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A REVIEW OF ICT LITERACY SKILLS IN AFRICAN TERTIARY EDUCATIONAL INSTITUTIONS

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Abstract *This review summarizes the importance of information and communication technology (ICT) literacy skills in student education on the African scene. The study specifically presents an overview of ICT literacy as well as the empirical studies of other researchers. Benefits in applying the knowledge to the information resources, factors determining the application of ICT literacy skills on information resources among the students in Africa, the research gaps in the literature and the suggestions for future studies in order to address the research gaps.*

Keywords: *ICT, ICT Literacy Skills, Literacy, Student Education, Higher Educational Institutions (Heis), Africa*

INTRODUCTION

In the 21st century, ICT has changed the role of education and information professionals in handling, processing, and managing information to provide timely and improved information services in information resources format. Furthermore, according to Dhanavandan, (2012) the developments in ICT expedited the development of new electronic materials and devices. Developments in library and information have evolved to a shift in paradigm from printed publications to electronic formats, from document ownership to easier accessibility to information, intermediate handlers of information to end-user service models, as well as locating particular libraries to virtual libraries. In agreement to other empirical literature, Sharma (2009) posits that improvements in applications of ICT through the past few decades have resulted in drastic and radical evolutions as regards information storage, gathering, accessibility, organization, retrieval and consumption, and developments in this sector has brought numerous products and service delivery. Diyaolu, (2018) is of the view that the advent of technology has advanced the expedition of human activities in the world today. Further, Egberongbe (2011) also opined that developments in global economies have been moulded by far-reaching changes in the ICT industry. The advent and utilization of ICT are perhaps the most important development influencing scholarly communication. Applications of computer technology to information handling and dissemination has resulted in the delivery of numerous products and services. Subsequently, academia has witnessed remarkable developments through these years, attaining new frontiers of technology-driven applications. In alignment to other scholars, Sarkar, (2012); Kituyi, (2013) asserted that through the last decades, there have been heavy investments by Higher Education Institutions (HEIs) in ICT development on account of its significant impact in in teaching and learning. Ayoku, (2015) and Ameen, (2016) state that arrival of contemporary, technologically-advanced information society, evolving approach of information managers, as well as the shift in demand from print to digital information sources have greatly influenced information delivery and library management. It is on this premise that in our world today, libraries are not defined purely by their physical attributes, collections and computerization, but from the services they render. In order to meet up with the rising demands associated with the digital age, libraries must be equipped with the required technology and human proficiency. Johnson, (2011) authenticates that HEIs have advanced every facet of scholarship on account of technology, for instance, students carry out their research activities through the internet by consulting educational journals, newspaper articles as well as other electronic transcripts. Other students download online assignments online and communicate via e-mails with their lecturers, while several others utilize graph plotters, multimedia tools, spreadsheets and presentation programs regularly. The propagation of e-learning and distance education have altered the old-fashioned classroom style of teaching and learning. As ICT changed the role of library and librarians, information needs of its users has been altered and this

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necessitated both information providers and seekers to keep abreast of the latest technology, by acquiring required skills to be able to fit in and utilize information resources remotely and within the confine of the library, no wonder Chen, (2011); Gakibayo, (2013) postulated that the capability of students in effectively finding and retrieving information is a vital resource required for their career advancement. Inconsistency with this assertion, Koltay, (2011); Jones, (2013) endorse the assertion that students in HEIs must be well-grounded and trained in ICT skills in order for them to fully utilize the ever-increasing array of electronic information resources.

According to Cowan, (2018), technological development has heralded an enormous collection of information resources into our households, teaching spaces and workplaces and there is substantial pressure upon us to explore its usage, as ICT is been utilized as a faster medium of communication and investigation. It is evident that in the world of today, possessing a computer does not necessarily culminate in improved acquaintance to technology and does not spontaneously lead to increased ICT proficiency. A degree of success today begins with the ability to manage, evaluate, and transmit all methods and types of information within a technological space, and these are referred to as ICT skills. Consequently, the lack of ICT skills results in rarer prospects for personal development, and a society that is handicapped on account of ICT skills cannot fully maximize the merits accruable from learning opportunities (Akoh, 2018). Further, Flood, (2015) affirmed that literacy in ICT embraces the 21st-century usage of literacy, such that the communication and research of information through digital means are as imperative as reading and writing were in centuries gone by. Both ICT and information literacy are germane not only to the academia in HEIs but to the general public so as to facilitate their lifelong learning and ensure their effective participation in the information world. ICT literacy skills define vital abilities and proficiencies, which include a combination of cognitive (which involves the ability to ascertain and address information needs and problems) a technique (which is the ability to utilize software, digital tools, and infrastructure necessary for creating, manipulating, storing, and disseminating information). ICT literacy and proficiency have gained importance in every aspect of life, especially among academia. In line with this assertion, Guma, (2013) declares that components of ICT literacy has to do with the ability to define the creation, accessibility, integration, management, evaluation, and proper communication of information in the ICT environment. In the same vein, Baro, (2011); Carlson, (2011) affirm that an ICT literate person should be able to outline and facilitate access for information from numerous sources; provide a critic for the effectiveness and adequacy of information for a precise purposes; organize and manage information for later retrieval; incorporate or synthesize information from different sources; produce or become accustomed to online information for specific purposes; adapt or communicate information for the populace through various media (such as software usage/manipulation, e-mail, spreadsheets word documents etc.) Thus, proficiency in ICT is essential by people to meet their career needs Kamba, (2011); du Plessis, (2014). The benefits of ICT literacy skills in learning cannot be compromised, due to the fact that proficiency in ICT can determine the nature and level of the information required.

Furthermore, competency among students in HEIs enhances the capability of students towards their effective and efficient accessibility to needed information inclusive of the adoption of the most suitable approaches of information investigation or retrieval system, creation of well-fabricated search strategies, extraction of information, as well as information management Boeriswati, (2012); Dias, (2014). According to Beutelspacher, (2013), an information literate user is able to conceptualize a research problem, communicate questions centered on the required information, ascertain fundamental conceptions, and has wide knowledge of search engines, has experience in the use of boolean operators, as well as the ability to access e-library materials. The valve of information skills reaches beyond the University towards the broader values of long-life learning, employability and the development of a culture of active and informed citizenship based on the effective use of information Rafique, (2014). Additionally, Chanchinmawia, (2018) sustained the assertion that users with high levels of ICT proficiency may be able to appraise the legitimacy of the information and effectively utilize modern search engines, disseminate their findings ethically, efficiently and legally. The acquisition of these skills in the course of their university education becomes useful throughout their career (Cherono, 2017).

AIM OF STUDY

To evaluate the importance of information and communication technology (ICT) skills in student education on the African scene.

METHODOLOGY

In order to accomplish the aim of the research paper, qualitative research methodology was employed in view of the fact that, is a form of social inquiry that focuses on the way people interpret and experience events and the world which they live (Stangor, 2011). Hence, the consulted literature for this study reviewed relevant selections from academic journal databases, e-books, google scholar, as well as library and information science articles and publications. The consulted literature from the year 2010-2019 were accessed, compared and critically evaluated to ensure reliability and validity of the information.

PERSPECTIVES ON ICT LITERACY SKILLS AMONG STUDENTS IN SOUTH AFRICA

Various empirical literature appraised levels of literacy on ICT among undergraduate students revealed that ICT literacy skills are generally inadequately utilized by undergraduate students in African Universities. Furthermore, it has been revealed from the literature that students could explore the merits of ICT literacy skills in their academic work, but there are diverse difficulties which must be urgently solved so as to improve ICT literacy skills in the universities. This is because the majority of the undergraduate students researched in several studies confirmed that the undergraduate respondents faced difficulties while trying to access and utilize electronic information resources because of slow or unreliable Internet connection thereby leading the underutilization of digital resources. Further, the level of ICT literacy skills was low because the majority of the students revealed that ICT literacy skills offered by their various institutions are moderately relevant. This infers to mean that preponderance of students did not fully maximize their competence of ICT literacy skills because they were not highly relevant to their areas of research, hence, they confirmed that they have been trained and retrained on information literacy however the majority also suggested they preferred more practical and interactive lessons than theorized ones. This implies that the students were equipped theoretically but practically they cannot effectively exploit digital resources. A preponderance of students responded that they developed ICT literacy skills for course assignments. Generally, the students have shown that they have an interest in using electronic information resources for their academic needs but their expectations were not fully met because of the above-mentioned circumstances. Further, the information literacy skills course needs to be competency-based education and training (CBET) in order to adequately build the capacity of students with critical skills and know-how vital to fully utilize the panoply of electronic information and leverage self-determined learning (heutargogy). In addition, Madondo, (2017) reported that training courses on information literacy skills equipped varsity students with essential skills for mastery of e-resources offered in their various Institution. However, many other students strongly suggest the integration of more practical and interactive ICT literacy lessons so that the students may be able to perform independent practical searches. Furthermore, ICT literacy-enhancing modules should be put in place, so as to promote undergraduate students' academic pursuits From the foregoing, lecturers and other decision-makers in Institution must be made to be more conversant with the relevance of ICT competency skills, as many respondents possess inadequate hands-on skills as a prerequisite for processing and retrieval of e- information from ICT subscriptions, domains and websites.

Badat, (2014) reported that available statistics depict African countries as underdeveloped when compared to other global regions as regards the management and utilization of ICT literacy skills. However, this differs significantly from the status quo in South Africa, as Mashile, (2016), disclosed that many South African Institution are highly integrated, possessing a vast array of ICT infrastructure, due to the fact that it is an essential component of the country's National Development Plan (NDP), as well as the government's ICT Strategy document for year 2025 (also abbreviated as "Infocom 2025") as clearly spelt out in NPC, (2013). A vital proposition in the NDP document is the offer of cost-effective high-speed broadband internet service in all Institution across the country. From the foregoing, Andreasson, (2015) informed that infocom 2025 is a cooperative programme designed for South Africa, with the aim of integrating all ICT developmental projects through the networking of all South African information-based communities, organizations and agencies, with the overarching aim of achieving competitiveness across the globe. Infrastructure, policy, capacity enhancement concerns, as well as ensuring local content standards within ICT-based establishments, and the advancement of capacity in the utilization of telecommunications technologies form part of the envisaged goals as entrenched in the Infocom 2025 document. Also, the Department of Higher Education and Training (DHET) in South Africa provides soft-landing for universities in the area of funding for renovation and overhauling of ICT infrastructure, as well as providing funds and grants for ICT capital projects such as modern ICT hardware, software and infrastructure. Also, Onyancha, (2012) disclosed that South African Institutions fund several courses on ICT literacy skills for the purpose of enhancing the intellectual capabilities of undergraduate students. It is on this premise that Satgoor, (2015) opined that despite the huge investments in ICT literacy skills by universities, there are unanswered questions which Centre on counter-productivity on account of inefficiency and inadequate proficiency of ICT skills in the exploitation of digital resources. It is on this premise that Ashcroft in the year 2011 epitomized that, while discussions surrounding the adoption of electronic materials, such as improving the mindfulness of users, the multiplying and multiplicity of keywords have been determined, discussions pertaining to e-book provisions remain unresolved. No wonder therefore, that Mogase, (2015) reported the under-utilization of e-resources in Institutions due to inadequate ICT literacy skills. Furthermore, Pietersen, (2015) noted that, while academic institutions have enjoyed the merits accruable from e-collections development, the adoption other e-information resources (for instance, e-books) seems to be developing at snail speed.

FACTORS INFLUENCING THE APPLICATION OF ICT LITERACY SKILLS IN LEARNING

ICT literacy skills of users can be influenced by demographic factors such as gender and age. According to Alazzam, (2012), demographic variables are the physiognomies, characteristics and features of the human population, which can also be conceptualized as the socio-economic variables of a population. Several studies have been carried out to investigate how age and gender determine the ICT literacy skills of users. Okore, (2012) in his study accounted that gender was found to have an influence on ICT skills, this affirmation was supported by Huffman, (2013) that the use of ICT skills in learning was less for females, and higher for male respondents. According to Rossson, (2011) also opined that generally speaking, females were less favorably disposed to the use of computers. Van-Dinther (2011) postulated that gender is an additional pertinent factor in the usage and application of ICTs. Also, Hilbert, (2011); Robinson, (2015) claimed that the gender gap in the use of ICT skills is greater where more rigorous use of the worldwide is involved. Women are considerably less likely to be regular manipulators of ICT on account of the fact that their males are more intensive users of the technology (Owusu-Ansah, 2014. Also, Bassi, (2011) opined that gender is correlated with the utilization of ICT resources, and that male students were more likely to access and utilize ICT infrastructure than their female colleagues.

Bakkabulindi (2011) in his study elucidated that age correlates with the utilization of ICT literacy skills. This assertion is coherent with the findings of other scholars such as Peeraer, (2010); Umar, (2014), who detected that age is an imperative correlation in the application of ICT skills towards inventions, with the younger users of ICT tending to be more rigorous adopters of the technology than the older users. Old and ageing students and teachers, as well as senior employees and graduates in HEIs, require extra tutelage and /or devoted ICT training (Okiki, 2011). Also, older and returning students may not have as much experience as their younger colleagues, and this may culminate in exacerbated levels of computer anxiety (Quadri, 2013). The preponderant level of usage of ICT literacy skills in information resources along gender considerations is an indication that students in HEIs still derive satisfaction from electronic resources despite their minimal expertise in the manipulation of ICT infrastructure. Further, their level of e-resources use greatly enhanced by their perception of ease and usefulness of electronic resources such as E-journals and E-books (just to mention a few).

Furthermore, studies by different scholars have no doubt revealed the attitude and perception of student respondents in the application of ICT skills to the utilization of e-information resources. In a study by Silas, (2012), in his study of student attitude to electronic resources stated that in his study of 503 students of Andrews University, Michigan, USA, a vast majority of the students (i.e. 87.9%) did not adopt the-resource type due to the fact that they are not ready to apply their level of ICT literacy. Similarly, a similar result was established by Folbet, (2011), who observed that 35.5% of the student respondents were ignorant of the existence of e-book materials. Also, Marques, (2012); Miller, (2015) noted that "the demand for e-textbooks to support taught course students in higher education are not currently being met and the scarcity of textbooks generally is a big point of concern for students". More distressingly, Croft (2010), opined that lack of awareness of ICT literacy skills was the major reason cited by the respondents for not utilizing e-resources. A total of 40.2% of the respondents said they were unaware there were e-books in the library, while 26% revealed that they did not know and have the skills on how to locate them in the library, and 6% stated that they were unfamiliar with these resources. Contrary results were also obtained by other researchers, such as Brahme, (2012); Wang, (2016), who reported that the majority of graduate students were aware of e-books and had applied ICT skills in the course of their use of the e-resources. Furthermore, Ebrary (2010) disclosed that less than 15% of the interviewed users who responded to why they never utilized e-books, complained that e-books were too challenging to read and they are lacking the ICT skills. Also, Nwone, (2017), stated that student respondents revealed their displeasure with e-books claiming that they were difficult to read and browse or require specialized equipment in ICT skills. Also, Myrberg (2015) had already submitted that eye strain from computer screens can lead to distress and could affect the choice of the respondents in applying their ICT skills.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, this review paper investigated the importance of information and communication technology (ICT) literacy skills in student education on the African scene. it is pertinent to state that demographic factors, as well as attitude and perception, challenges the application of ICT literacy skills in the use of information-resources use. The inability of information users to prevail over these obstacles could also hamper the effectiveness and efficiency of information-resources use among information users, this is also an area worth further investigation in future research. At this juncture, a review of the existing literature is geared towards the advancement of ICT literacy skills theory and practice, as well as determinants of ICT literacy skills in Institutions. Also the implication of this study, is that it requires the

involvement of the teachers, students, and the administrative perspective in the implementation, awareness, belief and acceptance of ICT literacy skills as well as changing the attitude and perception, gender equality of the users towards the ease and use of information resources for optimal satisfaction and utilization of the resource, Academic should develop themselves on the use of technology by attending training offered by institutions and on-line courses, ICT related modules should be taught to academics and awarded certificates to encourage them, there should be awareness through teaching and Learning Centre (TLC) in order to make sure that all academics and students are aware of the TLC services as well as its significances. Permanent data projector should be installed in the lecture rooms to enhance their skills performance. Further, the possible gaps in the existing literature are shown above in order to provide direction for future research into ICT literacy skills implementation and application.

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