



Challenges Facing the Usability of Information Communication and Technology in Adult Education through Open and Distance Learning in Dodoma, Tanzania

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Abstract: *The researcher aimed to examine the challenge encrusting the usability of Information Communication and Technology in Adult Education through Open and Distance Learning. The study used qualitative research approach as well as case study design with the Regional resident tutor, instructor and learners as the research population. Researcher included 15 participants who were purposive sampled. interview and focus group discussion employed as the method of data collection. Thematical analysis was used to analyse data with direct quotation. The researcher found that limited ICT infrastructure, low ICT literacy among adult learners, and financial barrier to run ICT are the challenges facing the use of ICT in adult education through open and distance learning program in Dodoma. Moreover, findings found that enhancing digital literacy programs, strengthening technical support services, increasing accessibility of internet services is the best way to diminishing the above challenges for the betterment of stabilizing the usability of information technologic communication in adult education. It has been concluded that ICT has emerged as a priority in the delivery of teaching and learning, in adult education through open and distance learning. However, ICT encounter challenges like systemic issues, lack of skills, and economic constraints. It is recommended that the government, should address the difficulties facing the use of ICT within the adult education. Such efforts should focus on strengthening technological infrastructure such as ensuring the availability of computers and all relevant equipment, enhancing the capacity of instructors and reducing the cost of internet bundles.*

Keywords: *Information, Communication, Technology, Adult Education, Open, Distance Learning*

How to cite this work (APA):

Songambele, R. (2025). Challenges facing the usability of Information Communication and Technology in Adult Education through Open and Distance Learning in Dodoma, Tanzania. *Journal of Research Innovation and Implications in Education*, 9(4), 1157 – 1163. <https://doi.org/10.59765/csy7e3>.

1. Introduction

Adult education is among the backbones of social-economic developments, offering opportunities for lifelong

learning, reducing the illiteracy rate among adults and youths, and developing valuable individuals in society, as well as enhancing professional skills and innovation (Adu-Marfo, at el, 2024). Adult learners often have various backgrounds, motivations, and responsibilities that

influence their engagement levels in educational settings. Factors such as work commitments, family responsibilities, and prior educational experiences can impact how engaged adult learners are with their studies (Athuman and Amosi, 2024). Bond et al. (2020) a proper and modified supporting structures recognized to meet the unique needs of adult learners hence distance learning is one of the supportive ways to the learners of adult education. Rapid technological advancements in the world have led to the use of technology integration in teaching as an important section of enhancing academic and managerial achievement. Information Communication and Technology involves multiple convergences of content, computing, telecommunication and broadcasting as a valuable asset in academic transformation (URT, 2023).

The role of Information Communication Technologies (ICTs) is therefore multifield. It cuts across the diverse settings of human life including social, political, economic, developmental, environmental and educational sphere (Kagugu, 2011). ICTs have the potential in facilitating communication and interaction among the learners themselves and between learners and facilitators in distance education settings (Venugopal and Manjulika, 2022). The possibilities and realisations have differed greatly according to the environment in which programmes have taken place. There is widespread belief that ICTs can and will empower facilitators and learners, transforming teaching and learning processes from being highly teacher-dominated to student centred, and that this transformation will result in increased learning gains for learners, creating and allowing for opportunities for learners to develop their creativity, problem solving abilities, informational reasoning skills, communication skills, and other higher-order thinking skills (Kagugu, 2020b).

In Indonesia, personalized learning experiences facilitated by digital technology played a crucial role in sustaining student engagement. Tailored content, adaptive feedback mechanisms, and interactive features customized to individual learning styles to keep students motivated and invested in their learning journey (Hidayat et al., 2022). In Jordan, incorporating Kahoot into the online classroom environment led to increased student engagement. The interactive and competitive nature of Kahoot quizzes motivated students to actively participate in learning activities. A positive impact on learning outcomes. Students who participated in Kahoot activities showed improved retention of course material and demonstrated better performance on assessments compared to traditional teaching methods. Furthermore, the use of Kahoot fostered collaboration among students. The platform allowed for real-time feedback and discussions during quiz sessions, promoting peer-to-peer learning and knowledge sharing (Altawalbeh, 2023)

In Zambia, online Moodle had a positive impact on student engagement in online learning activities. Students become more actively involved in discussions, assignments, and collaborative tasks within the Moodle platform. Also, Moodle improve communication and interaction between students and instructors. Features such as discussion forums, messaging tools, and online quizzes promoted effective communication channels within the online learning environment. Another significant finding was the flexibility and accessibility offered by Moodle to students (Kambolokoni, 2023). The platform allowed for anytime, anywhere access to course materials, resources, and assessments, enabling students to engage with learning content at their own pace.

In Ghana, female learners faced several challenges while engaging in distance education, including limited access to technology and internet connectivity, lack of adequate study spaces at home, balancing family responsibilities with academic commitments, and experiencing feelings of isolation due to limited interaction with peers and instructors. However, they also reported benefits such as increased flexibility in scheduling their studies around family obligations and work commitments, reduced travel time and costs associated with traditional campus-based learning, and improved time management skills (Adu-Marfo et al., 2024).

In Kenya, the integration of ICT tools in higher education led to an enhanced learning experience for students. Technologies such as online learning platforms, multimedia resources, and interactive simulations were reported to improve student engagement and understanding of complex concepts (Wanjara et al., 2019).

In Tanzania, there is a barrier of the digital technology use. For example, teacher confidence is directly affected by levels of personal access to digital technology, available technical support and the amount and type of training available, all of which can be seen as barriers to the application of digital technology (Bundalla and Nyangarika, 2020). Most educational institutions in Tanzania which provide adult education they failed to implement the use of advanced technology because of the expense of advanced technology needed for the teaching and learning process, like advanced projectors and microphones, together with their mixer for amplifying voices. Also, the number of teachers who are experienced in using this advanced technology is compared to the total number present in the organisation (Al-Adwan et al., 2023). The importance of integrating ICT into teaching and learning processes. ICT tools enhance student engagement, facilitate interactive learning experiences, and improve overall educational outcomes. Students generally had positive attitudes toward using mobile applications for learning purposes. They perceived mobile apps as

convenient tools that could enhance their learning experience (Urbina, et al., 2021).

Despite the increasing use of Information and Communication Technology (ICT) in Tanzania, particularly within adult education institutions that employ the Open and Distance Learning (ODL) system for teaching and learning, its overall usability and effectiveness remain below the desired standard. Although the government has made considerable efforts to promote education and invest in technological infrastructure to enhance accessibility and learning efficiency, the expected outcomes have not yet been fully realised especially among adult learners pursuing education through the ODL system in the Dodoma region. For a considerable period, adult education institutions have been delivering instruction through various technological platforms such as online learning materials, virtual meetings (including Zoom, Google Meet, and video conferencing), and other related digital methods.

However, the adoption and reception of these technologies among learners have been relatively low. Moreover, the proficiency and fluency in the use of such digital tools have not reached a satisfactory level. Even more concerning is the inadequacy observed in the preparation, dissemination, and presentation of learning materials, which often fail to meet professional and academic standards. A significant number of students have been found engaging in academic malpractice such as plagiarism, while others rely on incorrect or unreliable information sources. These persistent challenges have compelled the researcher to focus on examining the usability of ICT in adult education within the Open and Distance Learning framework, with particular emphasis on identifying and analysing the factors that hinder the effective and appropriate use of information and communication technologies in the academic context.

2. Literature Review

Shafiqul (2019) identified some problems related to ICT-based education. The identified problems are technology and moral issues, affordability, technological imperialism, socialisation and humanisation of technology, appropriateness and acceptability. Opportunities offered by ICT-based education may not be beneficial to all learners in countries with different socio-economic, political and cultural environments. The availability of knowledge through technology may cause serious maladjustment to the people of many developing countries. The cost of establishing and maintaining the program economically, culturally, socially or politically must be affordable as globalised system of education. Shafiqul further found that any replacement or reformation of the use of technology in

developing countries needs to be harmonized socially, culturally and economically. According to him each technology has its own strengths and weaknesses. One medium may serve a teaching function better than another in a particular area and culture and learners may have different preferences for the technology to best learn with. The socio-economic and cultural background of a person influences their ability to learn from different media technology. The use of new communication technologies requires trained manpower to design, develop, produce and deliver educational materials. Few developing countries have adequately trained human resources for these specialized jobs

Bala and Ladan (2023) found that that adult learners are different from traditional students since they have family and work responsibilities which may hinder them to use effective technology for learning activities. For this reason, they need to manage their family and work while continuing their education. This requisite is reported in many of the studies in the literature as the source of a major challenge for adults, creating balance between work and family or other social responsibilities. Particularly, female learners are reported as the ones who are mostly challenged by such family responsibilities as childcare and domestic works as well as their work if they're employed.

Yasmin (2013) found out that the adult learners who start to study after a long period of time have a difficulty focusing on studying through the application of technology. In addition to these personal challenges, some factors pertaining to distance education programs also pose learning challenges for adults when an inconsistency between the program and learners occurs as well as the availability of technological devices and network. Willging and Johnson (2019) reported that lack of interest in a program or digital learning materials is a source of challenge for adults.

Pierrakeas et al. (2024), on the other hand, indicated that learners' inability to understand the application of Information Communication and Technology and their lack of prerequisite knowledge or skills might be also challenges for traditional learners. The review showed that middle-aged adults have challenges to concentrate on studying and course materials owing to their busy work life and lack of ICT knowledge. Similarly, DutsinmaKahu et al. (2014) eroded the individualization of learning has made adult trainees' passive listeners rather than active ones. There seems to be unavailability of ICT material for training of adult education students do not have the needed skills for integration of ICT into the training process. It seems there are some challenges hindering the integration of ICT into the training of adult education students in Isa Kaita College of Education.

Kibuku et al., (2020) found that there is inadequate ICT capacity for e-tutors which is a challenge to the delivery of e-Learning. To address this challenge, the sessional paper proposed the following policy actions: compulsory ICT training for all teachers and education managers by 2015, ensuring ICT competencies are acquired by all pre-service teacher trainees, continuous training of teachers to maintain the ICT competencies and developing and implementing ICT Education and Training Strategic Plan. Unfortunately, as noted earlier; the policy strategies and recommendations of this sessional paper largely have remained unimplemented.

Gichoya and Muumbo (2015) in their respective studies also reported the lack of e-Learning technical competencies as well as the e-content creation skills on the part of the e-tutors as a key hindrance to the enactment of e-Learning in state sponsored in adult leaning. They further observed that even where there is training on the part of e-tutors, the focus is on the technical functionalities of the system as opposed to the e-Learning pedagogical training which is the real challenge.

3. Methodology

Research methodology is the philosophy or the general principle which will guide your research (Mishra and Alok, 2017). It is the overall approach to studying research topic and includes issues you need to think about, such as the constraints, dilemmas and ethical choices within your research (Dawson, 2002). It is the science of studying how research is conducted systematically. In this field, the researcher explains himself with the different steps generally taken to study a research problem.

The study was conducted in Dodoma Region. The area of this study was selected based on the facts that if the researcher is familiar with the study area helps the researcher to handle the obstacles that might affect the process of data collection (Shenton, 2004). From that ground the researcher of this paper is familiar with Dodoma region particularly at the institute of adult education. The researcher has also decided to conduct her study in Dodoma Region because it is among the regions that provide education through open and distance learning. Findings from pilot studies have shown that many students in this region face significant challenges in their studies, particularly in relation to the use of Information and Communication Technology (ICT) systems.

This paper employed qualitative research. Guest, Mack, and Woodsong define Qualitative research seeks to understand a given research problem or topic from the perspectives of the local population involved. Macqueen and Namey (2005). Qualitative research used in this paper

especially for effective in obtaining culturally specific information about the values, opinions, behaviours, and social contexts of particular populations in their natural setting. This paper guided by a case study design. Creswell (2014) defines a case study as a qualitative design in which the researcher explores in-depth a program, event, activity, process, and one or more individuals. In this paper the case(s) are bound by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time.

The population of this study were regional resident tutor, instructor and learners. Sample size of this study depended on the attainment of saturation, hence, 15 participants were involved. In qualitative approach, "saturation" refers to the point where a researcher has collected enough data that no new themes, insights, or patterns are emerging, indicating they have thoroughly explored the topic and can confidently draw conclusions from their findings. Essentially, the data is considered full, and further data collection would not provide any additional meaningful information, thus ensuring the research is robust and credible (Morse 2015).

This study used purposive sampling technique. According to Kothari (2014), purposive sampling is an occasion based on previous knowledge of a population, and the specific purpose of the research investigators for use in personal judgments to select a sample. In this study, purposive sampling was employed because the researcher expects to obtain the relevant information from the setting. Purposive sampling used to select participants due to their position, whereby learners are the primary beneficiaries of information communication technology, while the instructor and regional resident tutor are responsible for educating through ICT. In addition, the researcher collected the data through interviews and observation to provide a comprehensive understanding of the research subject. Hence, thematic analysis used to provide a proper analysis of data. Thematic analysis used to identify and analyse patterns within the data. A synthesis of findings, including summaries and direct quotations from participants, hence presentation, focusing on the study's objectives to offer a nuanced perspective.

4. Results and Discussion

This paper aimed to explore the Usability of Information Communication and Technology in Adult Education through Open and Distance Learning in Dodoma, Tanzania. The findings are that limited ICT infrastructure, low ICT literacy among adult learners, and financial barrier to run ICT are the challenges facing the use of ICT in adult education through open and distance learning program in

Dodoma. Moreover, participants proposed strategies to overcome them as follows:

4.1 Limited ICT Infrastructure

Research findings found that ODL learners in Dodoma suffer from inadequate ICT infrastructure, including insufficient computers, unreliable internet connectivity, and lack of multimedia resources. This limitation affects the application of Information Communication Technology in ODL program. During the interview with students, one of them observed that,

Inadequate network presents a significant challenge which continues to impede both the adoption and advancement of technological practices. In much of the Dodoma region, a substantial proportion of students reside in rural areas where internet connectivity remains unreliable or entirely inaccessible, a circumstance that greatly undermines the meaningful integration of ICT in the education sector.

Moreover, one of instructors noted that,

The implementation of ICT through the Open and Distance Learning in an Institute of Adult Education in the Dodoma region is severely hindered by a persistent shortage of essential technological teaching and learning devices. For instance, at this particular centre, the academic office is equipped with only two computers despite employing a large number of staff members, each of whom is expected to incorporate technological applications into their teaching.

The findings contradicted with study by Bala and Ladan (2023) who found that adult learners are different from traditional students since they have family and work responsibilities which may hinder them to use effective technology for learning activities. For this reason, they need to manage their family and work while continuing their education. This requisite is reported in many of the studies in the literature as the source of a major challenge for adults, creating balance between work and family or other social responsibilities. Particularly, female learners are reported as the ones who are mostly challenged by such family responsibilities as childcare and domestic works as well as their work if they're employed.

4.2 Low ICT Literacy Among Adult Learners

The research found that, A significant number of adult learners studying through ODL in Dodoma have limited or no prior experience with ICT tools. This digital illiteracy poses a barrier to effectively engaging with online learning platforms and resources. During the interview with students, one of the students said,

a considerable extent, the implementation and utilisation of Information and Communication Technology (ICT) within our programme are greatly constrained by a shortage of qualified professionals who possess the necessary expertise to effectively organise, interpret, and disseminate knowledge at an appropriate academic level. This deficiency has, in turn, resulted in the majority of students struggling to attain sufficient competence and confidence in applying technological tools and systems relevant to their respective fields of study.

The study corresponding to the study by Kibuku et al., (2020) who found that there is inadequate ICT capacity for e-tutors which is a challenge to the delivery of e-Learning. Similarly, Pierrakeas et al. (2024), on the other hand, indicated that learners' inability to understand the application of Information Communication and Technology and their lack of prerequisite knowledge or skills might be also challenges for traditional learners. The review showed that middle-aged adults have challenges to concentrate on studying and course materials owing to their busy work life and lack of ICT knowledge.

4.3 Financial barrier to run ICT

The findings found that cost of acquiring ICT devices like computers and accessing the internet is prohibitive for many adult learners in Dodoma. This financial barrier limits the application of ICT in ODL programs and affects their learning outcomes. During focus group discussions with learners, one of the learners contributed that,

The use of Information and Communication Technology (ICT) faces significant challenges, particularly due to the shortage of funds required for the purchase of essential equipment and for the organisation of training programmes related to technology. For instance, in our office, there is an acute shortage of a wide range of necessary items, including computers, central processing units (CPUs), and facilities for internet installation. Unfortunately, there are no financial

resources allocated for the procurement of these vital tools. Whenever we make inquiries with the senior management or the accountant's office, the response is always that there are no available funds. This persistent lack of financial support has greatly hindered the progress and development of ICT, as it becomes extremely difficult to operate effectively without the necessary technological equipment.

From the students' perspective, one student was quoted as saying that,

the cost of purchasing internet data bundles for online learning is another major challenge. The prices of data bundles have increased considerably, making it very difficult for students to afford them. As the student explained, online learning requires spending long hours connected to the internet, which leads to high data consumption. Consequently, many students struggle to sustain their studies through digital platforms because the cost of remaining online has become prohibitively expensive.

The above information implies that that scarcity of ICT infrastructure, teaching resources, lack of experts and financial constraints not only makes the teaching process exceedingly difficult but also contributes to limited technological advancement and academic growth among students, thereby diminishing the overall effectiveness and quality of education delivered through ICT-based learning systems.

The current findings agreed to the study by Shafiqul (2019) identified some problems related to ICT-based education. The identified problems are technology and moral issues, affordability, technological imperialism, socialisation and humanisation of technology, appropriateness and acceptability. Opportunities offered by ICT-based education may not be beneficial to all learners in countries with different socio-economic, political and cultural environments.

In another side, the findings found that enhancing Digital Literacy Programs, Strengthening Technical Support Services, Increasing Accessibility of Internet Services is the best way to diminishing the above challenges for the betterment of stabilizing the usability of Information Technologic Communication in adult education in Dodoma region

5. Conclusion and Recommendation

5.1 Conclusion

In this century of rapid innovation and advancement of science and technology, the use of Information and Communication Technology (ICT) has become the backbone of the education sector. It has been concluded that ICT has emerged as a top priority in the delivery of teaching and learning, particularly through open and distance learning systems. However, its growing remains numerous challenges especially those related to systemic issues, limited skills, and economic constraints. These challenges tend to vary from one individual to another and from one institution to the next. For instance, within institutions offering adult education, the challenges appear to be more pronounced, even though the need for and reliance on ICT remains vital and significant for learners pursuing education through distance learning.

5.2 Recommendation

It has been recommended that the government, in collaboration with education stakeholders, should unite their efforts to address the difficulties facing the use of ICT within adult education. Such efforts should focus on strengthening technological infrastructure such as ensuring the availability of computers and all relevant equipment while also enhancing the capacity of instructors by providing them with advanced ICT training and, where possible, opportunities to undertake formal ICT courses. Furthermore, the government is urged to reduce the cost of internet bundles, particularly for students, to enable them to afford online learning expenses whenever they need to access educational materials via the internet.

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