	2.92	0.97	HE
32.	Communication with other academic staff through Skype and Twitters	38	43	209	217	1.81	0.88	LE
33.	Communication through web-based group chat rooms/forum	49	55	200	203	1.90	0.94	LE
34.	Communication through web Blogs	22	31	224	230	1.69	0.77	LE
35.	Connecting to other academic staff through telephone WhatsApp communications	211	209	53	34	3.18	0.87	HE
	Overall Mean					2.10	1.04	Low Extent
	Deviation -							

Analysis of the results presented in Table 4 indicated that academic staff responses from items from 29-30, 32-34 rated below the accepted mean score of 2.50 showing disagreements with these items in the table. Only items 31 and 35 rated above the accepted mean score of 2.50, showing agreement with the statements. The grand mean of 2.10 with standard deviation of 1.04, indicated negative reactions from the respondents concerning many of the statements relating to the extent to which the academic staff participated in promoting innovations and development in tertiary education in Delta State through inter-tertiary collaborative technologies. This result further indicated that academic staff extent of participation in collaborative technologies was to a low extent.

Table 5: Mean Scores and Standard Deviation on Academic Staff Participation in Promoting Innovations and Development in Tertiary Education in Delta State through Inter-Tertiary Collaborative Supervision
N = 507

S/N	ITEMS	VGE	GE	LE	VLE	MEAN	STD	DECISION
	Please indicate the extent of your participation in collaborating with other academic staff through inter-tertiary collaborative supervision							
36.	Classroom observations and visitation carried out in your own institution by experts from another tertiary institutions	64	86	201	156	2.11	0.98	LE
37.	Inter-institutional supervision organized for academic staff to visit other professional colleagues in different institutions	48	82	211	166	2.02	0.93	LE
38.	Clinical supervision undertaken in your own institution by another institution to develop academic staff instructional competencies	41	59	249	158	1.97	0.87	LE
39.	Joint external supervision conducted by various academic staff from different tertiary institutions to improve interactions	67	83	189	168	2.10	1.01	LE
	Overall Mean Score and Standard Deviation					2.05	0.95	Low Extent
-								

Analysis of the results from Table 5 showed that academic staff responses from items from 36-39 rated below the accepted mean score of 2.50 indicating disagreements with all the items in the table. None of the items rated above the accepted mean score of 2.50. The grand mean of 2.05 with standard deviation of 0.95, indicating negative reactions from the respondents concerning the extent to which the academic staff participated in promoting innovations and development in tertiary education in Delta State through inter-tertiary collaborative supervision. This result indicated that academic staff extent of participation in collaborative supervision was to a low extent.

4. DISCUSSION OF FINDINGS

Generally, the result findings of the study indicated that inter-tertiary collaborations was of great relevance in strengthening both institutional and academic staff capacity for promoting innovations and development in the tertiary institutions. However, the findings revealed that the extent of academic staff participation in promoting innovations and development at the tertiary institutions were to a low extent. Given that their domestic and international participation and collaborations in areas of research, paper co-authorship, staff training and development, collaborative technologies and supervision were to a low extent. Their collaborations were more significant (not to a great extent) rather in the activities organized domestically within the country, than those ones organized international outside the country.

Findings of research question one under table 1 revealed that academic staff participation in inter-tertiary research collaborations was to a low extent. The result finding included that academic staff were neither extensively involved in collaborating in the areas of research with their colleagues from the same field of study or different fields of study, both within and outside the country nor did the academic staff participate/collaborate in joint research collaborations involving many academic staff from the same field of study or different fields of study, from different tertiary institutions both within and outside the country. This finding agrees with Glänzel (2001), Wagner-Döbler (2001) and Sun (2006) whose studies found the research collaborations in most countries in the different parts of the world was very low.

Supporting these findings, Hinze, Tang and Gauch (2007) study also reported that institutional research collaborations in most countries were limited. All these findings agree with the findings of the present study which revealed that both domestic and international (abroad) research collaborations among academic staff of the various tertiary institutions were to a low extent, demanding that solution be provided to save situation. Findings of research question two under table 2 also revealed that academic staff participation in both domestic and international inter-tertiary paper co-authorship was to a low extent. This result finding included that academic staff participation in domestic textbook two person's book co-authorship with academic staff in the same field of study but from a different tertiary institution within the country was to a low extent. Academic staff participation in domestic two person's journal publications with academic staff in the same field of study but from a different tertiary institution within the country; and participation in a multi-joint domestic book chapter contribution whereby several academic staff of the same field of study but from different tertiary institutions are involved, was also a low extent.

More so, their participation in a multi-joint domestic book chapter contribution whereby several academic staff from different fields of study and from various tertiary institutions are involved; International co-authorship in writing a textbook with academic staff of the same field of study in a tertiary institution outside the country; International co-authorship in journal publication with academic staff of the same field of study in a tertiary institution outside the country; International paper co-authorship with academic staff from a different field of study in a tertiary institution outside the country; and participation in international book chapter co-authorship where several academic staff from various tertiary institutions are involved were also extensively low.

There was a high extent of academic staff participation in such situation involving multi-joint domestic journal publication by several academic staff from the same field of study but from different tertiary institutions; and areas involving multi-joint domestic journal publications where several academic staff from various fields of study from different tertiary institutions was involved. Moreover, academic staff participation in domestic and international inter-tertiary paper co-authorship was low. This finding concurs with Hinze, Tang and Gauch (2007) study which found that both book and journal co-authorship in some country were extremely low. While in such countries like for Switzerland recently amount of papers co-authored increased especially at the international level which rose to about 58%. This finding differs from the present study which indicated that the amount of papers co-authored by academic staff internationally was to a low extent.

Findings of research question three under table 3 also revealed that academic staff participation in both domestic and international inter-tertiary staff training and development exercise was to a low extent. This result finding included academic staff attendance to domestic workshops and seminars organized outside their own tertiary institution within the country; off-the-job/industrial attachment training programmes organized by experts in other tertiary institutions within the country; formal education training offered abroad at the University for award of a certificate; participation in short term training courses abroad; attendance at international conferences, workshops and seminars organized outside their institution abroad; taking sabbatical leave outside the country to other institutions abroad; and participation at industrial attachment training programme within a certain period of time in an institution outside the country were extensively low.

Their high participation and inter-tertiary collaborations were only felt in their attendance at domestic conferences organized outside their own tertiary institution within the country; going on sabbatical leave to other institutions within the country; and in the formal education they received at the University for award of a certificate within the country. This finding concurs and agrees with Ezugoh (2017) whose study discovered that the in-service training and development programmes were not adequately being provided for the facilitators teaching in the centres, meaning that this was to a low extent.

Findings of research question four under table 4 also revealed that academic staff participation in inter-tertiary collaborative technologies was to a low extent. Academic staff collaborations were most significant and high through emails and telephone WhatsApp communications with their colleagues from other tertiary institutions. The result finding further revealed that academic staff participation in video and audio conferencing with their colleague from other tertiary institutions, communication through Skype, Twitters, web-based group chat rooms/forum and Blogs were extensively low. This finding differs from Khosrow-Pour (2001) who found that by using these collaborative technologies, widely dispersed work teams can easily share information, whether they are located across the country or around the world. Therefore, use of collaborative technologies should be highly promoted in tertiary institutions including Delta State.

Findings of research question five under table 5 also revealed that academic staff participation in inter-tertiary collaborative supervision was to a low extent. This finding included that institutional capacity to organize inter-tertiary collaborative supervision through regular classroom observations, visitations and practices; inter-institutional supervision; clinical supervision; and joint external supervision outside their own institutions within the country was to a low extent. These practices were extensively low at the tertiary institutions, thereby negatively affecting inter-tertiary collaborations among tertiary institutions.

This finding agrees with most researchers like Egwunyenga (2006), Nwaham (2008) and Zlatev (2015) who have conducted researches on the challenges of supervision of instruction in schools which affected using several techniques to conduct supervision in schools. Nevertheless, all the findings of the present study indicates and demands that there should be a change in the administration of tertiary education in Delta State whereby inter-tertiary collaborations among academic staff of various tertiary institutions - Universities, Polytechnics and Colleges of Education, for promotion of innovation and development should be highly encouraged.

5. CONCLUDING REMARKS

This investigation revealed that inter-tertiary collaborations have great influence in promoting innovation and development in tertiary education in Delta State but the extent to which academic staff utilized this was to a low extent. Sustainability in the tertiary institutions demands that academic staff collaborate among themselves and this will create room for new ideas to be formulated that will bring about continual innovations and developments in the tertiary institutions. In this regards inter-tertiary collaborations through academic staff participation in research, domestic and international co-authorship, staff training and development, collaborative technologies and inter-tertiary collaborative supervision should be highly encouraged among tertiary institutions in Delta State. Failure of the various stakeholders in the tertiary education institutions such as the government, regulatory bodies like NUC for the Universities, NABTEB for the Polytechnics and NCCE for the Colleges of Education, various institutions management and leaderships, and academic staff to utilize these opportunities can negatively affect their operations, efficiency, performance and sustainability of entire system in the recent technological times and developments.

6. CONTRIBUTION TO KNOWLEDGE

This present study gives all the stakeholders, scholars and specialists within the tertiary education sector an insight to the various areas and means of promoting innovation and development in tertiary institutions through inter-tertiary collaborations, which is useful for enhancing quality learning and improving best practices in the tertiary education sector. In light of the literature review and study evidence, in order to understand academic staff extent of promoting innovation and development in tertiary education in Delta State through inter-tertiary collaborations, the following recommendations are suggested below:

1. The Federal and State Government in Delta State should support and encourage academic staff research collaborations through adequate funding and budgetary allocations to tertiary institutions. Obviously, such activity can only be encouraged where there is effective implementation of the national policy on education that will promote inter-tertiary collaborations among tertiary education institutions.
2. Management and leadership of various institutions should organize and create a forum where constant orientation will be given to academic staff of various institutions concerning the importance of domestic and international co-authorship in promotion innovations and development at the tertiary education institutions.
3. Management and leadership of various institutions in collaborations with the government, their regulatory bodies like NUC, NABTEB and NCCE and private institutions should support academic continuous staff training and development through adequate financial support, scholarships, incentives, rewards and other welfare packages.
4. The government in collaborations with the tertiary education regulatory bodies should aid and improve collaborative technologies in the tertiary institutions through adequate funding of tertiary institutions. Moreover, the ICT policy for tertiary education should be effectively implemented in order to improve and promote utilization of collaborative technologies among academic staff at the various tertiary institutions.
5. Regulatory bodies of various institutions like NUC, NABTEB and NCCE should form synergy in order to encourage and promote inter-tertiary collaborative supervision among the various tertiary institutions (Universities, Polytechnics and Colleges of Education) in Delta State for efficiency and improvement in their institutions.

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