

An Assessment of ICT Competence Among Academic Staff in Kwara State Colleges of Education, Nigeria: Implications for Management

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Abstract

Globally, information and communication technology (ICT) is seen as an indispensable part of the contemporary world. In fact, culture and society have to be adjusted to meet the challenges of the information age. ICT is a force that has changed many aspects of education system. It is on this premise that this study examined the ICT competence among academic staff of colleges of education in Kwara State, Nigeria. Survey research design was adopted in this study. The population consists of all academic staff in government owned colleges of education in Kwara State. An instrument titled ICT Competence among Academic Staff of College of Education Questionnaire (ICASCOEDQ) was used to

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collect data from a sample size of 152 academic staff using simple random sampling technique. The collected data were analyzed using descriptive statistics (percentages). From the results, it was revealed that academic staff are competent in word processing, Microsoft power point, e-payment and mobile phone browsing; electronic mail (e- mail) and social networking. It was also evident that inadequate funding, internet connectivity/low internet bandwidth, inadequacy of ICT facilities at workplace and low ICT literacy by staff are the biggest challenges to the ICT competence among academic staff. It was also revealed that better interactivity and connectivity, ability to type, process and store work for later use, facilities for easy information retrieval and timely and quicker information processing are some of benefits gained by the effective usage of ICT by academic staff. It was recommended that the government and school management should encourage academic staff to participate in ICT training programs. Acquisition of ICT skills from such training programs would help to improve their level of ICT competence and this would lead to high productivity.

Keywords: *ICT competence, Academic staff, Colleges of education, Nigeria*

Introduction

Information and communication technology (ICT) is an indispensable part of the contemporary world. In fact, culture and society have to be adjusted to meet the challenges of the information age. ICT is a force that has changed many aspects of people's ways of life. ICT is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer, and network hardware and software, satellite systems and so on, as well as the- various services and applications associated with them, such as videoconferencing and distance learning (Mondal & Mete, 2012). ICT involves a process of creating, processing, storage, retrieval and dissemination of information and data using computers and telecommunications. ICT also refers to electronic technologies used for accessing, processing, gathering, manipulating and presenting or communicating information as well as to other

electronic devices such as computer, radio, television, digital camera, telephone (AbdulKareem & Isiaka, 2009; Akpan, 2008; Yusuf & Balogun, 2011).

Academic staff in higher institution plays a crucial role in the development, adoption and implementation of any educational curriculum or innovation. This role becomes even more needed in the adoption and integration of ICT into the education programme of a country. It has been discovered that knowledge of ICT usage improves human capacity in every field of human endeavor, including business transaction, industrial operations, educational programmes and activities and life in general. Teachers are important to any society. The roles they play in the education process are central to basic education generally, and particularly in Developing Countries. A daunting challenge facing the education system is the lack of competent teachers who are literate and proficient in the use of computer application, computer packages and information technology (Yusuf, Afolabi & Loto, 2013). Academic staffs are often referred to agents of change, and if they become literate and competence in the use of modern technology, they would bring about a lot of positive attitudes towards the use of information technologies. In colleges of education, where academic staff are under pressure to carry out their work efficiently and effectively amidst knowledge-based technology and globalization, the use of ICT becomes imperative. Teachers who succeed in making use of ICT in their work processes do not only contribute to improved learning outcomes in their students, but also benefit personally from enhanced work productivity (Adavebiele, 2016, Victor & Figo, 2015; Yusuf et al. 2020).

Academic staff of colleges of education have various tasks to accomplish and these range from teaching, research and publications, marking of tests and examinations, supervising students' research activities, supporting students through advisory roles, attending conferences, providing community services etc. In other words, for them to be effective and efficient, they need to acquire an appreciable level of ICT competence. ICT competence as used in this study refers to the ability of a college

of education teachers to make use of the various ICT tools such as e-mail, facsimile, internet, world wide web, intranets, extranets, online databases and other networking technologies in the performance of their job. Their ability to do what is defined as desired or to be effective in producing the desired result. It encompasses teacher efficiency and effectiveness. Effective and efficient teacher is one who is accurate, attempts to solve job-related problems, avoid waste of resources and ensures quality output. Educators' ICT competence can help in this direction. This corroborates with Radloff (2001) who stated that ICT increases the skills and status of teachers for job performance. Premised on this background, the study assessed the ICT competence among academic staff in Kwara State Colleges of Education, Nigeria.

Problem Statement

In this era of globalization, job efficiency of academic staff in higher institutions cannot be divorced from the level of ICT competence which is necessary for quality academic output. Unfortunately, in Nigeria, some higher institutions' academic staffs still do not recognize the opportunities that ICT presents for improving the efficiency and effectiveness of their job. Some of them lack knowledge that would aid the application of ICT skills in lesson planning, mastery of subject matter, instructional delivery, research and record management (Abdulrahman et al. 2020). The need for ICT in educational system has become more relevant. This is because, ICT can provide a convenient technique for designing and developing a course of instructions and can expose the academics to varieties of information that will equip them to face the task ahead. ICT literacy skill among academic staff has been viewed as a prerequisite in adoption and integration of ICT in the school system. Specifically, it has however been observed that in state colleges of education in Nigeria, ICT usage among academic staff in the teaching and learning situation is still very minimal (Archibong, Ogbiji & Anijaobi-Idem, 2010). This is in line with the study of Akpan (2014) who reported that previous researches on the availability and utilization of ICT resources for teaching and research by academic staff in higher institutions of learning has been found to be low despite. This

informed the researchers' decision to investigate if this prevailing situation could be attributed to academic staff competence in ICT.

Review of Literature

From conceptual point of view, ICT comprises electronic devices such as computer, radio, television, telephone, satellite, and the Internet. ICT refers to forms of technologies that are used to transmit, store, create, share or exchange information (Abdulrahman et al. 2020; Johnson, 2007). Moore & Kearsely (2005) defined ICT as an innovative approach for delivering computer mediated, well-designed, learner-centered and interactive learning environments to anyone, anyplace, anytime by utilizing the internet technologies concerned with instructional design principles. Idowu & Esere (2013) describe ICT as electronic mode of knowledge sharing and transmission, which may not necessarily involve physical contact between teacher and student.

Research to date has shown the importance of ICT in education system. For instance, Kpolovie & Awusaku (2016) investigated the lecturers' perceived attitude on the adoption of ICT and found that lecturers embraced ICT as an indispensable tool that is needed for them to succeed in teaching students in classroom. The study concluded that ICT is an integrated framework of computers, software applications that is needed to be adopted by lecturers for efficiency and effectiveness in education. The study conducted by Fagbanmi & Ogunjobi (2009) on the availability and use of ICT among staffs of research institutes in Nigeria and found that ICT plays an important role in shaping the skills and knowledge of staffs with the adoption of technology. The study concluded that ICT is an umbrella term that includes all technologies encompassing medium for recording information such as magnetic disk, tape, optical disks (CD/DVD) flash and paper record, technology for the broadcasting, information, radio, television and technology for communicating through voice and sound or image microphone camera, loudspeaker, telephone to cellular phones. It also includes a wide variety of computing hardware, desktop computers, laptops, storage devices etc. Research conducted by Idowu & Esere (2013) affirmed that

lecturers in higher institutions remain the main actors in the development of both the individual and the society at large. Specifically, they remain the most essentials and critical element in a student's achievement with the adoption of technology in ensuring effective delivery of the contents of curriculum. It was concluded that if ICT is fully adopted, it will serve as great hub upon which educational development has been hinged because lecturers represent the hope of any society and there is need to equip him for the job through exposure to the ICT knowledge, skills and abilities relevant to his noble assignment.

Furthermore, ICT has the potential to accelerate, enrich and deepen skills, motivate and engage students learning, helps to relate school experience to work practice, helps to create economic viability for tomorrow's workers; contributes to the total development of the institution; strengthens teaching and learning and provides opportunities for connection between the school and the world (Toyo, 2017). Mondal & Mete (2012) found that the importance and significance of education cannot be overstressed because it is the process through which the cultural values of a people, knowledge, understanding skills and abilities are transmitted among its populace in order to prepare them for further membership and participation in the maintenance, growth and development of the society. Education takes care of the total development of the individual personality and the society of which all individuals are a part. Hence, no worthwhile development and progress can take place in any society unless the citizens are well educated and are fully equipped with modern technology knowledge as a tool for solving the diverse and complex problems facing that society, thereby bringing about meaningful change and positive progress in that society. The study noted that nothing meaningful and convincing can be achieved through education without the use of technology by the teachers who need it to ensure that the goals and objectives of education is achieved. Gama (2008) established that the value of ICT is endless. ICTs not only give the opportunity to have easy access to information from various sources, but also facilitate resource sharing between and among various organizations apart from improving the status of the institution. The significance of ICTs usage among academic

staff of Nigerian colleges of education cannot be overemphasized.

Theoretically, this study is anchored on some assumptions based on two models of technology, which include Technological Pedagogical Content Knowledge (TPACK) and Technology Acceptance Model (TAM). First, TPACK framework is built upon Shulman's idea of Pedagogical Content Knowledge to describe how teachers' understanding of educational technologies and PCK interrelate with each other to come up with an effective teaching with the use of technology (Ammade et al., 2020; Hossain et al., 2019). TPACK framework is the intricate interaction between and among the primary forms of knowledge: (i) content (CK); (ii) pedagogy (PK) and; (ii) technology (TK). Conversely, framework's focus does not only limit on these bases; its emphasis goes more into the different brands of knowledge that lie at the intersections between three primary forms: Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), and Technological Pedagogical Content Knowledge (TPACK) (Aydin & Gürol, 2019). Also, the Technology Acceptance Model (TAM), which was propounded by Fred Davis in 1986, was developed together with the efforts of Richard Bagozzi, is said to be a development of Aizen and Fishbein's Theory of Reasoned Action (TRA). TAM is based on various factors that determine technology acceptance and information technology usage behavior. The TAM introduced the concepts of Perceived Ease of Use and Perceived Usefulness which are the essential determinants of technology acceptance and user behavior (Aslan & Zhu, 2016).

Research Questions

1. What is the ICT competence level of academic staff in Kwara State Colleges of Education, Nigeria?
2. What are the challenges related to ICT competence faced by the academic staff in Kwara State Colleges of Education, Nigeria?
3. What are the benefits of ICT competence to the academic staff in Kwara State Colleges of Education, Nigeria?

Research Methodology

The population of the study consists of one hundred and seventy-eight (178) both males and females academic staff in Kwara State College of Education, Ilorin; Kwara State College of Education, Oro; and Kwara State College of Education, Lafiagi. In order to avoid being restricted to sampling academic staff in some departments and leaving others out, the researchers adopted quota and simple random sampling techniques so as to enable the researchers to purposively administer the research instrument and have a good mix of academic staff in diverse discipline in the study. Out of the total number of academic staff selected for the study, one hundred and eight (108) were males while seventy (70) were female's staff. In terms of rank, the sample comprised seventy-six (76) senior lecturers (Chief and Principal Lecturers) and one hundred and two (102) junior lecturers (Lecturer I, Lecturer II, Lecturer III and Assistant Lecturer). An instrument tagged 'ICT Competence among Academic Staff of College of Education Questionnaire (ICASCOEDQ) was adapted from the work of Edewor, Imhonopi & Urim (2014). The questionnaire was divided into 2 sections. Section A sought demographic information on gender, rank and job description. Section B contained a total of 34 questionnaire items and was divided into 3 sub-sections. Specifically, Section B sub-section i contains 12 questionnaire items which sought information on ICT competence level among academic staff. Section B sub-section ii and iii contain 12 and 10 questionnaire items respectively. The 12 items in section B (sub-section i) measured in a 4-point Likert-scale ranging from 'Not competent to 'Very competent' and 12 and 10 items in section B sub-section ii and iii measured in a 4 point Likert-scale ranging from strongly agreed to strongly disagreed. The questionnaire was made very brief and concise. The drafted questionnaire items were first presented to the research expert for necessary corrections. The face validation for items in the research instrument was carried out by 1 academic staff that is in the measurement and evaluation discipline. The internal consistency of the research instrument established through the test- retest method using 50 academic staff that were not part of the study sample. This yielded a correlation co-efficient of 0.86 for the entire instrument. This was done in line with Odekunle (2013) who remarked that

validation of research instrument must be done before administration. Hence, the instrument was considered adequate and significant to the objective of this study. The collected data were analyzed using descriptive statistics (percentages). On the decision rule, as for research question 1, items whose percentage scores are 50% and above indicated that they were either competent or very competent and less than 50% was considered to be either not competent or low competent. However, as for research questions 2 and 3 items whose percentage scores are 50% and above and less than 50% were used as bases for agreed and disagreed respectively. The research instrument was administered to a total of one hundred and seventy-eight (178) academic staff in all the three state colleges of education using cross-section method of data collection with the assistance of two trained research assistants. Out of 178 administered questionnaires, only one hundred and fifty-two (152) were successfully completed and returned, giving a return rate of 85.4%. Data collected were analyzed using descriptive technique of data analysis.

Findings and Discussion

Research Question 1. *What is the ICT competence of academic staff in Kwara State Colleges of Education, Nigeria?*

Table 1. ICT competence among academic staff

Item	Not Competen t Frequency (%)	Low Competen t Frequency (%)	Competen t Frequency (%)	Very Competen t Frequency (%)
Word processing,	32 (21.1)	19 (12.4)	68 (44.7)	33 (21.8)
Microsoft excel and corel draw	61 (40.1)	28 (18.5)	44 (28.9)	19 (12.5)
Data analysis	81 (53.3)	08 (5.3)	38 (25.0)	25 (16.4)
Microsoft powerpoint	19 (12.5)	22 (14.5)	45 (29.6)	66 (43.4)

presentation				
E- library	72 (47.3)	30 (19.8)	28 (18.4)	22 (14.5)
E- payments	17 (11.2)	22 (14.5)	67 (44.1)	46 (30.2)
E-learning (online courses)	52 (34.2)	33 (21.7)	47 (30.9)	20 (13.2)
Notes online/ giving assignments	65 (42.8)	37 (24.3)	20 (13.2)	30 (19.7)
Video conferencin g and e- conferencin g	68 (44.7)	25 (16.4)	49 (32.2)	10 (6.7)
Mobile phone browsing, electronic Mail (e- mail) and social networking	18 (11.8)	22 (14.5)	71 (46.7)	41 (27.0)
E-books, e- journals, e- references materials, e- news, e- magazines	46 (30.3)	40 (26.3)	39 (25.7)	27 (17.7)
Networking and internet	63 (41.4)	22 (14.5)	47 (30.9)	20 (13.2)

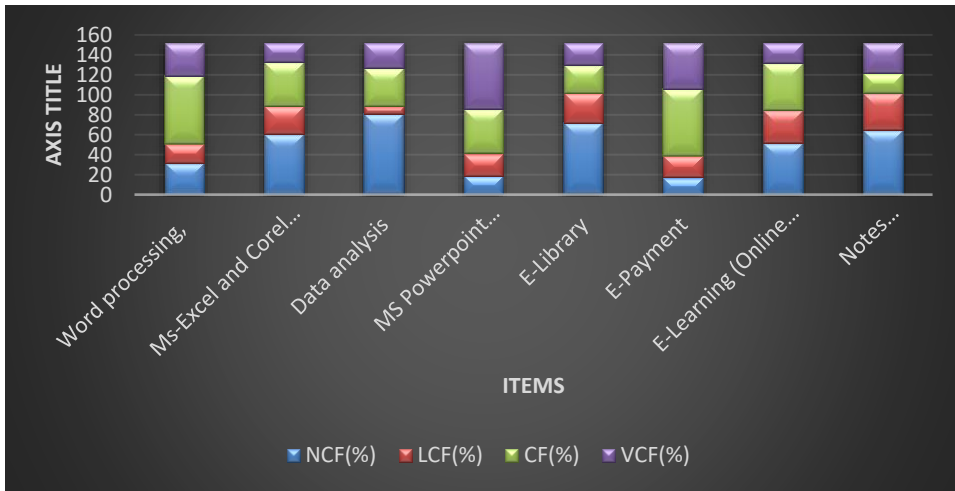


Figure 1. Graphical Analysis on ICT Competence of Academic Staff of Colleges of Education

The results in Table 1 and Figure 1 revealed that academic staff of Kwara state colleges of education were either competent or very competent (combined) in Word processing, Microsoft Power point presentation, e-payments and Mobile phone browsing, Electronic Mail (e- mail) and Social Networking with 101 (66.5%), 111 (73.0%), 113 (74.3%), 112 (73.7%) respectively, as against less than 50% bench mark for “Not Competent” and “Low Competent”. On the other hand, the results indicated that they were either not competent or low competent (combined) in Microsoft excel and Corel Draw, Data analysis, E-library, E-learning, Notes online/ giving assignments, Video conferencing and E-conferencing, E-books, E-journals, E-references materials, E-news, E-magazines and Networking and Internet with 63 (41.4%), 63 (41.4%), 50 (32.9%), 67 (44.1%), 50 (32.9%), 59 (48.6%), 66 (43.4%) and 67 (44.1%) respectively, as against 50% and above bench mark for “Competent” and “Very Competent”. Given this result, it can be said that the competency level of academic staff in ICT is extremely low. The present finding is in line with that of Akpan (2014) who reported that teacher ICT competence in Nigeria is below expectation and access to ICT resources like the internet and computer is mostly limited in campuses of various higher institutions. The finding of this study also corroborates with the

research finding of Omenyi, Agu & Odimegwu (2007) who reported that teachers’ perception of their increased job efficiency was associated with the level of ICT competence possessed by the teachers. The implication of these findings is that the academic staff ICT competence in higher institutions of learning could greatly impact upon their job efficiency. The current finding is also in line with the TAM which explained that there are factors that determine technology acceptance and information technology usage behavior among users. Specifically, the concepts of perceived ease of use and perceived usefulness are key essential factors of technology acceptance (Aslan & Zhu, 2016). The study is in agreement with the TPACK model, which described how teachers’ understanding of technologies in education interrelates with each other to ensure efficiency and effectiveness in the use of technology (Aydin & Gürol, 2019).

Research Question 2. What are the challenges related to ICT competence faced by the academic staff in Kwara State Colleges of Education, Nigeria?

Table 2. Challenges to ICT competence among academic Staff

Item	Strongly Agreed Frequency (%)	Agreed Frequency (%)	Disagreed Frequency (%)	Strongly Disagreed Frequency (%)
Poor funding	60 (39.4)	66 (43.5)	20 (13.2)	06 (3.9)
Lack of prioritization of investments by management and sponsorship by the school management.	32 (21.1)	63 (41.4)	37 (24.3)	20 (13.2)
Proximity to ICT facilities and Inability to acquire personal ICT	24 (15.8)	59 (38.8)	48 (31.6)	21 (13.8)

facilities.				
Inadequacy of ICT facilities at workplace.	58 (38.2)	42 (27.6)	28 (18.4)	24 (15.8)
Low ICT literacy by staff and ICT phobia.	46 (30.1)	49 (32.2)	28 (18.5)	29 (19.1)
Lack of interest and No patience to learn (poor learning interest).	05 (1.2)	32 (21.1)	65 (42.8)	50 (32.9)
Poor opportunity for training	40 (26.3)	48 (31.6)	35 (23.0)	29 (19.1)
Insufficient time due workload	63 (41.4)	22 (14.5)	47 (30.9)	20 (13.2)
Personal office not secure to install ICT facilities	19 (12.5)	22 (14.5)	45 (29.6)	66 (43.4)
Insufficient time for practice	36 (23.7)	45 (29.6)	37 (24.4)	34 (22.3)
Poor Internet connectivity/low internet bandwidth	62 (40.8)	47 (30.9)	23 (15.2)	20 (13.2)
Erratic power supply/Spotty power supply	50 (32.9)	35 (23.2)	37 (24.3)	30 (19.7)

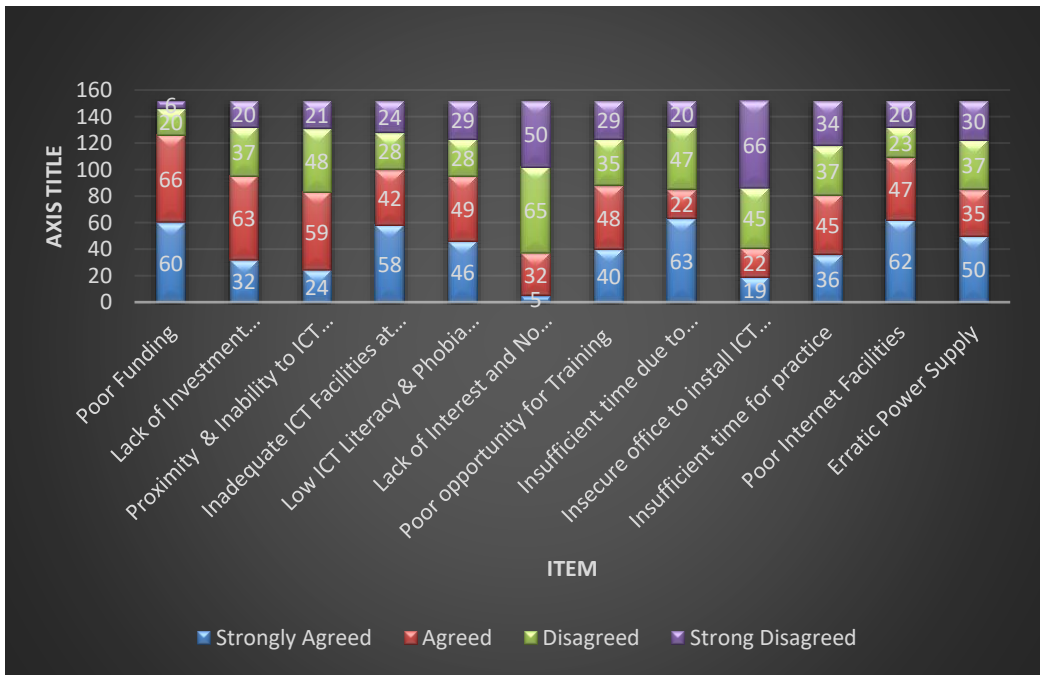


Figure 2. Graphical analysis on challenges related to ICT competence among academic Staff

The results in Table 2 and Figure 2 shows the challenges to ICT competence among academic staff in Kwara state colleges of education, Nigeria. It is evident that poor funding, poor internet connectivity/low internet bandwidth, inadequacy of ICT facilities at workplace, lack of prioritization of investments by management and sponsorship by the school management and low ICT literacy by staff and ICT phobia are the most challenges to the ICT competence among academic staff in Kwara state college of education as agreed by the respondents with 126 (82.9%), 109 (71.7%), 100 (65.8%), 95 (62.5%) and 95 (62.3%) respectively. Other challenges with high frequencies are poor opportunity for training, erratic power supply/spotty power supply, insufficient time due workload, proximity to ICT facilities and inability to acquire personal ICT facilities and insufficient time for practice as stated by 88 (57.9%), 85 (56.1%), 85 (55.9%), 83 (54.6%) and 81 (53.3%) of the staff respectively. However, personal office not secure to install ICT facilities and lack of interest and no patience to learn were not seen as to pose as challenges with 41 (27.0%)

and 37 (22.3%) respectively. This implies that so many challenges are influencing the ICT competence among academic staff in Kwara State Colleges of Education. This is in line with Edewor, Imhonopi & Urim (2014) who identified various challenges that are associated with the use of ICT which include epileptic power supply, inadequate availability of ICT facilities among others. The finding of the current study corroborates with the work of Toyo (2017) who found that there are factors contributing to low adoption of ICT in higher institutions. They include inadequate ICT gadgets and lack of training. Akpan (2014) found that the effective adoption and utilization of ICT in higher institutions of learning is thwarted by a combination of factors.

Research Question 3. What are the benefits of ICT competence to the academic staff in Kwara State Colleges of Education, Nigeria?

Table 3. Benefits to ICT competence among academic Staff

Item	Strongly Agreed Frequency (%)	Agreed Frequency (%)	Disagreed Frequency (%)	Strongly Disagreed Frequency (%)
Ability to type, process and store work for later use	95 (62.5)	27 (17.8)	18 (11.8)	12 (7.9)
Better interactivity and connectivity	96 (63.2)	56 (36.8)	-	-
Timely and quicker information processing	70 (46.1)	38 (25.0)	-	44 (28.9)
Facilitates easy information retrieval	42 (27.6)	80 (52.6)	20 (13.2)	10 (6.6)
Collaborative research	30 (19.8)	49 (32.2)	40 (26.3)	33 (21.7)
Digitization of school processes	39 (25.7)	43 (28.3)	40 (26.3)	30 (19.7)
Enhanced information	53 (34.9)	37 (24.3)	22 (14.5)	40 (26.3)

dissemination processes				
Automated records management	32 (21.1)	38 (25.0)	40 (26.3)	37 (24.4)
Improved communication	31 (20.4)	56 (36.8)	19 (12.5)	46 (30.3)
Easy accessibility	26 (17.1)	66 (43.4)	24 (15.8)	36 (23.7)

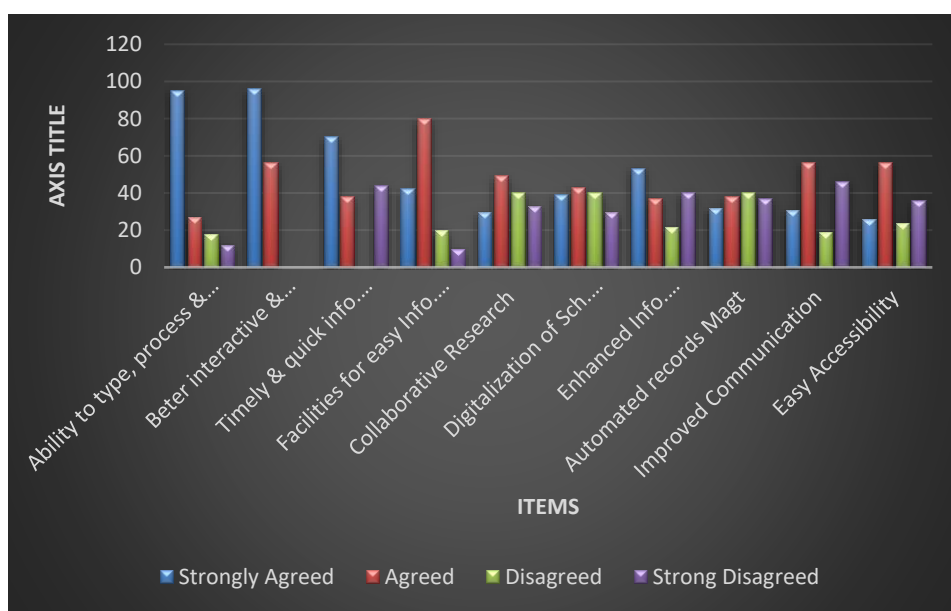


Figure 3. Graphical analysis on benefits of ICT competence for academic Staff

The results displayed in Table 3 and figure 3 discloses the benefits to ICT competence among academic staff of Kwara State Colleges of education, Nigeria. Some of the major benefits include better interactivity and connectivity, ability to type, process and store work for later use, facilitates easy information retrieval and timely and quicker information processing as agreed by 152 (100%), 122 (80.3%), 122 (80.3%) and 108 (71.1%) of the respondents. Other benefits include easy accessibility, enhanced information dissemination processes, improved communication and automated records management, digitization of school processes and collaborative research as agreed by 92 (60.5%), 90 (59.2%),

87 (57.2%), 82 (54.0%) and 79 (52.0%) of the respondents respectively. However, it is obvious that automated records management was not seen as one of the benefits to ICT competence in Kwara state colleges of education as recorded by low responses from the respondents. Thus, this analysis is in line with Edewor, Imhonopi & Urim (2014) who highlighted various benefits of ICT facilities in tertiary institutions to include digitization of school processes amongst others. This study also agreed with that of Toyo (2017) who stated ability to type, process and store work for later use, and digitization of school processes amongst others as some of the most benefit of ICT to teachers in higher institutions of learning.

Conclusions

Based on the findings of the study, it can be said that academic staffs of Kwara state colleges of education, Nigeria were extremely competent in word processing, Microsoft power point, e-payments and mobile phone browsing, electronic mail (e- mail) and social networking. There are many challenges to ICT usage by the academic staff of Kwara state colleges of education. They include inadequate funding and internet connectivity/low internet bandwidth and inadequacy of ICT facilities at workplace lack amongst others. The benefits of ICT competence among academic staff in the Kwara State college of education, can be best seen in the ability to type, process and store work for later use, facilities for easy information retrieval and timely and quicker information processing amongst others. Having had an insight on the assessment of ICT competence among academic staff in Kwara State Colleges of education, the research findings show that that the benefits to ICT usage in any tertiary institution cannot be overemphasized. The researchers therefore concludes that every higher institution of learning especially colleges of education should utilize every source possible to combat the challenges responsible for poor or low ICT competence among academic staff.

Implications For Management

1. Funds should be provided by the government on a regular basis to the management of Colleges of Education in order to invest on ICTs.
2. Government and college management should encourage academic staff to participate in ICT training programs. Acquisition of ICT skills from such training programs would help to improve their level of ICT competence and this would lead to high productivity.
3. The management of Kwara state College of Education 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.
4. Government's interventionist agencies such as Tertiary Education Trust Fund (TETFUND), Petroleum Technology Development Fund (PTDF) should focus their intervention more on the provision of ICT facilities for colleges of education in Nigeria.
5. Other stakeholders in education (e.g. banks, oil companies) should assist colleges of education in terms of adequate provision ICT facilities.

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