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11) **Tables** should be kept to a minimum and be designed to be as simple as possible. No table should exceed a page. Each table should be on a separate page, numbered consecutively in Arabic numerals and should bear a title. Tables should be self-explanatory without reference to the text.

12) **References** should be in the latest American Psychology Association (APA) bibliographic format.

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INTEGRATION OF TECHNOLOGY IN SOCIAL SCIENCE RESEARCH IN HIGHER INSTITUTIONS IN NIGERIA

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Abstract

Technology integration in educational delivery and in other human endeavours has helped in diverse ways to change how things are done efficiently. It has also played a vital role in conducting, analyzing and reporting of research thereby enhancing research outcomes and utilization. Despite the usefulness of technology integration in research and in educational delivery, there seem to be a dearth of empirical information concerning technology integration in research in social sciences among lecturers in the universities. The study, therefore, assesses the level of technology integration in research studies in social sciences in the universities. Four research questions were formulated and answered. The study employed survey design. The population of the study consisted of all categories of lecturers in all the departments in social sciences faculties across Nigerian private universities. 200 respondents were purposively selected. A self-developed questionnaire was used to collect data for the study while data analysis was done using simple percentages. The study revealed among other things, that internet and SPSS are the most available technology to researchers, high level of awareness of usefulness of technology integration in research; internet and SPSS are the most commonly used technology; and that technology integration in social sciences research is facing a barrage of challenges in Nigeria. Consequently, the study recommended that efforts should be made to scale up funding of higher institutions in Nigeria to enable them procure necessary technological tools for research and other education activities. Similarly, efforts should be made to address all barriers to technology integration in research.

Introduction

The 21st century has witnessed unprecedented advancement in the use of technology to enhance education delivery and other human

endeavours. Technology has also been used in various ways to improve the quality of teaching and learning. For instance, technological innovations such as the Internet and computer have facilitated information sharing and other interactions among scholars. Indeed, the use of technology has become essential not only in the classroom (Almekhafi & Almeqdadi, 2010) but virtually in almost every spectrum of human activity. Through technology, learners and scholars have access to unlimited and valuable learning resources.

Technology integration, according to the National Forum on Educational Statistics, is the incorporation of technology resources and technological practices into the daily routine of work, business and school management. It is the act of democratizing knowledge and empowering learners to participate in learning authentic learning and multimodal learning (Lamke and Coughlin, 2009). Technology integration is a planned and purposeful use of technology to support learning objectives (Rao,2013). It is helping learners to capture quick knowledge and information, thereby making communication easy for them as well as helping them to collaborate and share knowledge with peers who are at different geographical locations (Bolicks, 2002).

With regards to research, technology integration involves the use of technological devices to improve the way research is conducted. These include using technology, sourcing relevant literature through internet browsing, collecting and analyzing data as well as disseminating research findings to end users. For instance, the internet is used to access data search engines such as ProQuest, Sage, Emerald, ABI, Peer Reviewed Journals, Business New and a host of others. Theseare useful tools which help researchers to access data and information whenever necessary. Research processes and outcomes are also being enhanced through the use of Computer Assisted Self-Interviewing (CASI) methods which use audio and video automated telephone interviewing system to collect data. There are also mobile phones, Geographic Information System (GIS) which are used to collect various forms of structured data (Onwuegbuzie, 2009).Others tools include: Nvivo, Atlas, Video technology, Global Posting System (GPS) to mention but a few. These technological applications help researchers to expand the way data is collected, analyzed and managed. They also increase opportunities for interaction between researchers and respondents, help researchers to gain speed and save time and

resources. Technology also enhances research information storage and retrieval. Duffy (2002) contends that the use of internet and other search engines provide researchers with enabling environment for conducting web based research.

Despite the overwhelming importance of technology and the pervasiveness of application of technology in education, integration in social sciences research seem to be very low in some higher education institutions in Nigeria. In addition, most studies on technology integration seem to centre on integration into classroom and in the delivery of teaching learning activities while not much is done on integration of technology into research in general and social sciences research in particular. The situation is more critical in developing countries such as Nigeria that are not only lagging behind with respect to technology development but still have to grapple with other challenges such as inadequate infrastructure to drive technology. Moreover, most Nigerian universities are poorly funded and as such lack the financial capacities to acquire needed technological tools for research. Where some institutions are able to acquire the needed technological infrastructure, integration is often hampered by other problems such as lack of expertise, incessant power outage among a barrage of others.

This research study therefore, assesses the extent of technology integration in social sciences research in higher institutions in Nigeria. The study identifies major technological tools available to researchers in the social sciences, assesses level of awareness of technological tools among researchers, determine the extent to which the tools are used by researchers in social sciences as well as identify major challenges on the use and integration of technology in research in social sciences.

Purpose of the Study

The study sought to:

1. Identify major technological tools available for researchers in the social sciences.
2. Access the level of awareness of the technological tools among researchers in the university.
3. Determine the extent to which these technological tools are used by social science researchers.

4. Identify major challenges to effective use of technological tools for researchers among social science researchers.

Research Questions

To guide the study, four research questions were formulated:

- What are the technological tools available to researchers in the social sciences?
- To what extent are lecturers in the social sciences aware of these tools?
- To what extent are the tools utilized by lecturers in the social sciences?
- What are the major challenges or obstacles to the use of technology in research in social sciences?

Literature Review

Although not much seem to have been done on technology integration in social sciences' research, studies reviewed show that much work have been done on technology integration in education and on barriers to technology integration. Literature review in this study centered mainly on the importance of technology integration and challenges associated with it. Computer technology and digital media have fundamentally transformed all aspects of human lives and have become important parts of all educational endeavour. Technology helps to improve and enhance the acquisition of knowledge, skills and learning. It also helps learners to acquire competencies to function well in workforce and the society at large. It is useful for student-centered learning. When technology is appropriately integrated into learning activities, it helps to improve students' performance and learning outcomes in general. Integration into education helps to enhance competencies such as understanding of complex concepts, connections between ideas, processes and learning strategies as well as development of problem solving skills, visualization, data management, communication and collaborative skills (Collins & Halverson, 2009).

The use of technology in education is essential in helping students build skills needed for the 21st century. These skills range from information, media, technology skills, learning and innovation skills, to life and career skills (Partnership for 21stCentury Skills,2009). Writing on the use of technology in research, Ahern (2005) contends that the

Internet, especially the various search engines, provides opportunities for researchers not only to access a variety of information but to collaborate on journal publications.

By making web-research possible, technology helps to collect data from vulnerable and hard to reach populations such as children, the gay and people with rare disorders (Duffy, 2000 & Eaton et al, 2002). Maloney et al, 2003 & Wilson, 2003 observed that the internet makes access to specific populations quick, cost-effective and efficient.

Problems of Technology Integration

Despite the ready availability of technology and its importance in education delivery, integration has been confronted with a barrage of problems. For instance, Naido & Schutte (1999) noted that technology integration activities especially in developing countries are limited as a result of infrastructure problem, which are attributed to lack of funds, expertise and political instability. Oyedaran- Oyeyinka & Lai (2003) in a cross country analysis of internet diffusion in Sub-Saharan Africa observed that Internet use in Africa lags behind other regions. Farrel & Isaacs (2007) noted that most countries in Africa are plagued with internal conflicts and political instability that have impaired progress in ICT integration in education. Citing the case of Zimbabwe, Chityo and Harmon (2009) contended that more than 10 years of political instability in the country has impeded access and the use of information technology as a learning resource. Their report further showed that adoption and application of computer and internet in most universities is still low thereby affecting effective integration of technology.

Several factors have been identified as responsible for insufficient integration of technology in education in Africa. These include: inadequate funding and cost, lack of infrastructure, and insufficient capacity building for staff (Nwuke, 2003). Machcha (2004)noted that inadequate and irregular funding of ICT initiative and prohibitive cost of ICT equipment hinder ICT integration in higher education. Zinyeka (2005) observed that cost is the main constraint which has resulted in the lack of resources and undesirable institutional environments. Consequent upon poor funding and high cost of information technology, most developing countries are unable to set up reliable and efficient infrastructure needed for technology integration.

The Association of African Universities (2000) noted that the integration of technology into learning, research and management is still at its infancy stage in most African universities because the enabling environment is not yet created. Steiner et al (2004) summarized the state of internet connectivity in tertiary institutions in Africa as being too little, too expensive and poorly managed.

With regards to capacity building, the Association of African Universities contended that technology integration is affected by the absence of systematic skills and expertise for integrating technology in teaching, learning and research. Zinyeka (2005) in a study of availability of ICT experts found out that there are no ICT experts for teaching and learning of technology in most universities in Africa. Machacha (2004) noted that there are inadequate external and internal programmes for critical skills to manage and support ICT functions, which is compounded by institutional inability to retain skilled ICT staff and faculty due to poor remuneration. Ertmer (1999) noted that in addition to lack of resources, financing, infrastructure and institutional constraints, technology integration in curriculum and research is affected by teachers' attitude, beliefs and their knowledge and skills in technology. Ertmer (2005) observed that even when the conditions for successful integration appear to be in place, technology integration in most universities seemed to be low due to the existence of internal factors. These factor Hew & Bush (2007) noted include: lack of resources, lack of specific technology and skills, technology supported-pedagogical knowledge and skills, and technology- related-classroom management and skills, leadership, school time-tabling and structure and school planning, teachers' attitude and beliefs towards technology, and pressure of assessment.

Methodology

The study employed the survey design. The population of the study comprises all lecturers in Faculties of Education and Social Sciences of the University of Lagos. The respondents consisted of all categories of academic staff that carry out one form of research or the other. A total of 200 lecturers, consisting of 100 from each faculty, were purposefully selected for the study. Data for the study was collected using a structured questionnaire developed by the researchers. The questionnaire consisted of two sections, A and B. Section A elicited

Table 2: Major technological tools available for researchers

S/N	Variables/tools	Number of responses	Percentage	Rank
1	Nvivo	9	4.5%	12th
2	Atlas	18	9.0%	11th
3	Social media (Twitter, Facebook, Google group)	25	12.5%	10th
4	Bar code	36	13.0%	9th
5	Refwork	30	15.0%	8th
6	Video Technology (YouTube, Video)	73	36.5%	7th
7	Global Information Systems	74	37.0%	6th
8	Computer Assisted Telephone	75	37.5%	5th
9	Language translator	98	39.0%	4th
10	Mobile phone	153	78.5%	3rd
11	Analytical tools (SPSS, SAS, Epinfo, Stagraph, etc)	170	85.0%	2nd
12	Internet	195	97.5%	1st

Table 2 shows the major technological tools reported to be available for social science researchers in the University of Lagos. Internet services ranked top among the technological tools reported by respondents to be available for researchers with 195(97.5%). This is followed by analytical tools such as SPSS, SAS, among others, which was ranked second with 170(85%). The other tools in their order of utility included mobile phones /tablets 153(78.5%), language translators 98(39%), computer assisted technology (Skype), 75(37.5%), Global Information Systems 74(37%), video technology (YouTube, Video, etc.) 73(36.5%), Refwork 30(15%), barcode 26(13%), social media such as twitter, Facebook and Google group ranked 10th. Nvivo and Atlas came last in the ranking with 11th and 12th ranks respectively.

Table 3: Awareness of uses of technological in research among the researchers

S/N	Items	Strongly Agree	Agree	Disagree	Strongly Disagree
1	Technology is useful in research studies	30 (15%)	170 (85.0%)	-	-
2	Technology can enhance my research outcomes	40 (20%)	155 (77.5%)	5 (2.5%)	-
3	I am used to doing my research without technological input	-	10 (5%)	106 (53%)	80 (42%)
4	Technology is useful in data analysis	109 (54.5%)	76 (38%)	-	15 (7.5%)
5	Researchers should always use technology to collect data	130 (66%)	51 (25.9%)	6 (3.0%)	10 (5.1%)
6	Technology is useful in the sourcing of information	70 (35.5%)	91 (46.3%)	31 (15.7%)	5 (2.5%)
7	Use of technology affects the quality and outcome of research	75 (38.1%)	96 (48.7%)	21 (10.7%)	5 (2.5%)
8	Technology is useful in processing of research result and report	108 (54.8%)	84 (42.7%)	5 (2.5%)	-

Note: Value on the parenthesis outside the parenthesis are frequency distributions while those in the parenthesis are percentage distributions.

Table 3 measures the responses of the respondents on the awareness of technological tools amongst researchers. The result from the table indicated that all the respondents admitted that technology was useful in their various research studies. In a similar vein, 195(80%) of the respondents consented that technology could enhance their research findings and the outcome of their study while only 5(2.5%) of

the respondents disagreed with the statement. Also, only 10(5%) of the respondents admitted that they were used to doing their research without any technological input while the majority 186(95%) of the respondents disagreed with the view. As regards to the usefulness of technology in data analysis, a large proportion of 185(92.5%) of the respondents admitted that technology was useful in the data analysis in their studies while only about 15(7.5%) of the respondents disagreed with this position. Furthermore, majority 181(91.9%) of the respondents believed that researchers should always use technology in their collection of data while only 16(8.1%) of the respondents shared an opposite view. Apart from using technology in collection of data, majority of the respondents 161(81.8%) admitted that technology was useful in the sourcing of information for research purposes while 36(18.2%) of the respondents disagreed with the statement. In a similar vein, majority of the respondents 171(86.8%) consented that the use of technology affected the quality and outcome of research while only about 26(13.2%) of the respondents disagreed with the statement. Finally, 192(97.5%) of the respondents agreed that technology was very useful in research process while only 5(2.5%) of the respondents disagreed with this position. In summary it could be deduced from the table above that majority of the respondents had a sufficient level of awareness about technological tools for research purposes.

Table 4: The level of utilization of ICT tools in social sciences among social science researchers

S/N	Tools	Adequately Utilized Frequency	Under-utilized Frequency	Mean	Rank
1	Nvivo	9	191	1.04	12th
2	Atlas	18	182	1.09	11th
3	Social media (Twitter, Facebook, Google group)	25	175	1.12	10th
4	Bar code	36	174	1.13	9th
5	Refwork	30	170	1.15	8th
6	Video	73	127	1.36	7th

	technology (YouTube, Video)				
7	Global Information Systems	74	126	1.37	6th
8	Computer Assisted Telephone	74	126	1.37	5th
9	Language translator	98	102	1.49	4th
10	Mobile phone	158	42	1.79	3rd
11	Analytical tools (SPSS, SAS, Epinfo, Stagraph, etc)	170	30	1.85	2nd
12	Internet	195	5	1.91	1st

Mean Midpoint 1.5

Table 4 shows the level of utilization of ICT tools among social science researchers. The result indicated that internet resources, analytical tools such as SPSS, SAS, language translator and computer assisted telephone were the most utilized ICT tools among social science researchers while other technological resources such as Nvivo, Atlas, Bar code, social media, Refwork received low patronage from social science researchers in the University of Lagos.

Table 5: Challenges of using technologies in research

S/N	Variables	Frequency	Percentage	Rank
1	Research technology takes time to understand	26	13.1	5th
2	Research technologies are often expensive	35	19.2	4th
3	Research technologies are often not accessible	136	61.1%	3rd
4	New technologies are	161	81.7%	2nd

	often difficult to use (Technical knowhow)			
5	New technologies are not available for research purposes	192	96%	1st

Table 5 shows possible challenges confronting respondents in the use of technological tools for research. Key among the challenges reported by the respondents was the non-availability of some the new technological tools for research purposes in their institution. Other critical challenges reported by the respondents in the order of their severity include: difficulty in the use of some of new technologies during research 161(81.7%), and inaccessibility of some of the technological tools 136(69.1%). Also, some respondents about 35(19.2%) believed that using technological tools during research was often expensive while only 26(13.1%) of the respondents reported that using technology during research consumed a lot time.

Discussion of Findings

Four research questions were formulated to guide data collection for this study.

Research question one sought to determine technological tools available for researchers in social sciences in the University of Lagos. The result shows that the main tools indicated by the researchers were the internet and SPSS. This finding is expected as the internet has been found to be very useful to learners and researchers in a variety of ways such as enhancing communication and access information. This finding is consistent with various views on the availability and usefulness of the internet to researchers and learners. For instance, Ahern (2005) contended that the internet, especially various search engines, is providing opportunities for researchers not only to access a variety of information, but to also collect and access data as well as a conducive environment for collecting web- based research. It is also evident from the study that other tools such as Nvivo, Atlas and a host of others, which have been found to be useful for researchers, are not well known to most of the respondents. This implies that apart from traditional tools, integration or use of most of the other not well known technological tools by researchers is grossly limited. This assertion is

consistent with Chitiyo and Harmon (2009) who observed that integration of technology in most institutions is impeded by poor availability and access to appropriate technological tools by both lecturers and students.

With regards to awareness of available technological tools for researchers in social sciences, the study shows that the respondents are considerably aware of research tools though some indicated that they are not aware of some of the tools. The result is expected because of the pervasiveness of technology which makes it almost impossible for anybody in the academia not to be aware of or at least know the names of common technology used by researchers in other developed climes.

As availability and awareness may not necessarily translate to usage or utilization, the study sought to determine the extent of utilization of technology among social science researchers. The result showed that internet resources, SPSS, language translator and computer assisted telephones were the most utilized by social science researchers while others such as Nvivo, Atlas, Social media, and Ref work were not utilized. This finding is expected as it confirms the low level of technological development and usage among educators and researchers in developing countries. Furthermore, apart from using technology, especially internet as a search engine to look for information and email, most researchers (including those in the social sciences) are yet to incorporate other computer soft wares in their research processes.

The study revealed an array of reasons for the low utilization of technological tools for research in social sciences. This includes the non-availability of some of the new technological tools for research purposes (96%). This was followed by difficulty in using new technologies (81.7%). Others include non-accessibility of new technologies and cost of technology. The findings showed that efforts at technology integration could be limited by these challenges. The findings are consistent with several studies which identified barriers to effective integration of technology to education (Nwuke, 2003; Machacha, 2004; Zinyeka, 2005; Ertmer, 2005; Hew and Bush, 2007; Lim, 2007; Saleh, 2008; Chitiyo& Harmon,2009). For instance, Ertmer (1999) noted that efforts to integrate technology into curriculum and research are limited by factors such as lack of resources, funding, infrastructure and institutional constraints, teachers' attitude, their

belief, their knowledge and skills in technology. Similarly, Chitiyo and Harmon (2009) identified eight constraints encountered by lecturers in technology integration: lack of funding and budgeting constraints, poor internet access and connectivity, absence of appropriate staff development and capacity building opportunities, unreliable electricity supply, cultural and contextual relevance, absence of ICT policy and integration framework and lack of appropriate and relevant expertise.

The implication is that with all these barriers, effective technology integration in education and in research will still be a herculean task. This is more critical in developing countries such as Nigeria where technological development is still low and funding of education is grossly inadequate. There is also acute shortage of experts in the field of technology due to brain drain, and power outage is still chronic. Technology integration in research is no doubt essential especially now when emphasis is shifting to qualitative research that makes use of a lot of on-line software such as Nvivo, Atlas, MAXqda, Hyper RESEARCH (Creswell,2009) to help researchers to effectively and efficiently collect ,code, analyze and interpret research information. Moreover, with the advent of globalization, no country can live or operate in isolation any longer. There is always the need for information sharing which means that researchers in Nigeria must acquaint and familiarize themselves with technologies used by researchers from other countries in order to take advantage of what technology offers.

This, therefore, calls for concerted efforts by the government, the institutions and individual researchers themselves to address the various forms of barrier to technology integration to research. To this end, the government should ensure adequate funding of education at all levels with special emphasis on higher education. This will enable educational institutions to procure the necessary hardware and software needed for technology integration. It will also enable them to acquire necessary infrastructure that will enhance technology integration in the institutions. The institutions, on the other hand, should ensure that funds earmarked to them are appropriately utilized to procure the needed software. Hence it is not enough to acquire the software, effort should be made to ensure that they are used by the staff; this can be achieved by providing them the necessary training and expertise required to maximize the deployment of such technological

tools/infrastructure in research. The individual researchers should ensure that they are technology savvy and compliant by familiarizing themselves with the various technological tools in order to enhance their research abilities and outcomes.

Conclusion

Technology integration in education and research in particular has become imperative in that technology helps to enhance research effectiveness and outcome. Technological resources help the researchers not only in locating and collecting research information but have become very useful and essential tools for every aspect of the research process. This is more so as most libraries are now on-line which means that access to resources from these libraries requires that researchers must be technology compliant especially in the face of globalization which is changing the way businesses are done as well as bringing advancement in knowledge. Consequently, researchers in the social sciences need to be innovative and not just be aware of technological tools used in research but must be able to avail themselves of the opportunity such tools offer for better research outcomes. There is, therefore, the need for governments and higher educational institutions in the country to invest not only in the acquisition of technology but also in the training and retraining of their staff and personnel to enable them acquire necessary technological knowhow especially in the area of research. The need for such investment cannot be overemphasized as there seem to be an intricate relationship between technology, research and development as development in any nation is driven by research which in turn is enhanced by technology. This therefore means that the future of research, and invariably development in Nigeria, is dependent on the successful integration of technology in research processes, especially in the social sciences.

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