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USING INFORMATION COMMUNICATION TECHNOLOGIES (ICTS): ITS EFFECT ON OPEN AND DISTANCE LEARNING STUDENTS AT THE INSTITUTE OF ADULT EDUCATION IN THE COASTAL REGION, TANZANIA

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ABSTRACT

This study examined the Use of Information Communication Technologies (ICTs) and their effect on open and distance learning students at the Institute of Adult Education in the Coastal Region, Tanzania. The study employed a sample size of 101 respondents from the Institute of Adult Education. The study used a mixed approach and descriptive design. Data was collected through questionnaires, interviews, focus group discussions and personal observations. Quantitative data were analysed by using SPSS 20 Vision, while qualitative data were analysed using a content analysis procedure. The findings showed that most available ICT facilities at the Institute of Adult Education include computers, telephones and mobile phones. The findings also reveal that students employ systems such as Library Management Information System (LMS), Students' Records Management System (SARIS), Students' Examination Management System (SEMS) and E-Moodle to access information during the learning process through ICT. The findings further showed that ICT in open and distance learning had several significant effects. Hence, it increases the speed of delivering materials and academic services, improves access to information, reduces the cost of postage and travel, and saves time. The study concluded that the use of ICT encounters problems related to inadequate infrastructure, insufficient funds, and a lack of awareness and training. It was therefore recommended that the Institute of Adult Education improve technological infrastructure, provide computer training on the course program content to learners, and regularly monitor, control and maintain the ICT facilities.

Keyterms: Information, Communication, Technologies, Distance Learning, Learners, Adult Education

1.0 INTRODUCTION

Open and Distance Learning is defined as distributed education across borders or borderless education (Swai, 2006). Open and Distance education is used in relation to courses or services received away from campus. In Tanzania, distance learning education started in the 1940s with education by correspondence by a British Tutorial College. The Cooperative Education in Moshi was the first to introduce distance education locally in 1964. The second national correspondence institution came into existence in 1970. Open and Distance education enables many people to access education. It provides opportunities for people who cannot access mainstream educational institutions. In Tanzania, the Open University and the Institute of Adult Education are vested with providing education through open and distance learning. This enables more people to access University Education on a part-time basis and depending on

their financial ability. Many potential candidates would like to access university education but are yet to get time off from their jobs and other responsibilities (Kagugu, 2020).

The Rapid technological advancements in the world have led to multiple convergences of content, computing, telecommunication and broadcasting (Kagugu, 2020). These have led to the use of Information Communication Technologies in education (URT, 2021). The role of Information Communication Technologies (ICTs) is therefore multi-role; hence, it cuts across the diverse settings of human life, including social, political, economic, developmental, environmental and educational spheres (Vogt, 2020). ICTs have the potential to facilitate communication and interaction between the students themselves, students and teachers in distance education settings (Venugopal and Manjulika, 2022).

Trucano (2023) argues that ICTs in various forms have been used with some success to support the initial acquisition of literacy skills. 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 teachers 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 students, 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.

In this 21st century, Information Communication Technologies (ICT) provide opportunities for more people the access education through open and distance learning. In this context, students utilise ICT that includes online resources such as Zoom, blogs, the internet for emails, chat rooms, bulletin boards and wikis, intranet and electronic media such as mobile phones (Macha, 2020). The uses of ICT tools, on the other hand, help the instructors to keep in touch with learners as the instructor monitors participation, evaluates learning, andragogy and the teaching-learning effectiveness (Mushi, 2020). Open and Distance learning comprises the use of different modes of teaching. A combination of print media, the use of ICT and face-to-face, zoom classes is currently employed. The Institute of Adult Education has enhanced the use of ICT through the introduction of Moodle to replace face-to-face teaching as the official Institution Learning Management System (IMS). It is, however, impossible to abandon the use of print media in the foreseeable future. The reason behind this is due to the size and nature of the country (Kagugu, 2020).

In Tanzania, the use of ICTs in facilitating information provision to the learners of Institute of adult learning through open and distance learning faces problems related to inefficiencies in accessing information by students. These include lack of knowledge in using technology, lack of facilities and. Hence, this study was carried out so as to find out the extent to which ICTs have played a role in facilitating information provision to distance learners at the Institute of Adult Education. This helps to demonstrate the essence of ICTs in employing the currently planned and implemented information systems for a positive impact on the provision of information to distance learners. The study was guided by the following questions: Types of Information Communication Technologies (ICT) facilities used in Distance Learning Education and the significance of Information Communication Technologies in Open and Distance Learning Education.

2.0 LITERATURE REVIEW

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2.1 Information Communication Technologies facility used in Distance Learning Education

Anderson (2021) found that computers, the use of a projector and the internet, website found at the institute in Australia. However, ICT had an impact on higher education before the widespread use of the Internet. Through the application of print, audio-visual and broadcast media to distance education, it has enabled those with adult roles and responsibilities to continue formal study leading to higher education qualifications on a mass scale. For example, in Australia, a range of technologies, innovative in their day but often quickly superseded, have been used to good effect by various programmes in the service of developing adult literacy. These have included audio-cassettes in combination with printed text, radio, interactive videodisc, narrowcast television, teleconferencing and various desktop computer applications such as hypermedia, word processing, language-drills programmes, shell programmes and text manipulation and storytelling programmes.

Maro (2019) found that an e-library is a type of ICT system used by the learners of Open and Distance Learning. Distance or e-learners are usually geographically isolated from their tutors. They need answers, ideas, advice and encouragement. Once they start completing assignments, they need personalised assessment of their work; probably a library through ICTs to support these students in their learning process. Under the e-library, distance learners are provided with different electronic resources that complement their print sources. Students are trained in information literacy skills. These enable them to interact with resource databases which contain electronic materials as well as the learning management systems which are used by the university as part of e-learning mode. These skills enable students to download and upload their progress reports and other learning resources.

Mwakilama (2021) found that Open and Distance Learning also using computer technology, students can also send and receive e-mails from their tutors. They can also chat and send queries to both tutors and librarians who need immediate solutions. Therefore, there is a link between e-learning and library services in the learning process. argues that use of ICT tools such as emails, chat rooms and bulletin boards help the instructor to keep in touch with learners as the instructor monitors participation, evaluate learning, andragogy and effectiveness of teaching-learning.

2.2 Significance of Information Communication Technologies in Open and Distance Learning

As a result, Judy and Angela (2019) observe that over the last two decades, there have been fundamental shifts in the way teaching and learning are perceived and conducted within the tertiary education sector. One is a move from teacher-centred to student-centred education. The other is a move from the traditional to the virtual classroom. Information Communication Technologies (ICTs), in most cases, have had tremendous success in providing services at reduced costs to people's doorsteps and for making higher education available to all classes of people. As a result, on one hand, people will have access right on higher education and, on the other hand, will gain the necessary knowledge, skills and experiences to serve the nation and prosper accordingly (Blurton, 2020).

UNESCO (2020) reported that the use of ICT contributes to innovations in distance learning technologies carried out in developing countries. Localised resources such as overhead

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projectors and chalkboards may no longer be necessary if all learners have access to the same network resources on which the teacher is presenting information, especially if the students are not physically at the same place. Most of these innovations focus on getting the maximum benefit from the existing resources. Distance Learning has progressed in rapid strides. As noted by Prem and Madhulika (2019) that India is now a home to some of the world's largest open universities, deploying a variety of educational media which include interactive radio and television, teleconferencing, multimedia and the World Wide Web. This has been due to the IT revolution and the extensive use of electronic media which have become viable options with most of today's open and distance education programs going this way. Similarly, Rogers and Maddox (2019) found that the role and value of using ICT in sustaining and continuing literacy learning have various dimensions. Benefits which have been identified include the motivational effect of writing on the internet, the opportunity for inexpensive distribution of large amounts of material, the spontaneous formation of international study circles, relating to a constructivist approach to sharing and valuing alternative wisdoms, and economies of recent printing technologies.

3.0 RESEARCH METHODOLOGY

3.1 Research Approach

The study employed a mixed research approach by integrating qualitative and quantitative research approaches. The selection of this approach was based on its arguments, which point out that combining both quantitative and qualitative approaches in a study provides a better understanding of the research problem (Clark & Creswell, 2007). Also, a mixed research approach was selected because it gives the researcher an opportunity to use triangulation methods through multiple methods of data collection and analysis with the intention of cross-checking the consistency of data and findings. The aim is to make an overall strength of the study (Cresswell, 2009). Therefore, the use of this approach enabled the researcher to utilise different methods of data collection such as interview, questionnaire and observation, to ensure the consistency, compensation for inherent method weaknesses, and possibly reduce the weaknesses.

3.2 Research Design

According to Creswell and Plano Clark (2007), Research design is a procedure for collecting, analysing, interpreting, and reporting data in research or study. Research design selection is based on the nature of the research problem and the issue being addressed (Cresswell, 2012). This study used a descriptive design. Kerlinger (1964) points out that descriptive studies are not only restricted to fact findings but may also often result in the formulation of essential principles of knowledge and solutions to significant problems. They are more than just a collection of data. They involve measurement, classification, analysis, comparison, and interpretation of data. The descriptive survey method of collecting information by interviewing or administering questionnaires to samples of individuals (Orodho 2003). It can be used when collecting information about people's attitudes, opinions, habits, or any variety of education or social sciences (Kombo & Orodho, 2002). This design helped the researcher collect enough information on participants' attitudes, opinions, and habits.

3.3 Area of Study

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There are 26 IAE regional centres distributed all over Tanzania. These are used to service students through open and distance learning as a general means of delivering knowledge, interacting, attending seminars and tutorials, practical work and demonstrations and for using reference materials (OUT, 2020). However, this research was conducted in the Coastal Region. The area of this study was selected based on the facts proposed by Shenton (2004) that familiarity with the study area helps the researcher to handle the obstacles that might affect the process of data collection. From that ground, the researcher of this study is familiar with the Coastal Region, particularly at the Institute of Adult Education; hence her experiences facilitated the process of data collection on the Use of Information Communication Technologies (ICTs): Its effect on open and distance learning students at the Institute of Adult Education.

3.4 Population and Sampling

Kombo and Trompo (2006) define the term population as a group of people having common characteristics. The target population is a group of individuals from whom samples are taken. A population can be a large group of people for whom the results of the study are to be generated. The target population for this study included learners from the Institute of Adult Education, Resident tutors and facilitators who work at the Institute of Adult Education centres in the coastal Region. It was expected that learners from the Institute of Adult Education were to provide relevant data due to their experience of using ICT in their learning activities.

Facilitators teaching at the Institute of Adult Education were involved in the study because they use ICT to facilitate materials and instructions to the learners. Resident Tutors are also involved since they are the ones who supervise academic matters in respective areas at the Institute of Adult Education centre. They provided data to cross-validate information given by learners and other respondents.

The study employed 30 participants sampled from the Coastal Centre. The sample involved 80. A cluster sampling technique was used to interview 80 respondents who were learners of the Institute of Adult Education, Resident tutor and facilitators. In cluster sampling, each cluster was randomly chosen to make up the sample; thus, each cluster became a sample of the population. According to Tripathi (2002) sample units should be heterogeneous, and the study considered Tripathi's views.

3.5 Sample Size

According to Kothari and Garg (2014), a sample size is a selected group derived from a given population for undertaking a study. In this study, 80 respondents out of 101 were selected from the selected Centre of Adult Education. The sample size is based on Krejcie and Morgan's formula, as established in 1970, which is used to determine the sample size as indicated below.

$Sz = P \div [1+ P (d2)]$

Where:

Sz = Sample size

P = Population

d = Degree of accuracy (0.05)

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Sz = 101÷ [1+101(0.05)2]

101÷102 (0 05)2

101÷ 1+0.255= 1.2525

101÷1.2525

Sz=80

From the above expression, the respondents were 80, as summarized in the Table.

Table 1: Composition of Sample Size

S/N	Category of population	Per cent (%)	Total
1	Learners	68.75	55
2	Facilitators	30	24
3	Resident Tutor	1.25	01
	Total	**100**	**80**

3.6 Data Collection Methods

The study required both primary and secondary data, which were based on qualitative and quantitative approaches. The reasons for collecting data using both qualitative and quantitative approaches was to help the researcher to triangulate and confirm the finding by complementing one evidence with another evidence from different sources of data.

3.6.1 Primary Data

Primary data refers to the information obtained first-hand by the researcher on the variable of interest for the specific purpose of the study (Sekaran, 2003). Primary data were obtained by the use of structured questionnaires containing closed and open-ended questions.

3.6.2 Secondary Data

Secondary data are those data which have already been collected by someone else (Babbie, 1989). This can be published or unpublished information. This study used both print and electronic resources. Secondary data was collected from various documents such as; books, newsletters, reports, magazines and journals.

3.7 Questionnaires

Questionnaires were used for learners because they were cheaper than face-to-face interview and reach a large number of respondents by enabling them to give information without influence. The questionnaires contained closed-ended and a few open-ended questions to permit respondents to include some additional information.

3.8 Interview and Focus group discussion

Likewise, an interview of the selected focus group was conducted for additional information, which confirmed answers obtained from the questionnaires.

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3.9 Data Analysis Procedures

Data for this study were analysed both qualitatively and quantitatively. As for qualitative data, the data that were collected in the field were analysed through content analysis. In this study, the analysis involved the extraction of the relevant data that collected from the field and then compressed, organised and assembled. Finally conclusion was drawn and verification was done. Furthermore, the collected data were coded and categorised by the research objectives, and the respondents' arguments were presented through direct verbatim quotations.

On the other hand, the quantitative data from questionnaires were analysed with the help of the Statistical Package for Social Sciences (SPSS), version 20. The collected data were subjected to descriptive analysis with interpretation that was given in terms of frequencies, percentages. Finally, both qualitative and quantitative findings were mixed together during the presentation, analysis and discussion of the findings in order to corroborate the results.

3.10 Reliability and Validity of the Instruments

Validity and reliability increase transparency and decrease opportunities to insert researcher bias in qualitative research (Singh, 2014). For all secondary data, a detailed assessment of reliability and validity involves an appraisal of methods used to collect data (Saunders et al., 2009). These provide a good relation to interpret scores from psychometric instruments (e.g., symptom scales, questionnaires, education tests, and observer ratings) used in clinical practice, research, education, and administration (Cook & Beckman, 2006). These are essential concepts in modern research, as they enhance the accuracy, stability, and adequacy of the assessment and evaluation of research work (Tavakol & Dennick, 2011). Validity always relates to the extent to which the research data and the methods for finding the data are accurate, honest, and on target. In this study, the validity of the questionnaire was determined by having it undergo a double translation-back-translation process; hence, Master's Degree holders who have a good background in adult education and information technology were involved.

In the same line researcher considered the issue of reliability. The reliability refers to a measurement that supplies consistent results with equal values (Blumberg et al., 2005). It measures the consistency, precision, repeatability, and trustworthiness of research. It indicates the extent to which it is without bias (error-free), and hence ensures consistent measurement across time and the various items in the instruments (the observed scores). In this study, the reliability of the tools was determined by test re-test method. The same Facilitators questionnaire was administered twice to the same group of, Resident Tutor and Learners within one week.

After pre-testing, Cronbach's Alpha coefficient was calculated to establish the level of consistency of the items in the questionnaire. The responses indicated that the reliability value was 0.89, which ranged from 0.80 to 0.90, which implied that there was an adequate internal consistency. If Cronbach's Alpha that is higher than 0.70 indicates that the test was strong (Mhando, 2020). Therefore, the internal reliability coefficients of all measures were satisfactory and accepted.

3.11 Trustworthiness of the Study

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A number of criteria were used to ensure data trustworthiness of this study, namely, credibility, dependability, transferability and confirmability. Credibility was ensured through triangulating the data collected using the three tools, respondents and cases. More attention was given to respondents during the interview session and observation process, and emerging contrasting issues that strengthened the findings were considered.

Dependability was achieved by ensuring that the collected data was audited and data evidences were obtained using various tools. Transferability was ensured through employing more than one case, especially the number of centres, a good number of respondents, by employing more than one method of data collection (triangulation methods), use of an appropriate duration for data collection and use of a proper method of data analysis that allows and is in line with a mixed approach. Likewise, confirmability was ensured through establishing proper records of data in the field and the two supervisors who guided the researcher audited and traced the logical progress of the study.

4.0 FINDINGS AND DISCUSSION

Types of Information Communication Technologies (ICT) facilities used in Distance Learning Education

Respondents were asked to identify the ICT facilities at the Institute of Adult Education. The purpose of this question was to know what kind of ICT facilities were known to be available at the institute. The study found that the main ICT tools that were mentioned to be available at the Institute of Adult Education were the computer, Telephone, and Mobile phone. Respondents had more than one option. The table below summarises the results.

Table 2: Types of Information Communication Technologies (ICT) facilities used in Distance Learning Education

ICT Facilities	F	Percent
Computer	118	98.3%
Telephone	12	10.0%
Mobile phone	26	21.7%

Source: Field Data, 2025

Table 2 above shows that computer as a facility constituted 118 (98.3%) while the mobile phone followed with 26 (21.7%). The telephone was at 12 (10%). This indicates that the main facility, as a means of communication, was the computer connected to the internet. The finding illustrated that all centres were provided with effective connections. The findings correlate with a study by Anderson (2021) found that computers, the use of projector and interment, website found at the institute in Australia. However, ICT had an impact on higher education before the widespread use of the Internet. Through the application of print, audio-visual and broadcast media to distance education, it has enabled those with adult roles and responsibilities to continue formal study leading to higher education qualifications on a mass scale.

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In relation to the types of ICT facilities used in the Institute of Adult Education, Respondents were asked to indicate the system they used to access information in their learning process through ICT facilities available. The purpose of this question was to know whether the available facility uses appropriate systems which help the students to meet the goals. The findings found that respondents had more than one option. Responses are summarised in Table 3 below.

Table 8: The use of information systems at IAE

Information systems	F	Percent
Library Management Information System (LMS)	50	41.7
Students' Records Management System (SARIS)	56	46.7
Students' Examination Management System (SEMS)	28	23.3
E-Moodle	16	13.3

Source: Field Data, 2025

Table 3 above indicates that the highest 56 (46.7%) used SARIS. SARIS enabled students to register or be admitted online through their regional centres. SARIS, a reliable student database, allows students' personal, performance and curriculum data to be used by the Institute departments such as the bursar's office, examination office, faculties and library (OUT, 2022). It also enables students to access their results for their assignments, tests, and examination scores. In the same content, the findings from the interview found that SARIS is suitable for learners to access their academic matters. This was commended by a respondent who said, "Although we sometimes delay getting our results, SARIS is appropriate than the former system."

On the other hand, 50 (41.7%) respondents indicated that the use of LMS as a tool for locating learning materials was also appreciated at the Institution. The major reason for using this, as noted by one of the respondents she was, "There are a lot of materials organised in the library that I access using the LMS." Due to the introduction of an automated machine which replaced the card catalogue, the IAE library introduced LMS to enable library users to locate information materials. The finding for LMS is related to the finding of Maro (2019), who found that e-library is a type of ICT system used by the learners of Open and Distance Learning. The library supports these students in their learning process. Under the e-library, distance learners are provided with different electronic resources that complement their print sources. Students are trained in information literacy skills.

The least systems in use were SEMS 23.3% and E-Moodle 13.3% respectively. The ICT systems facilitate the sharing, collecting and dissemination of information. It is Facilitators surprising for the least use of Moodle because Moodle has been designed for the purpose of depositing learning materials by the. The findings show that most of the students do not use this system. The major reason for not using this, as noted by one respondent in an interview, is a lack of knowledge.

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During the interview with learners, one of the respondents had the opinion that "I'm not aware of such a system." This is in contrast to the results of Mwakilama (2021), who showed that in the open and distance learning process, ICT tools such as emails, chat rooms and bulletin boards help the instructor to keep in touch with learners as the instructor monitors participation, evaluates learning, andragogy and effectiveness of teaching-learning.

Significance of Information Communication Technologies in Open and Distance Learning Education

The findings show that the use of ICT in open and distance learning had several significant effects. Table 4 shows that the majority (80%) of the respondents agree that there was an improvement in access to information, which helps them to deliver material and knowledge in a simple way.

The findings show that the respondents access the information from the SARIS. According to the respondents, this provided easy access to learning information materials. However, it should be noted here that mobile phones and telephones possess the same benefits as computers, although in this study, it was revealed that these ICTs had not been well used for academic delivery.

Table 4: The significance of using ICT

Benefits of ICT facilities	**F**	**Percent**
Increased speed of delivery	59	50.2
Improved access to information	96	80.0
Reduced cost for postage and travel	61	50.8
Saving your time	44	36.7

Source: Field Data, 2025

The findings from the current study found that respondents (36.7%) the use of ICT saves time. It was observed that most of the respondents accessed the internet at the institute's library, where there were few functioning computers. The study also found that 50.2% mentioned that ICT had increased the speed of delivering information. According to the respondents, once the information has been posted on the institute website, the students log in to the website and access the information, as compared to the old days when the post office used to deliver information. The use of ICT has extended the scope of offering programs in open and distance learning mode at the Institute of Adult Education in Tanzania. Learners were able to make this choice through technology-facilitated learning. The Institute of Adult Education had regional branches throughout Tanzania thus enabling the students to make choices using ICT without physically travelling to the headquarters.

The findings concurred with the study of Judy and Angela (2019) who found that over the last two decades, there have been fundamental shifts in the way teaching and learning are perceived and conducted within the tertiary education sector. One is a move from teacher-centred to student-centred education. The other is a move from the traditional to the virtual classroom.

Information Communication Technologies (ICTs), in most cases, have had tremendous success in providing services at reduced costs to people's doorsteps and in making higher education available to all classes of people. As a result, on one hand, people will have access right on higher education and on the other hand will gain the necessary knowledge, skills and experiences to serve the nation and prosper accordingly (Blurton, 2020). Maddox (2019) found that the role and value of using ICT in sustaining and continuing literacy learning have various dimensions. Benefits which have been identified include the motivational effect of writing on the internet, the opportunity for inexpensive distribution of large amounts of material, the spontaneous formation of international study circles, relating to a constructivist approach to sharing and valuing alternative wisdoms, and economies of recent printing technologies.

5.0 CONCLUSION AND RECOMMENDATION

The study concluded that the use of ICT encounters problems related to inadequate infrastructure, insufficient funds, and a lack of awareness and training. It is recommended that the Institute of Adult Education should improve technological infrastructure, provide computer training on the course program content to learners, and regularly monitor, control and maintain the ICT facilities.

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