

# Physics Lecturers Self Efficacy and Use of Information and Communication Technology (ICT) For Research Activities in Joseph Sarwuan Tarka University Makurdi (JOSTUM).

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**Abstract:** *This research work investigates Physics lecturers self efficacy and use of Information and Communication Technology for research activities in Joseph Sarwuan Tarka University Makurdi. To achieve the goal of the study, five research questions were asked, the research design adopted was descriptive survey design. The population for the study was 30 physics lecturers from college of science, department of physics and physics lecturers from college of Agricultural and science education, department of science education, purposive sampling technique was used to select all the 20 physics lecturers which constitute the sample. The research instrument developed for the study was titled: physics lecturers self efficacy and use of Information and communication technology for research activities in JOSTUM Questionnaire (PLSEUICTRAJQ) which has 46 items and was administered to physics Lecturers. Data from the study was analyzed using mean and standard deviation for the remark and chi-square for hypothesis test. The findings showed that: ICT facilities are not available or accessible to physics lecturers in JOSTUM, physics lecturers don't integrate ICT into physics concepts in JOSTUM, physics lecturers in JOSTUM frequently integrate ICT into research activities, physics lecturers have positive perceptions of self efficacy about ICT in carrying out research activities in JOSTUM, physics lecturers in JOSTUM do attend seminars, workshops organized to enlighten them on the modern and new developed ICT facilities to carry out research tasks. The study recommends that: The management of universities should ensure that academic staff offices are provided with ICT facilities and also connected to the internet. The use of ICTs for tasks delivery should be incorporated into lecturers training programs of pre-service and in-service Physics lecturers. Retraining channels such as seminars and conferences with a specific focus on improving the ICT skills of lecturers should be organized to all lecturers irrespective of their age, rank, educational qualification or gender.*

**Keywords:** Use of ICT, Self efficacy, Research Activities, JOSTUM

## 1.0 INTRODUCTION

Man's quest for knowledge and zeal to make his environment comfortable for him has been a challenge throughout his existence, from the Stone Age to the present time. He made series of effort and processes, and these processes he made to gain new knowledge and ways are to conquer his environmental challenges, Rajasekar (2013) explains that research is a logical and systematic search for new and useful information on a particular topic. Thus Kumar (2014) sees research as a careful, systematic, patient study and investigation in some field of knowledge to establish and to develop knowledge.

Information and communication technology (ICT) is a tool that comprises of electronic devices which are utilized for the information and communication needs of institutions, organizations, students and individuals (Ameen et al., 2019). ICT include devices and applications that provide access to information and enable electronic communications, like sending text messages or engaging in video chats. Mobile phones, smart phones, computers, and laptops are typical ICT devices; The Internet (e.g., the web) is another ICT and plays a special role because it is not a stand-alone device but a network of countless systems and devices. Web-connected ICT devices (e.g., smart phones, tablets) are defined by their access to the Internet (web connection), whereas non web connected ICT (e.g., old mobile phones) do not access the Internet (Anna et al., 2020). Information and communication technology (ICT) has become one of the basic building blocks of the present society. Many developing countries now regard the understanding of ICT and mastering the basic skills and concepts of ICT as part of the core of education. Education is the overall development of an individual in all ramifications and not limited to classroom jurisdiction. (Akinfolarin, 2014).

The use of ICT in research is of great help; they have reduced the human drudgery and added to the quality of research activity, they can perform many complex statistical calculations easily and quickly. The different information are made available to the researchers by computers in no time otherwise might have taken days or even months. The storage facility can make use of stored up data whenever required to do so. The results obtained from the computer are generally correct and reliable. A good research documents empowers readers to reach their own conclusion. Although the ICT has provided all the research facility even then the ethical practice in maintaining the quality is required in avoiding the plagiarism. Quality research requires judgment and honesty Geeta (2013).

One of the objectives of ICT in Nigeria as outlined in the National ICT Policy (FRN 2012) is to "integrate ICT into mainstream of education and training". The policy thrust is geared towards facilitating the transformation of Nigeria into a knowledge based economy, as well as empowering youths with ICT skills and preparing them for global competitiveness and promoting capacity building of ICT in the country's learning institutes.

Gregory (2011) defines self-efficacy as self-confidence to find out ability in order to carry out a form of control over the benefits of the person and the events in the surrounding environment. Confidence in one's own ability influences personal motivation, the higher the belief in one's own ability, the stronger the determination to complete the task well. Not only the ability to work determines the success of the task, but also determined by the level of confidence in the ability so that it can increase the intensity of motivation. ICT self-efficacy refers to the ability of individual to make use of the various ICT tools such as e-mail, facsimile, internet, World Wide Web, intranets, extranets, online data bases and other networking technologies in performing a given task Jimoh (2016). Also the height to do what is defined as desired or to be effective in producing the desired result. ICT self efficacy as used in this study encompasses lecturer's self efficiency and effectiveness while using ICT facilities at his disposal in carrying out research activities. It is lecturer's confidence in their abilities and capabilities to produce quality outcome in the performance of their task. An effective and efficient lecturer is one who does things right, attempts to solve job related problems, avoid waste of resources and ensures quality output in research Jimoh (2016).

Physics is a science that deals with the structure of matter and the interactions between the fundamental constituents of the observable universe Weidner and Brown (2021). In the broadest sense, physics (from the Greek *physikos*) is concerned with all aspects of nature on both the macroscopic and submicroscopic levels. Its scope of study encompasses not only the behavior of objects under the action of given forces but also the nature and origin of gravitational, electromagnetic, and nuclear force fields. Physics as concept laden subject, notably comprising of the concept of electricity, mechanics, heat, waves, quantum, plasma etc Yahaya (2017). Because of its abstract nature, it is hard to study or understand some of its concepts, thus it become necessary to find ways to ease the understanding and studying of those concepts. some of the research activities in physics includes; the integration of ICT into physics concept, possible ways of enhancing effective teaching and learning process, Teaching and learning strategies, analysis of data and information for research processes Jimoh (2016). Most researchers studying teacher's self efficacy sees it as a determinant of successful education outcomes, teachers with high efficacy beliefs are thought to work harder to be more involved in informal learning activities and to be persistent and less stressed (Doris et al., 2013).

Based on the above premise, it therefore becomes necessary that availability, accessibility and the integration of physics concept into ICT and lecturers self efficacy in the use of ICT facilities in Research activities be assessed in order to determine the physics lecturers self efficacy and use of Information and Communication technology (ICT) for research activities in Joseph Sarwuan Tarka University, Makurdi, Benue State.

### **1.1 Statement of the Problem**

The recent ranking of JOSTUM by ranking web of university (June, 2021) as the number 5819 in the World and number 48 in Nigeria and Excellent ranked as 5973 shows that the University research base is low and Lecturers are not visible in the World, this is due to the inability of lecturers in the university to utilize ICT and upload their research publication via online which is among the criteria for ranking of university.

Physics lecturers self efficacy towards ICT facilities is low and as such they do not utilize such facilities in carrying out research. Governments at different tiers in Nigeria have over the years committed enormous resources on the procurement of ICT laboratories, equipment and facilities. However, in spite of this effort, the attainment of objectives of ICT in these schools is observed to have suffered a setback. This is evidenced from the poor performance in ICT accessibility and utilization among students and teachers Yahaya (2017).

### **1.2 Research Questions**

1. What are the ICT facilities available/accessible for physics lecturers in JOSTUM?
2. In what physics concept do physics lecturers utilize ICT in JOSTUM?
3. To what extent do physics lecturers integrate ICT into research activities in JOSTUM?
4. What are physics lecturers' perceptions of self efficacy about ICT in carryout research activities in JOSTUM?
5. Are seminars, workshops organized for physics lecturers to enlighten them on the modern and new developed ICT facilities to carryout research task?

### **1.3 Hypothesis**

1. There is no significant difference between ICT facilities available/accessible for physics lecturers and their self efficacy in the use of ICT for research activities.
2. There is no significant difference between Physics lecturers' utilization of ICT in physics concept and their self efficacy in the use of ICT for research activities.
3. There is no significant difference between Physics lecturers' integration of ICT in carryout research activities and their self efficacy in the use of ICT for research activities.
4. There is no significant difference between Physics lecturers' perceptions towards ICT Self efficacy in carrying out research and their self efficacy in the use of ICT for research activities.
5. There is no significant difference between Seminar and workshops organized for physics lecturers and their self efficacy in the use of ICT for research activities.

## 2.0 METHOD

The study adopted descriptive survey research design. The population for this study consists of Thirty (30) physics lecturers in Joseph Sarwuan Tarka University Makurdi (JOSTUM) from college of science, department of physics and college of Agricultural and science education, department of science education. Twenty (20) Physics lecturers in total from the department of physics and department of science education were used as sample for the study. Purposive sampling technique was used to select all the 20 Physics lecturers that constitute the sample. The Instrument for the study was a questionnaire developed by the researcher and it is titled: Physics Lecturers Self Efficacy and use of Information and Communication Technology (ICT) for research activities in Joseph Sarwuan Tarka University Makurdi (JOSTUM) Questionnaire (PLSEUICTRAJQ). The questionnaire items were developed from the research questions. The questionnaire has two parts: 1 and 2. Part one of the questionnaire contained information on respondents' personal data. Part two of the questionnaire contained 46 items divided into five (5) sections; A- E. The research instrument which is (PLSEUICTRAJQ) developed by the researcher was validated by the project supervisor and experts in the field of inquiry. The questionnaires undergo both face and construct validity, and it was adjudged to be suitable for use on the respondents for the research work. The data collected were analyzed using mean, standard deviation and Chi-square statistics. The mean scores was accepted and rejected when they fall above and below 2.5 respectively while the Chi-square statistics was used to test the Null hypotheses at 0.05 level of significance. For the test of hypotheses, the null hypothesis was accepted if the  $X^2_{\text{calculated}}$  is less than the  $X^2_{\text{tabulated}}$  and rejected if the  $X^2_{\text{calculated}}$  was greater than  $X^2_{\text{tabulated}}$  value at 0.05 level of significance.

## 3.0 RESULTS AND DISCUSSIONS

**Research Question 1:** What are the ICT facilities available/accessible for physics lecturers in JOSTUM?

**Table 1: Mean scores on ICT facilities available/accessible for physics lecturers in JOSTUM**

S/N	STATEMENT	SA	A	D	SD	$\bar{X}$	S <sup>2</sup>	REMARK
1.	Computers are provided by the institution to various offices to serve as a means to carry out research.	4	2	8	6	2.20	0.52	Disagreed
2.	I have internet facilities in my office and I can access them.	0	2	9	9	1.65	0.45	Disagreed
3.	Wi-Fi in the institution is well functioning and can be access.	3	12	2	3	2.75	0.59	Agreed
4.	There is telecommunication centre in the institution which paves way in other to interact with other researchers.	2	12	4	2	2.70	0.58	Agreed
5.	There are e-library facilities in the institution.	2	12	6	0	2.80	0.59	Agreed
6.	Electronic data base is available in the institution.	0	1	15	4	1.85	0.48	Disagreed
7.	There are public address systems in institution use in delivering of lectures.	0	8	9	3	2.25	0.53	Disagreed
8.	There are printers available for printing out of learning materials and articles for research.	0	6	10	4	2.1	0.51	Disagreed
9.	Projectors are use in presenting of lectures.	0	3	13	4	1.95	0.49	Disagreed

**AVERAGE MEAN: 2.25**

Data from table 1 shows that items 1, 2, 3, 4, 5, 6, 7, 8 and 9 had the mean values of 2.20, 1.65, 2.75, 2.70, 2.80, 1.85, 2.25, 2.21 and 1.95 respectively. The table also revealed an average mean of 2.25 and is below the bench mark of 2.50 mean thus, this indicates that ICT facilities are not available or accessible for physics lecturers in JOSTUM to carry out research activities.

**Research Question 2:** In what physics concept do physics lecturers utilize ICT in JOSTUM?

**Table 2: Mean scores on physics concept which physics lecturers utilize ICT in JOSTUM**

S/N	STATEMENT	SA	A	D	SD	$\bar{X}$	S <sup>2</sup>	REMARK
1.	Electricity and Magnetism.	2	5	12	1	2.40	0.52	Disagreed
2.	Heat and Energy.	0	5	10	5	2.00	0.47	Disagreed
3.	Light and Optics.	1	9	10	0	2.55	0.53	Agreed
4.	Sound and Waves.	1	7	7	5	2.20	0.49	Disagreed
5.	Astrophysics.	0	11	5	4	2.35	0.51	Disagreed
6.	Plasma physics.	0	0	13	7	1.65	0.43	Disagreed
7.	Computational physics.	1	9	7	3	2.40	0.52	Disagreed
8.	Mechanics.	0	5	13	2	2.15	0.49	Disagreed
9.	Circuit Theory.	1	6	8	5	2.15	0.49	Disagreed
10.	Solid state physics.	1	3	12	4	2.05	0.48	Disagreed

**AVERAGE MEAN: 2.19**

Data from table 2 shows that items 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 had the mean values of 2.40, 2.00, 2.55, 2.20, 2.35, 1.65, 2.40, 2.15, 2.15 and 2.05 respectively. The table also revealed an average mean of 2.19 and is below the bench mark of 2.50 mean thus, this indicates that physics lecturers in JOSTUM don't utilize ICT into physics concepts.

**Research Question 3:** To what extent do physics lecturers integrate ICT into research activities?

**Table 3: Mean scores on the extent to which physics lecturers integrate ICT into research activities in JOSTUM**

S/N	STATEMENT	SA	A	D	SD	$\bar{X}$	S <sup>2</sup>	REMARK
1.	I frequently use computer and internet for data analyses and presentation of results.	12	7	1	0	3.33	0.63	Agreed
2.	I connect to internet frequently to search for research materials (literature review and literature tracking).	12	7	0	1	3.50	0.62	Strongly Agreed
3.	I connect to internet frequently to discover new facts and theories.	8	9	3	0	3.25	0.60	Agreed
4.	I frequently visit telecommunication centre in the institution to interact with other research.	1	1	14	4	1.95	0.47	Disagreed
5.	I visit e-libraries frequently to access materials for research.	0	4	14	2	2.10	0.48	Disagreed
6.	I use the social media frequently to connect with other researchers from other places to explore new ideas.	6	11	2	1	3.10	0.59	Agreed
7.	I frequently publish and validate research work using ICT.	7	9	4	0	3.15	0.59	Agreed
8.	I frequently connect to internet to help in preparing of lesson notes.	3	14	3	0	3.00	0.58	Agreed
9.	I frequently use power point in lecture presentation.	3	2	3	2	2.30	0.51	Disagreed
10.	I frequently use public address system to deliver lecture.	0	6	0	4	2.10	0.48	Disagreed

**AVERAGE MEAN: 2.82**

Data from table 3 shows that items 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 had the mean values of 3.55, 3.50, 3.25, 1.95, 2.10, 3.10, 3.15, 3.05, 2.30 and 2.20 respectively. The table also revealed an average mean of 2.82 and is above the bench mark of 2.50 mean thus, this indicates that physics lecturers in JOSTUM frequently integrate ICT into research activities.

**Research Question 4:** What are physics lecturers' perceptions of self efficacy about ICT in carryout research activities in JOSTUM?

**Table 4: Mean scores on physics lecturers' perceptions of self efficacy about ICT in carryout research activities in JOSTUM**

S/N	STATEMENT	SA	A	D	SD	$\bar{X}$	S <sup>2</sup>	REMARK
1.	I can use the computer and internet effectively.	12	7	1	0	3.55	0.62	Strongly Agreed
2.	I can use power point in lecture presentation.	5	10	2	3	2.85	0.56	Agreed
3.	I can design research instrument via word processors to collect data from research work.	4	15	1	0	3.15	0.59	Agreed
4.	I can explore the internet to search for materials for research and to prepare lesson notes.	7	12	1	0	3.30	0.61	Agreed
5.	I can run ICT programs that can be used to analyze, compute data collected from research field.	7	11	2	0	3.25	0.60	Agreed
6.	I can use search engines to discover new solution for scientific finding.	8	12	0	0	3.40	0.61	Agreed
7.	I can find new ways to apply ICT in research tasks.	2	12	6	0	2.80	0.56	Agreed
8.	I can publish and validate research works via ICT facilities.	8	10	2	0	3.30	0.61	Agreed
9.	I find it easier to teach using projector.	2	11	7	0	2.75	0.55	Agreed
10.	ICT supported teaching makes learning more effective.	15	5	0	0	3.75	0.65	Strongly Agreed

**AVERAGE MEAN: 3.21**

Data from table 4 shows items 1, 2, 3, 4, 5, 6, 7, 8 and 9 had the mean values of 3.07, 2.49, 2.65, 2.81, 2.77, 2.90, 2.32, 2.83, 2.28 and 3.24 respectively. The table also revealed an average mean of 3.21 and is above the bench mark of 2.50 mean thus, this indicates that, physics lecturers have positive perceptions of self efficacy about ICT in carrying out research activities in JOSTUM.

**Research Question 5:** Are seminars, workshops organized for physics lecturers to enlighten them on the modern and new developed ICT facilities to carryout research task?

**Table 5: Mean scores on whether are seminars, workshops organized for physics lecturers to enlighten them on the modern and new developed ICT facilities to carryout research task.**

S/N	STATEMENT	SA	A	D	SD	$\bar{X}$	S <sup>2</sup>	REMARK
1.	I do attend seminars, workshops.	5	15	0	0	3.25	0.74	Agreed
2.	I do attend seminars, works organized on ICT.	3	12	2	3	2.75	0.64	Agreed
3.	The seminars, workshops objectives were clearly spelt out and lived up to my expectations.	2	12	6	0	2.80	0.68	Agreed
4.	I gain new knowledge and methods of employing ICT facilities into research activities.	4	12	4	0	3.00	0.71	Agreed
5.	I applied the knowledge gain and methods learnt into research activities.	4	15	0	1	3.10	0.72	Agreed
6.	I consider attending future seminars, workshops on ICT for professional development.	13	7	0	0	3.65	0.78	Strongly Agreed
7.	The institution should frequently organize seminars, workshops on ICT.	14	6	0	0	3.70	0.79	Strongly Agreed

**AVERAGE MEAN: 3.15**

Data from table 5 shows that items 1, 2, 3, 4, 5, 6, and 7 had the mean values of 3.25, 2.45, 2.80, 3.00, 3.20, 3.65 and 3.70 respectively. The table also revealed an average mean of 3.15 and is above the bench mark of 2.50 mean thus, this indicates that, physics lecturers in JOSTUM do attend seminars, workshops organized to enlighten them on the modern and new developed ICT facilities to carry out research tasks.

**3.1 Hypothesis****Result of analysis of chi-square on hypothesis 1**

There is no significant difference between ICT facilities available/accessible for physics lecturers and their self efficacy in the use of ICT for research activities.

**Table 6: Showing the analysis of data on hypothesis 1**

$X^2_{\text{calculated}}$	Critical Value	Level of Significance	Degree of Freedom	Decision
65.74	36.42	0.05	24	Significant

Since the  $X^2_{\text{Calculated}}$  65.74 is greater than the critical value 36.42, we reject the null hypothesis. Thus, we conclude that there is significant difference between ICT facilities available/accessible for physics lecturers and their self efficacy in the use of ICT for research activities.

### Result of analysis of chi-square on hypothesis 2

There is no significant difference between Physics lecturers' integration of ICT into physics concept and their self efficacy in the use of ICT for research activities.

**Table 7: Showing the analysis of data on hypothesis 2**

$X^2_{\text{calculated}}$	Critical Value	Level of Significance	Degree of Freedom	Decision
39.86	40.11	0.05	27	Insignificant

Since the  $X^2_{\text{Calculated}}$  39.86 is less than the critical value 40.11, we accept the null hypothesis. Thus, we conclude that there is no significant difference between Physics lecturers' integration of ICT into physics concept and their self efficacy in the use of ICT for research activities.

### Result of analysis of chi-square on hypothesis 3

There is no significant difference between Physics lecturers' integration of ICT in carryout research activities and their self efficacy in the use of ICT for research activities.

**Table 8: Showing the analysis of data on hypothesis 3**

$X^2_{\text{calculated}}$	Critical Value	Level of Significance	Degree of Freedom	Decision
117.66	40.11	0.05	27	Significant

Since the  $X^2_{\text{Calculated}}$  117.66 is greater than the critical value 40.11, we reject the null hypothesis. Thus, we conclude that there is significant difference between Physics lecturers' integration of ICT in carryout research activities and their self efficacy in the use of ICT for research activities.

### Result of analysis of chi-square on hypothesis 4

There is no significant difference between Physics lecturers having negative perceptions towards ICT Self efficacy in carrying out research and their self efficacy in the use of ICT for research activities.

**Table 9: Showing the analysis of data on hypothesis 4**

$X^2_{\text{calculated}}$	Critical Value	Level of Significance	Degree of Freedom	Decision
69.24	40.11	0.05	27	Significant

Since the  $X^2_{\text{Calculated}}$  69.24 is greater than the critical value 40.11, we reject the null hypothesis. Thus, we conclude that there is significant difference between Physics lecturers having negative perceptions towards ICT Self efficacy in carrying out research and their self efficacy in the use of ICT for research activities.

### Result of analysis of chi-square on hypothesis 5

There is no significant difference between Seminar and workshops organized for physics lecturers and their self efficacy in the use of ICT for research activities.

**Table 10: Showing the analysis of data on hypothesis 5**



$X^2_{\text{calculated}}$	Critical Value	Level of Significance	Degree of Freedom	Decision
65.04	28.87	0.05	18	Significant

Since the  $X^2_{\text{calculated}}$  65.04 is greater than the critical value 28.87, we reject the null hypothesis. Thus, we conclude that there is significant difference between Seminar and workshops organized for physics lecturers and their self efficacy in the use of ICT for research activities.

#### 4.0 Discussion of Result Findings

The findings of this study are discussed and compared with empirical studies done previously by other researchers. These discussions are carried out based on the issues relevant with the research questions. The study was conducted to find out physics lecturers self efficacy and use of Information and communication technology (ICT) for research activities in JOSTUM.

##### What are the ICT facilities available/accessible for physics lecturers in JOSTUM?

From table 1, it shows that items 1, 2, 6, 7, 8 and 9 had the mean values of 2.20, 1.65, 1.85, 2.25, 2.21 and 1.95 respectively disagreed and the mean score of item 3, 4 and 5 had the mean of 2.75, 2.70 and 2.80 respectively agreed. Table 1 also revealed an average mean of 2.25. This indicates that ICT facilities are not available or accessible for physics lecturers in JOSTUM to carry out research activities and only few of the ICT facilities (Wi-Fi, telecommunication centres and e-library) are made available to the Lecturers. This finding is in line with the view of Apagu and bala (2015) where they investigate the availability and utilization of ICT facilities for teaching and learning of vocational and technical education in Yobe State technical colleges. The study revealed that ICT facilities were lacking in technical colleges. Teachers and Students exposure to ICT facilities was low. The study revealed that some of the benefits of using ICT in technical college include making teaching and learning interesting; helping teacher to be up to date in enhancing the quality of work of both teachers and students. Despite these benefits, the study revealed some of the challenges facing ICT as: irregular power supply; inadequate computer literate teachers; inadequate ICT facilities. Similarly, (Adiezetu et al., 2019) examine the availability ICT facilities and adequacy of use in teaching and learning Library and Information Science (LIS) undergraduate in South-South Nigeria. It was discovered that the six universities investigated, all had internet connectivity, computers, local area network (LAN), mobile phones, standby generator and uninterrupted power supply (UPS). Other ICT facilities like projectors, radio set and stylus pen were totally not available in these universities. Also Adamu (2012) undertook a survey of accessibility and usage of information and communication technology among teachers of technical education in tertiary Institutions in Niger State, Nigeria. The findings of the study revealed among others that ICT facilities are not available for teachers use at the department and as such they don't have access to it. In terms of usage, the teachers mostly use commercial cybercafés or personal computers for their purpose and thus there is poor usage of ICT for academic learning.

##### In what physics concept do physics lecturers utilize ICT in JOSTUM?

Table 2 shows that items 1, 2, 4, 5, 6, 7, 8, 9 and 10 had the mean values of 2.40, 2.00, 2.20, 2.35, 1.65, 2.40, 2.15, 2.15 and 2.05 respectively which all disagreed only item 3 with a mean of 2.55 agreed. The table also revealed an average mean of 2.19. This indicates that physics lecturers in JOSTUM don't utilize ICT into physics concepts. The finding of the study goes in accordance with, Yahaya (2015) who performed a study on teachers' self efficacy and ICTs integration in physics class rooms in Kano State, Nigeria, The study reveals that majority of the teachers (80.35%) believed that they are literate enough to incorporate ICTs in Physics class rooms but the extent of integration of ICTs into Senior Secondary Physics Education is minimal and to a larger extent inadequate. The anomaly might not be unconnected with Lack of inadequate ICT facilities in schools, perhaps due to poor funding among others. Christiana and Joel (2019) in their work: pre-Service teachers' self-efficacy beliefs towards educational technologies integration in Tanzania, stated that "Integrating technology into teaching is among the greatest challenges facing today's teachers. In Tanzania, the government and other stakeholders have been investing heavily in equipping secondary schools with computers connected to the Internet. Similarly, teachers have been equipped with skills to integrate these technologies into the classroom. Despite several existing initiatives, few teachers have been integrating them into the classroom environment".

##### To what extent do physics lecturers integrate ICT into research activities in JOSTUM?

Table 3 shows that items 1, 2, 3, 6, 7 and 8 had the mean values of 3.55, 3.50, 3.25, 3.10, 3.15 and 3.05, respectively agreed and items 4, 5, 9 and 10 had the mean value of 1.95, 2.10, 2.30 and 2.20 respectively disagreed. The table also revealed an average mean of 2.82. This indicates that physics lecturers in JOSTUM frequently integrate ICT into research activities. The integration of ICT into

teaching, learning is of great importance as stated in (Luhama et al., 2017). When used appropriately, ICTs help in expanding access to education through faster information distribution and availability anytime and anywhere (Aktaruzzaman et al., 2011).

#### **What are physics Lecturers perceptions of self efficacy about ICT in carrying out research activities in JOSTUM?**

Table 4 shows that items 1, 2, 3, 4, 5, 6, 7, 8 and 9 had the mean values of 3.07, 2.49, 2.65, 2.81, 2.77, 2.90, 2.32, 2.83, 2.28 and 3.24 respectively all agreed. The table also revealed an average mean of 3.21. This indicates that, physics lecturers have positive perceptions of self efficacy about ICT in carrying out research activities in JOSTUM. The finding of the study goes in line Hadriana (2019) who conducted a research on self-efficacy and attitude of the teachers of SMAN Kuansing district towards the utilization of ICT. Finally, it was concluded that the average score of self-efficacy of the teachers of SMAN in Kuansing District in utilizing ICT is 80.6% and the average score of their attitudes is 92.8%. It means that their self-efficacy and attitude are in very good levels. And again Qasem and viswanathapa (2016) conducted a research on teacher's perceptions towards ICT integration: professional development through blended learning, the findings of the study indicated that teacher perceptions towards ICT integration in e-course design were above average.

#### **Are seminars, workshops organized for physics lecturers to enlighten them on the modern and new developed ICT facilities to carry out research task?**

Table 5 shows that items 1, 2, 3, 4, 5, 6, and 7 had the mean values of 3.25, 2.75, 2.80, 3.00, 3.20, 3.65 and 3.70 respectively all agreed. The table also revealed an average mean of 3.15. This indicates that, physics lecturers in JOSTUM do attend seminars, workshops organized to enlighten them on the modern and new developed ICT facilities to carry out research tasks. Thus from the table, it shows that physics lecturers do attend seminars and workshops and they applied knowledge gain from them. The lecturers considered attending future seminars and workshops, thus they want the institution to be organizing seminars and workshops on ICT for them.

#### **4.1 Conclusion**

From the findings of the study it was deduced that Physics lecturers lack ICT facilities provided by the university, most of them carry out their research task with their personal computer and mean to connect to the internet and as such, some who don't have such personal ICT facilities find it difficult to integrate it into physics concepts. It was also deduced that effective carrying out of research activities in the tertiary institution can be enhanced through the use of Information and communication technologies, thus ICT is beneficial to the physics lecturers. Physics lecturer's perceptions towards ICT show that they have interest in integrating it into research activities and they do attend seminars and workshops to boost their knowledge in terms of ICT usage. Most of the Physics lecturers are effective in the use of ICT tools for carrying out research activities. Thus physics lecturers in JOSTUM have self efficacy beliefs about ICT utilization in carrying out research task.

#### **4.2 Recommendations**

1. The management of universities should ensure that academic staff offices are provided with ICT facilities and also connected to the internet. This would enable the lecturers to access and download information or materials quickly and easily for lecture preparation, teaching, research and other allied duties. This would enhance lecturers' job efficacy.
2. The use of ICTs for tasks delivery should be incorporated into lecturers training programs of pre-service and in-service Physics lecturers.
3. Retraining channels such as seminars and conferences with a specific focus on improving the ICT skills of lecturers should be organized to all lecturers irrespective of their age, rank, educational qualification or gender. This will enable lecturers to gain full mastery of the procedures needed to utilize ICT devices and resources.
4. The three tiers of Government, Non-Governmental Organizations (NGOs), and philanthropist should support the university by providing sufficient ICT materials, facilities, and services such as computer laboratory, modems, internet facilities, projectors, computers, and so on. Such provisions will supplement the retraining offered to lecturers in ICT and make it more impactful.



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