



ACCESS AND UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AMONG MALE AND FEMALE STUDENTS: IN COLLEGE OF EDUCATION AT THE UNIVERSITY OF DODOMA

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Abstract

This study investigated the gap between male and female students of 2015/2016 in college of education at the University of Dodoma in the accessing and using of Information Communication Technology (ICT). Digital divide is the gap between those with regular; effective accesses to digital technologies particularly the Internet, and those without. Global digital divide is a term often used to describe the gap between developed and developing countries in accessing and using technology in their daily life. The digital divide can be among one country and another, rural and urban, home and school, teachers against students as well as farmers and entrepreneurs in accessing and using ICT. The Mixed method was used in gathering data with the help of interview, observation and questionnaire. A total of hundreds (100) informants were involved in the study and these were first year students in two courses BEDARTs and BEDADMA students who were male and female students in the University of Dodoma at the College of education. Purposive sampling techniques and later simple random selection was applied to obtain the informants. It was noted that there was wide gap between male and female in accessing and utilizing Information and Communication Technology (ICT) in learning process where 78% of male were highly accessing and using technology comparing to female about 51% found using ICT.

1.0 Introduction and Background of the Study

Information and Communication Technology (ICT) is inevitable to be applied by any country in its prosperity in all spheres of life. Gillwald, Milek and Stork (2010) assert that, ICTs play an important role in African development is now well documented. ICT have been rapidly adopted and used in teaching and learning process in developed country as well as developing country in which Tanzania is among the developing country. Tanzania introduced ICT policy since 2003. Currently it is highly encouraged the use of ICT in teaching and learning process where university of Dodoma is one of the higher learning institution which must encourage the access and utilization of ICT among the students and all staffs at the university. The uses of ICT in teaching and learning process increases collaborative and independent learning among students that is why it's encouraged among male and female. Despite all the effort made there exist the gap between gender in accessing and utilization of ICTs. The situation of female students registered in undergraduate computer science studies is considered by educational experts to be critical (American Association of University Women(AAUW), 2000) cited in Stoilescu & McDougall, 2011); Canadian Association of University Teachers (CAUT), 2007). Research indicates that there is a great gap between male and female students in number and in performance in undergraduate computer science programs.

UDOM is public high learning educational institution established in March 2007. It is allocated in Dodoma region surrounded by Ng'hong'onha village, Makuru, Kisasa and Ntuka (UDOM Rolling Strategic Plan, 2012). It is aim being to providing education services and consultancy to the society. Therefore the use of Information Communication technology (ICT) to both lectures' and students is something which is inevitable in their teaching and learning process. The university has tried to ensure that wireless internet is easily accessible when around the campus. Also communication companies such as TIGO, VODACOM AND AIRTEL is continuing in providing broadband which is in favour of students to access and use ICT in order to facilitate access of information through the use of ICT in learning. Though male and female seems to have differences in accessing and utilizing ICT which lead to digital divide among them within the university especial in the college of education in comparison to college of informatics. This is due the reason that, the college of informatics its major pro-

grammes is related to computer science. The digital divide can be categorised as global, regional or national. At the national level, there is an urban-rural digital divide (Rao, 2005). In developing countries particular, we see clear tendencies of increased concentration of information flows to urban and central areas (Wong, 2002; Mwesige, 2004).

In the same way, the access and utilization of ICT between male and female is of historical trend, where male have more interest in using ICT and spend more time in it compared to women who mostly left aside (Rao, 2015). Women were viewed as their major responsibility is of taking care for the family where they spend most of the time in doing domestic chores in relation to male (Ngugi, 1967). Various measures have been taken to ensure that this gap is reduced by encouraging girls to develop interest studying course related to ICT so as they can have skills in it. For example, Beijing Declaration number 35 of the Fourth World Conference on women and the follow-up conferences in year 2000, 2005, 2010 and the Beijing +20 emphasizes the determination to ensure women's equal access to information and communication, among others, as a means to further the advancement and empowerment of women and girls (UN Women, n.d). World Resources Institute analysis on Digital Dividend (2004) highlighted that numerous projects and initiative are now being introduced to train women in the use of Computer and other ICTs. For example the Bayanloco Community Learning Centre, Kaduna and Nigeria train women in rural areas in Nigeria to use information technology for peace and poverty alleviation. Through these services, women have access to computer and other ICTs training, access to health information and micro credit programmes (Wilson & Lawan, 2015). Gender and technology studies have found that men and women adopt and use technology differently (Gefen & Straub, 1997; Venkatesh & Morris, 2000). Men's decisions to use technology are more strongly influenced by their perception of usefulness, while women's decisions are based more on perceptions of the technology's ease of use (Venkatesh & Morris, 2000). Further, men and women may view the same mode of communication differently. The study conducted by Sedoyeka (2012) in Tanzania found that, most participants of this study were hailing from Dar-es-Salaam, majority being students and professionals. About 72% of the participants were in their mid-twenties with a monthly income of less than Tsh300, 000 (\$200) out of the 800 participants who filled the questionnaires, males were the dominant group

comprising of 73%. This could have been caused by the nature of sample used where majority were computing and ICT students, the situation which is common in Tanzania. Thus, the study investigated the gap in accessing and utilization of ICT among male and female students at the University of Dodoma in the college of education.

1.3 Purpose of the Study

The main objective of this study was to investigate the extent to which there is digital divide between male and female students in accessing and using ICT in the College of Education (COED) at the University of Dodoma.

1.3.1 Specific Objective

- i) To determine number of male and female students who uses Information and Communication Technology (ICT) in learning activities.
- ii) To assess the skills of both gender in using ICT in learning activities.

This study was guided by the following research questions:

- i) How does male and female student's usage differ in level of skills in ICT.
- ii) How many male and female students in BED ARTS and BED ADMA use ICT in their learning process?
- iii) Is there the digital divide between male and female in using ICT in learning?

2.0 Literature Review

2.1 Theory Embedded In the Study

This review of literature focuses on engagement theory which advocates for ICT-based education which keep learners involved in hands on activities by the use of computer technology. This is supported by Motamedi and Sumrall (2000) in Tuckman and Monetti (2011, p. 502) who contend that "the use of computer has contributed significantly to the recent success of the mastery learning/teaching approach." Tuckman (2000) in Tuckman and Monetti (2011) contend that "the use of computer-mediated class activities resulted in significantly better results than teaching the class in a traditional way. Gagne et al (2005, p. 209) cited in (Makewa, 2013) suggest that "many ideas and topics that have been left out of school curricular because of the limitation of traditional instructional media and delivery methods, such as blackboard, paper and pencils, and books, can now be introduced. It is believed that when students interact with the learning materials openly by the use of ICT it enhance

effective learning. The theory is in consistency with the constructivism theory of learning proposed by Jean Piaget, Piaget (1950) Constructivism is a theory of knowledge that argues that humans generate knowledge and meaning from an interaction between their experiences and their ideas. Therefore, enhancing the use of ICT in learning process is something very crucial to any higher learning institutions to device and bridges the gap between male and female in using ICT in learning as it influence meaningful and independent learning.

2.2 Empirical Study

Basing on the background of the study the main purpose of the study was to assess the access and utilization in ICT among male and female's students in college of education specifically BED ARTS and BED ADMA. It should be noted that there are several studies addressing the gap between male and female in accessing and utilizing ICT in learning process. This study intended to add knowledge and awareness on the gap between male and female among students at the University of Dodoma. Where the following research subtitles are covered in relation to the research topic. Among the subtitle are: number of male and female who access and utilize ICT in learning process, skills of male and female in using ICT. A study carried out in the University of Southern California (USC) reveals that, there is a great gap between male and female students in number and in performance in undergraduate computer science programs. According to many researchers, females feel less confident than males in pursuing computer science courses (Dryburgh, 2000; Hancock, Davies, & McGrenere, 2002; Harrell, 1998; Todman, 2000; Wilson, 2002) as cited in (Stoilescu & McDougall, 2011).

Research has detailed variety of ways in which women lag behind men in the ownership of technology and the development of technological skills. For example, men own and use computers and the Internet more than women, spend more time online, take more technology classes, and show more motivation to learn digital skills (Cooper, 2006; Correa, 2010). There are also cultural and psychological factors that may constrain certain people, such as women from using technologies even when they have access (Terry & Gomez, 2010) cited in (Correa & Dixon, 2014). Also, Hilbert (2011) maintain that, the gap in ICT usage between women and men is the product of both socioeconomic differences and some combination of underlying, gender-specific effects. Moreover, Researchers claimed that those gender-specific differences had their origins in the fact that women under-

estimated their actual usage skills, which lead to lower self-efficacy to use ICT (Busch, 1995; Joiner, et.al, 1996; Hargittai and Shafer, 2006), as well as in their general attitudes toward computers (Hilbert, 2011).

It was concluded that men are more interested in technology than women (Fallows, 2005: 5). In short, women were seen as being more likely to be technophobic and were ascribed a certain computer anxiety. This type of reasoning was in line with a longstanding argument that technology is gendered. In the United States, most new users were women around the year 2000 (Cummings & Krout, 2002). Gender differences remained, but were smaller (Leggon, 2006) and mainly concentrated on marginalized groups, such as ethnic minorities (Tolbert, et al, 2007).

Digital divide can also be witnessed in African country where Tanzania is among the country in the continent. The study conducted in Nigerian university by Wilson and Lawan (2015) revealed that, an average 23 percent fewer women than men are online in developing countries. This represents 200 million fewer women than men who are online. Similarly, the gender gap is more pronounced in the developing world, where 16% fewer women than men use the Internet, compared with only 2% fewer women than men in the developed world (Intel Corporation and Dalberg Global Development Advisors 2012; ITU 2013). Internet gender inequality reflects and amplifies existing inequalities with respect to gender. However, Manda and Mulkangara (2007) as cited in (Bassi & Camble, 2011) report that gender is associated with the use of electronic information resources, and that male postgraduate students were more likely to use e-resources than female students. Also, Herbert (2011) asserts that there is greater differences between gender and ICT usage shows that in 11 of the 13 countries, a larger percentage of men use the Internet than women (with the exception of Rwanda and Tanzania, in which women already represent the larger share). In Kenya, for example, one of the larger and technologically most advanced African countries of our sample, 21.1% of all men have been online in 2007/8, while only 11.5% of all women use the Internet. 56.0% of all men use a mobile phone, versus only 46.9% of all women. The author argues that, African women are also less literate in Kenya 77.2% of men to 68.0% of women. Moreover, Manyilizu and Gilbert (2015) argue that, in tertiary studies, females students are reported to have less confidence on

using computer than males. It's believed that females exhibited more negative views and perceptions towards the use of computers than male.

The study conducted by Kayunze, Magesa and Sanga (2013) at Sokoine University observed that, students submit written assignment by hands rather than printed work. It was revealed that students' did not have enough computer skills and they felt 'it is tedious to type their works' and also feared printing costs. Also, few computer access points were observed in universities under this study. It was observed that a small proportion of students owned computers that they share with their fellow students. Students have to travel some distances to look for Internet café. At the Internet café, students have also to wait if all computers are in use. Also, in computer laboratories with inadequate computers and students crowded for sharing computers, male students predominantly are the operators.

3.0 Methodology

The study employed both qualitative and quantitative approaches with limited quantitative; both approaches are used to avoid the shortcoming of each method. The survey design was carried out among BEDARTS and BEDADMA students in college of education with a sample of 200 students 100 from each course as a sample for study. The sample was obtained randomly at first and stratified sampling technique was employed to have male and female students. Cohen Et al (2007) argues that, stratified is used when the researcher typically obtaining the sample of the study ensuring that each sample is equally represented. Open-ended questionnaires and semi-structured interview were administered to the respondents, as they give respondent wide chance of giving more information as the study is concern. Observation, the researcher observed students during discussion groups and listening without asking them anything at the study area (Kothari, 2004). This technique was used for the purpose of observing which gender dominate the operational uses of ICT during their group discussion. Interview method was used to interviewee ten (10) students of both sexes from each course. The researcher asked the respondent questions face to face to obtain primary data on number of male and female who access and use ICT in studying. Also the technique was used to explore more information concerning the gap between male and female in using ICT. Kumar (2011) asserts that interview is used commonly to collect information from people by

interviewing them face to face and jotting information.

Descriptive statistic was opted in analyzing quantitative data while qualitative data were subjected to thematically analysis of the text. Ethical issues were considering as the first and foremost, the researcher has an obligation to respect the rights, needs and desires of the informant(s).

4.0 Presentation and Discussion of Findings

The findings of this study are presented and discussed in accordance with the studies as guided with two research objectives and three research questions.

4.1 Number of Male and Female who Access ICT in Learning Processes

The findings pertaining to this subtitle was guided by the first objective of this study which was to determine number of male and female students who uses Information and Communication Technology (ICT) in learning activities. The guided question was: how many male and female students in BED ARTS and BED ADMA access ICT in their learning process? The information pertaining to this question was obtained through questionnaire and interview from the respondents. The findings were as follows about 100 respondents who were male and female. It was found that 78% of male and 51% female access ICT while 22% of male and 49% do not access ICT. The figure below shows the level of both genders in accessing ICT.

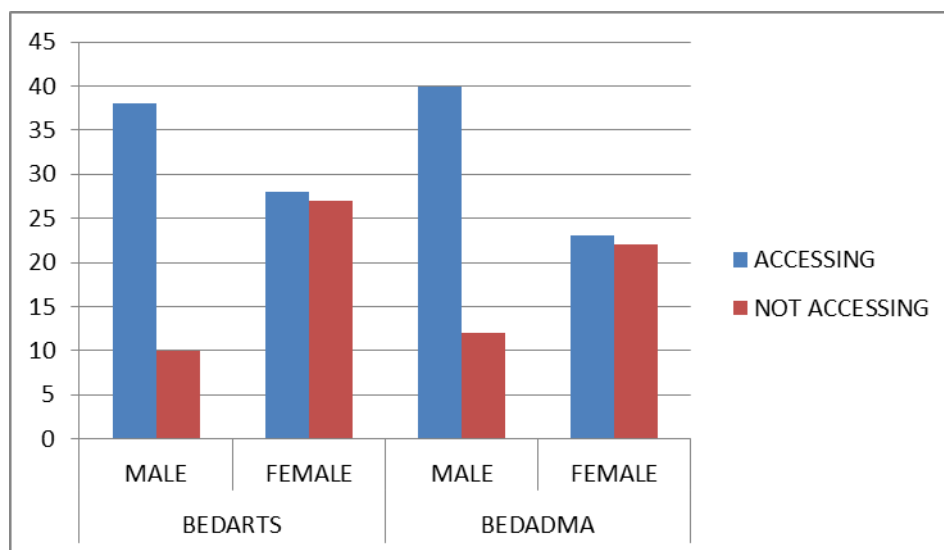


Figure 1: data from the field shows the access between male and female in ICT

From the above figure show that both students access digital equipment such as smart phone. This finding agrees with the studies by Manda and Mulkangara (2007) and Ford, Miller, and Moss (2001) who reported that male students use e-resources more than female students and that female students find more difficulty in finding information online than males. The implication of this is that male students are more likely to excel in their academic pursuits more especially in the technological age, due to the fact that current and fast information is more accessible electronically.

The low access on the part of female students could be attributed by various reasons. The findings from the graph above confirm with the findings from the study conducted by Kayunze, magesa & Sanga (2013) which reaffirm that, failure of female students to access proportionally ICTs resources as males do originates from some gender factors (Sanga *et al.* 2011). Respondents have different views on this. Undergraduate students pointed out that male student have more time to spend on computers than female students. Another reason for this is Marginalization and gender inequality or discrimination have made it difficult for women to access and benefit from ICTs. Internet gender inequality is particularly salient in developing countries, with very real consequences for women and girls. Apart from marginalization this inequality can even be seen as have the root from the word of GOD in which the Bible and Curran have also categorised what to be the role of men and what are the role of women this makes them to be inferior even liking using ICT the assume using it as among the issues need to be carried out by men. Also their social status, time they spent, and exposure in using computer related resources.

4.2 Number of Male and Female in Utilization of ICTs

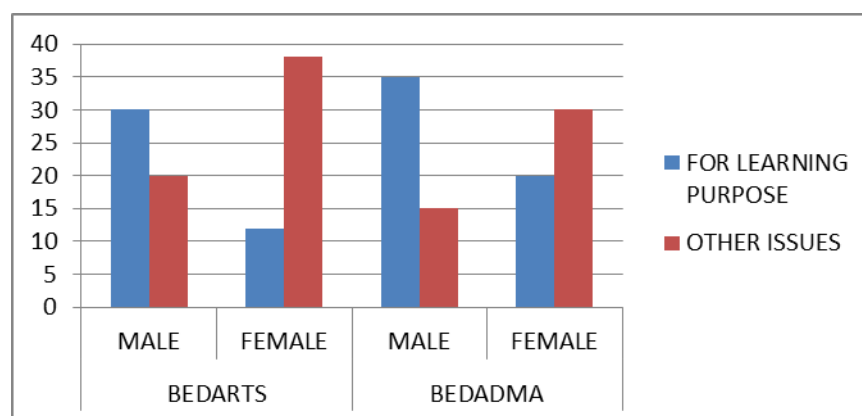


Figure 2: show the number of male and female in utilization of ICT

Also the study found that, most of female that access computer and smart phone use them for other issues such perusing wearing style from histogram, face book and other social media. For example about 32% of female who own computer use them for learning purposes as compared to 65% of male and 35% males uses them mostly in watching moves rather than for studying purposes in relation to 68% of female. This findings confirm with the findings of the study conducted by Hilbert (2011) from 12 Latin American and 13 African countries from 2005-08 founded that girls use the Internet for instant messaging and chat-rooms, whereas boys downloaded games and music, engaged in online trading, and created Web pages. Follows (2005: 1) summarized a survey in the United States with the conclusion that, men like the internet for the experiences it offers, while women like it for the human connections it promotes. Statistical data from the USC led World Internet Project (2009) reconfirm these findings. In Canada, 79% of men and 75% of women were online in 2007. The study also confirms differences in usage. In 2004, Canadian men spent on average more time online than women (14.3 to 12.0 hours per week). This difference increased from 2.3 to 3.5 hours in 2007 (18.8 hours to 15.3 hours). As the main reasons for non-usage, Australian women state lack of interest (35%), not having a computer or Internet connection (26%) or lack of skills (16%). The percentage of men to women who use the Internet is reported for the following developed countries: Australia: 74% to 71%. Czech Republic: 55% to 46%; Hungary: 45% to 39%; Israel: 71% to 64%; New Zealand: 78% to 77%; Singapore: 69% to 54%; United Kingdom: 68% to 65%. The two exceptions to this trend seem to be Sweden (with 75% of men online and 78% of women) and the United States (71% to 73%). (World Internet Project, 2009), existing data from developing countries show that women are less likely than men to use ICT. This leads related research to the conclusion that a digital gender divide clearly exists and is a severe threat to women. In many countries such gaps become dramatic, putting women at a significant disadvantage (Hafkin & Huyer, 2007). Similar to findings in developed countries, this divide applies to access and to the frequency and intensity of usage (Park, 2009).

4.3 Male and Female Skills in ICT

The findings in this subtitle were guided by the objective as it state: To assess the skills of both gender in using ICT in learning activities. The guided question was how does male and female student's usage differ in level of

skills in ICT. The information pertaining to this subtitle was obtained by using interview, questionnaire and observation. The study found that male had more skills in using ICT compared to female as one girl quoted saying

“Tukiwa kwenye group discussion mara nyingi wanaume ndo huwa wanachapa kazi, pia wao ndo wanaujuzi zaidi kwasababu wanaume ni watundu wa komputa”

translation, “most of the time when we are in group discussion men are the one who do control the discussion even they are the one type the assignment because seems to have more skills in ICT compared to female”.

From the questionnaire given to respondents to rank their level of skills in ICT below is the summary of the results.

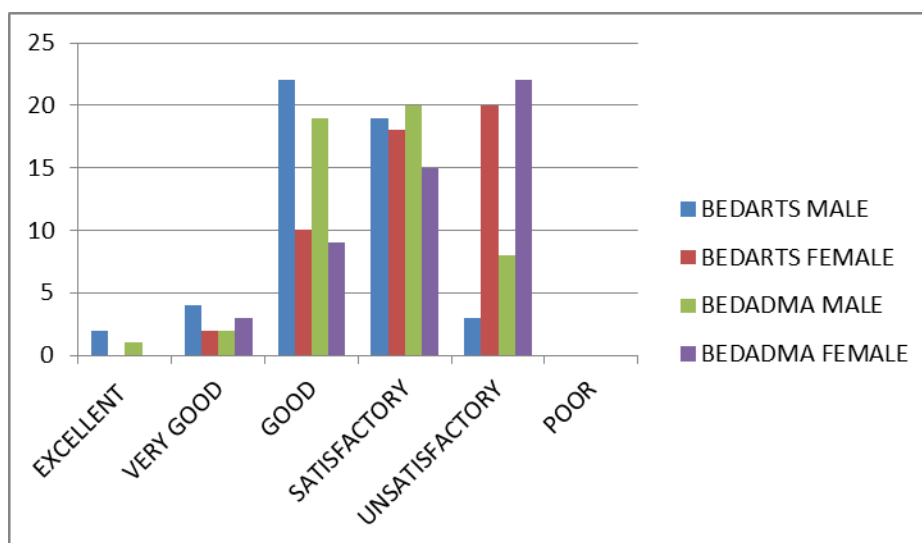


Figure 3: show the level of skills among male and female students

The findings further revealed that the gender digital divide is manifested in the low number of female using ICTS compared to men. The study by Ford, Miller and Moss (2001) observed that females tended to experience more difficulty finding information online, feel less competent and uncomfortable using internet, use internet less frequently than males and make use of a less varied set of internet applications (Ahamed, 2015).

Also, from the study it was observed that during group discussion men are the one who dominate the typing of their assignment. This is due to the fact that men seem to have more skills and competent compared to female. Correa (2010) asserts that, Men have also taken more technology classes and are more likely to have had a

computer in their own room, which provides more opportunities to experiment and acquire confidence and skills associated with digital technologies. Males use the Internet more than women for a wide range of activities, particularly those that require greater technological skills such as job searching, e-banking, and posting or uploading material (Correa & Dixon, 2014).

5.0 Conclusion and Recommendation

Therefore the digital divide among male and female students in Tanzania to large extent, cannot be addressed through ICT policies per se. They require policy interventions in other areas that would allow women and girls to enjoy the benefits of ICTs equally. The government needs to strengthen and provide conducive environment that will encourage both boys and girls to access and utilize ICTs from lower level schooling. This will strengthen level of skills among girls and boys in general. Programmes that encourage girls participation in subjects related to ICTs need to be strengthen. This will also help them to develop positive attitude about uses of ICTs for learning purposes rather than using it for perusing wearing styles and gossiping. It is recommended that the government have to invest more on the use of ICTs the policy should not be only on words rather it needs to be put into practices. Heavy investment on One Laptop per Child in Tanzania (OLPC) is of highly needed currently as we are in the world of science and technology, so doing it will help to lift Tanzanian economy since its believed that if women are educated technologically they have high social return in the society compared to men.

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