THE USE OF ICT TOOLS IN HIGHER LEARNING INSTITUTIONS IN TANZANIA

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Abstract

A tremendous growth in the higher education sector had made the administration of higher education institutions complex. Many researches reveal that the integration of Information and Communication Technologies (ICT) helps to reduce the complexity and enhance the overall administration of higher education.

The paper is centered on availability and utilization of ICT tools and infrastructure in two selected academic institutions Institute of Finance Management (IFM) and Institute of Rural Development Planning (IRDP). Data were collected from 320 respondents which comprised with 256 students and 64 academic staffs. Data were mainly collected using questionnaire.

The result shows that IRDP and IFM had a minimum number of ICT equipments such as computers and projectors that are used in the training, communication and learning. The study reveals that there are several factors that favor ICT tools utilization such as inadequate books in the Library, adaptability, availability of technical support to mention few.

Keywords: ICT, ICT utilization, Higher learning Institutions, Education, Telecommunication, Computer

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1. Introduction

A good higher education system is required for overall prosperity of a nation. A tremendous growth in the higher education sector had made the administration of higher education institutions complex. Many researches reveal that the integration of Information and Communication Technologies (ICT) helps to reduce the complexity and enhance the overall administration of higher education. This study has been undertaken to identify the various functional areas to which ICT is deployed for information administration in higher education institutions and to find the current extent of usage of ICT in all these functional areas pertaining to Information administration. The various factors that contribute to these functional areas were identified. A theoretical model was derived and validated.

It is generally agreed that ICT is a crucial resource in education. ICT has become common place entities in all aspects of life. ICT has fundamentally changed the practices and procedures of nearly all forms of endeavor within business, education and governance (Oliver, 2002). Within education sector of developing countries, ICT has begun to have a presence but the impact has not been as extensive as compared to developed countries (Kamal and Banu, 2010).

The use of ICT in education lends itself to more student-centred learning settings and often this creates some tensions for some teachers and students. But with the world moving rapidly into digital media and information, the role of ICT in education is becoming more and more important and this importance will continue to grow (Oliver, 2002). Increasing capacity of ICT has further been empowered by the growth of a global network of computer networks known as the Internet. It has impacted the way business is conducted, facilitated learning and knowledge sharing, generated global information flows, empowered citizens and communities in ways that have redefined governance, and have created significant wealth and economic growth resulting in a global information society (National ICT Policy, 2003).

There is no doubt that ICT can play significant role in the orderly development and management of Universities (Aduwa-Ogiegbaen and Isah, 2005). It is in realization of this fact that many higher learning institutions in Tanzania have invested heavily in acquiring ICT to support teaching, learning and communication inside and outside the institutions. Higher learning institutions acquire funds from different source to make sure they don't miss the advantages of

ICT especially the internet as an important tool in this competitive world and teaching computer related subject to equip users with IT knowledge.

Tanzanian higher learning institutions are expected to utilize ICT for the benefits of all the citizens such as provision of e-library, e- learning and research database where every Tanzanians and non-Tanzanians can have access to research reports instead of the current situation whereby someone has to be physically available to read a research report found in higher learning institution.

Majority of students in higher learning institution are youth which are the driving force of any nation. If these students are not well trained on effectively use ICT tools it will imply less gain or nothing from the advantages of ICT and loss of resources such as time and money in the future when they graduate.

Tanzania is categorized under the less developed countries of which are said to have ICT policies and master plans, and struggling in improving and implementing these strategies but have not fully integrated ICT in education system. Focusing on assessing the availability and utilization of ICT tools in higher learning institutions, this paper is examining the current status of the available ICT infrastructure and ICT tools and the main factors determining utilization of ICT tools in higher learning institutions in Tanzania. The discussion will help the higher learning institutions to plan the availability of ICT facilities and successfully utilize of ICT. Policy makers will have more information that will accelerate improving the ICT usage policy and how the Government should facilitate the ICT utilization in higher learning institutions. It will also stimulate other researchers to research on the linkage of ICT in education and development in Tanzania and the missing gap they may find in this research.

Despite the rapid improvements, Tanzania's ICT environment is still somewhat challenged as is concentrated only in Dar es Salaam - the commercial capital with little or no deployment/access in other urban and rural centers. Many higher learning Institutions have computer laboratories and other multi-media facilities which are not satisfactory and these are more prevalent in private educational institutions than in public ones (National ICT policy, 2003).

Tanzania is connected to SEACOM and being among the few countries connected through the world using the high speed fibre optic cable which will be enabling its users to have high speed internet access to various sources of information and ICT application. Currently some of regions are connected to SEACOM fibre optics including Dodoma, where Dodoma University in Dodoma is the only higher learning institution in Tanzania connected to SEACOM fibre optic cable.

Tanzania achieved notable progress in deploying ICT notwithstanding the 1974 Prohibition Order on Electronic Computers and Television Sets. The achievements were a result of various adjustments since the early nineties in policy, regulatory and commercial facets, both macroeconomic and within ICT's converging sectors. The private sector has actively contributed to these achievements by investing in among others, support facilities, training centers and sales outlets. These efforts have enabled government departments, institutions of learning, Non-Governmental Organizations (NGOs), as well as other entrepreneurs; acquire ICT solutions that address their individual problems most appropriately (National ICT Policy 2003).

Since then the number of voice mobile operators and internet service provider and data operator are increasing year after year is shown in table 1.

Table 1: Licensed Telecommunication Operators

Years	2000	2001	2002	2003	2004	2005	2006	2007	2008	June 09
Number of Voice Mobile Operators	5	6	6	5	5	5	6	6	6	6
Number of ISP/Data Operators	11	17	20	22	23	23	25	34	60	62

Source: TCRA website, 2009

ICT is used in education in a number of different ways mainly two: learning and management. Electronic resources have added value to the higher learning institutions, because they increase access to information through various ways. Manda (2006) revealed that electronic resources make it possible to share knowledge, experience and information on a global scale instantaneously.

Adika (2003) found that the internet makes it possible for users to have access to large volumes of information on many disciplines, irrespective of the users' geographical location, although the use of the internet by faculty members is still low. The main reason for this was lack of access to the internet and the need for training. Therefore, librarians and information professionals need to be well equipped with electronic resources knowledge, which can be used to provide training for users and to harness the immense potential of the internet as a source of information for teaching, learning and research. Spennemann (2007) stated that human activities play a role in internet usage, which has been used both as a communication tool and a general entertainment system, and web usage is high at the start of the working day and then peaks at the end of the day.

Uddin (2003) discovered that lecturers of Rajshai University found the internet useful for some common needs and that the academic rank of users was considered to be an important factor in determining their priorities. On the other hand, the study by Sharma and Maleyeff (2003) revealed that the internet has been welcomed by educators as a great tool for using in the classroom as it can be used to connect students in disparate countries as well as to increase students' confidence in using the technology.

Al-Ansari (2006) found that the internet is mostly used for accessing information, via search engines, sending and receiving e-mails, and accessing world-wide web publication, therefore it helped them to save time, find up-to-date information and cooperate with their colleagues. Actually what is experienced in the literature review is that, internet is the most ICT tool used in many higher learning institutions.

2. Material and Methods

Two higher learning institutions were considered in the study: Institute of Finance Management (IFM) and Institute of Rural Development Planning (IRDP). These institutions are found in Dar es Salaam and Dodoma regions respectively. Selection of the two institutions was purposive selected based on their geographical location. UDSM is in the city where there is possibility of getting ICT tools easily contrasted to IRDP which is located in Dodoma.

The data were obtained from cross-sectional surveys. A total of 320 respondents comprised with 256 students and 64 academic staffs were involved in the study. Out of 320 respondents, 206 were form IFM and 114 were from IRDP. Refer Table 2. Face-to-face interviews and questionnaires were instruments used to collect data from the respondents. Data analysis carried is descriptive statistics.

Table 2: Distribution of Sample Size

Institute	Academician	Students
IFM	36	170
IRDP	28	86
Total	64	256

Source: Field data, 2009

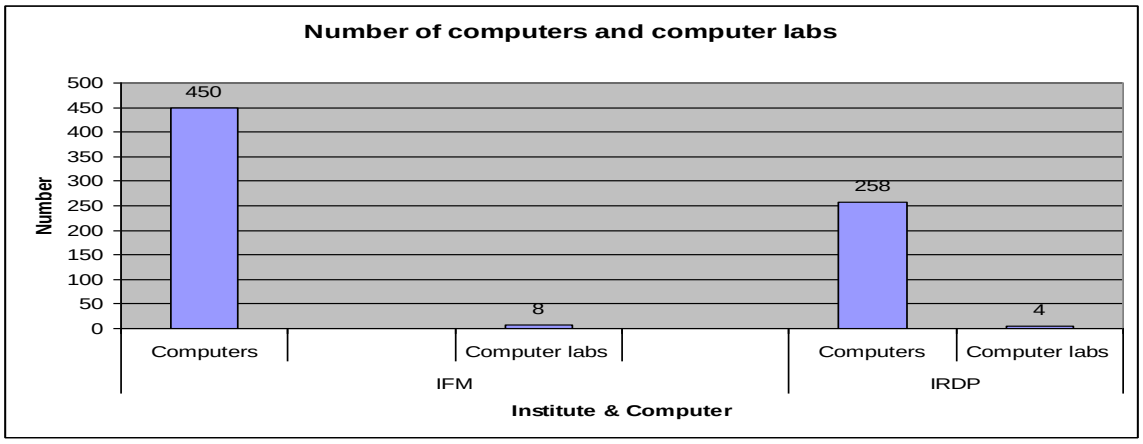
3. Results

3.1 Status of ICT infrastructure and Tools at IFM and IRDP

Number of computers and computer rooms

The study found that total numbers of computers at IRDP were 258 where by 150 computers were used by students and the remaining 108 were used by staff (see figure 1). There were only four computer rooms, one for internet surfing with 30 computers, another computer laboratory with 30 computers operate as a Geographic Information System (GIS) laboratory. Another was library computer room with 20 computers and the remaining computer laboratory had 70 computers which used for teaching computer applications.

Figure 1: Number of computers and computer labs available



Source: Field data, 2009

On the other hand in IFM, the total number of computers was 450 where by 270 computers were used by students in the computer rooms and the remaining 180 computers were used by staff. There were eight computer rooms each had computers ranging from 35 to 45. These computer rooms were not assigned specific tasks but they were installed with software that can be used for programming, financial packages, linux studies and others.

Websites and internet connection

Both institutions had internet connections having the speed of 512 kbps downloading and 256 kbps uploading. IRDP was connected using Satellite dish by Simba Net Internet service provider (ISP) while IFM was using the Asymmetric Digital Subscriber Line (ADSL) modem from Tanzania Telecommunications Company Limited (TTCL) but later starting on 1st December 2009 upgraded to 4 Mbps using ADSL modem from TTCL.

Projectors

The numbers of projectors at IFM were 30 distributed in every department while the numbers of projectors at IRDP were 14 in which each department has at least 2 projectors. It was experienced that no any projector was installed in the lecture rooms in either of the institution but kept in ICT offices or in the departmental office for individual staff borrowing. The number of projectors

when compared to the number of staffs who might need to make use of them at per, were not sufficient.

Availability of internet connection

The study revealed that there was internet connection in both institutions but internet connection was not stable. There was frequently breakdown due to known and unknown reasons such as virus attack and delay payment which compelled the service provider to cut off the connection. A total number of 302 which is 94.4% of the respondents reported that internet connection in most of the time is not available and if available it has slow connection that hinder them to do some activities online. The remaining percent 5.6 reported that the internet was always available and they were comfortable with the connection speed.

Electricity and backup generator

It was found that in both institutes there were backup generators to supply electricity when there is power outage. It was also noted that not all the campus buildings were connected to the generator. On the other hand, the power supply at IFM was reported to be more problematic as compared to IRDP this resulting from transformer failure more frequently.

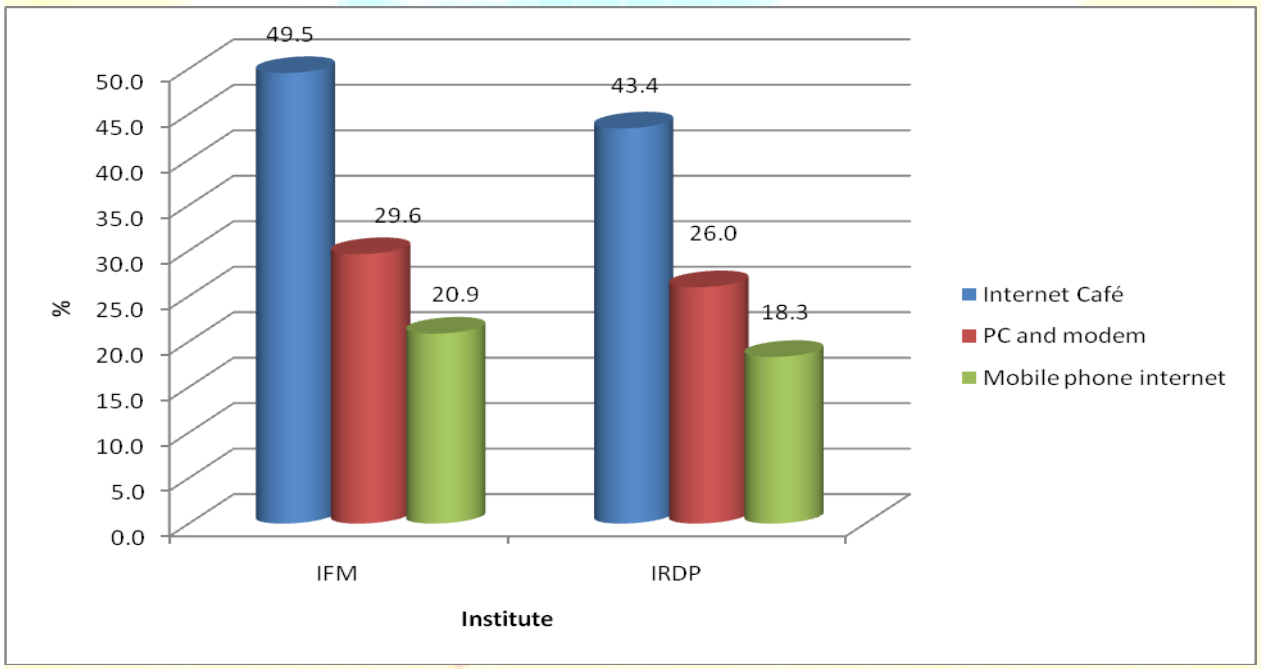
Computer laboratory usage

It was found that, students were not frequently using computer laboratories as majority of the students (66%) reported that they were rarely using computer labs while only 34% of the students responded that they were frequently using computer laboratory facilities. Majority of the student were using computers in the computer laboratory during the training sessions only as for the rest of the time the labs were being used by other class sessions.

Alternative access of ICT especially internet

Since the internet connection was not always stable, staff and students of two institutions had different alternatives for accessing ICT especially internet. Three alternatives were mentioned which includes: going to internet cafes; using modems and using mobile phones. Among the three internet cafes was the most mentioned alternative mentioned in either of the institutions as can be seen in figure 2. While in IFM was outlined by 49.5%, in IRDP about 43.4% mentioned this alternative. The second most used alternative was mentioned to be modem. These modems were used in their personal computer of laptops. The modems used were those offered by Zantel, TTCL, Airtel, Vodacom and Sasatel mobile phones service providers.

Figure 2: Alternative access of internet apart from institute's facilities



Source: Field data, 2009

3.2 Usage of ICT

In order to determine to what extent the available ICT facilities were used, the respondents were asked to respond on five aspects: email; website; projector; mailing lists; audio and video conferencing; and newsgroups. The result found that mailing lists, audio and video conferencing and newsgroup were not used in either of the institutions as can be seen in Table 3. While email

and website were used by both academic staffs and student, projectors were used by only academic staffs.

Table 3: ICT usage in IFM and IRDP

ICT Tools	Institute			
	IFM		IRDP	
	Academicians	Students	Academicians	Students
Email	36	27	28	12
Website	36	163	28	74
Projector	36	0	28	0
Mailing lists	0	0	0	0
Audio and Video Conferencing	0	0	0	0
Newsgroup	0	0	0	0

Source: Field data, 2009

6.3 Factors determining the utilization of ICT tools at IFM and IRDP

ICT knowledge

One of the factors determining the usage or the utilization of ICT tools in higher learning institutions is users' ICT knowledge. All the academic staffs, equals to 100% in both institutes (36 from IFM and 28 from IRDP) responded that they had ICT knowledge. About 87.1% of IFM students said they had ICT knowledge while 83.7% students from IRDP had ICT knowledge. This result indicates that only few percent of students had no knowledge about ICT, and that calls for expansion of ICT facilities in these institutions.

ICT user's attitude

To test users' attitude on the usage of ICT tools, all the respondents were asked if the usage of ICT tools helped them in their day to day to easy/simplifying their tasks. It was found that all the 64 academic staffs ICT tools had helped them. For the case of students, about 88.5% of them agreed that the use of ICT tools helped them while the remaining 11.5% students disagree that the use of ICT tools helped them.

Factors that favors utilization of ICT tools

Table 4 presents factors that favor the usage and utilization of ICT tools in the two institutions. One of the factors that were mentioned by all the respondents was inadequate of books in the library that favors the utilization of the ICT tools.

Table 4: Factors that favors utilization of ICT tools

Factor	Code	Count	Pct of Responses	Pct of Cases
Technical support availability	1	180	11.3	56.3
The ICT tools availability	2	176	11.0	55.0
The ICT tools reliability	3	135	8.4	42.2
The ICT tools affordability	4	67	4.2	20.9
Adaptability	5	213	13.3	66.6
Awareness	6	170	10.6	53.1
Comfort ability	7	128	8.0	40.0
Top Management Support	8	5	0.3	1.6
ICT usage Policy	9	33	2.1	10.3
Curriculum requires me to use	10	173	10.8	54.1

Inadequate books in library	11	320	20.0	100.0
Total responses		**1600**	**100.0**	**500.00**

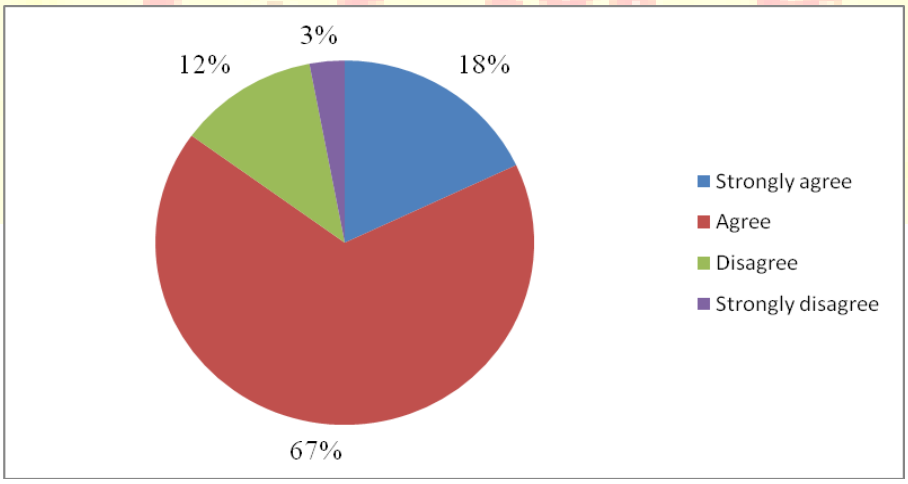
Source: Field data, 2009

Factors that are obstacles on the utilization of ICT tools

There are factors that are the obstacles on the utilization of ICT tools in higher learning institutions in Tanzania. The five most mentioned factors as reported by the respondents were: lack of top management support on the utilization of ICT tools being mentioned by 75% of the respondent; slow internet connection being mentioned by 74.4 % of respondents; no enough time of using computer rooms and having restrictions on the usage that make users especially students opt not to use and find the alternatives (67.5%); lack of technical support (60.3%); ICT facilities are not affordable to users (58.1 %).

Relationship between ICT tools utilization and users' performance

Despite the factors outlined above, the study found that performance of majority of respondents (67%) had been positively affected by the usage of ICT tools. It was only 3% of the respondents who said that the usage of ICT tools did not improve their performances. More information is depicted in figure 3.



Source: Field data, 2009

4. Conclusion

It has been observed that in the two institutes involved the numbers of computers are very few compared to the number of students admitted. In IRDP ratio of computer to students is 1:12 while at IFM the ration is 1:22. The ratios call for more computers and other ICT facilities.

Internet connection ports and connection speed is not sufficient to all the computers connected since users are experiencing slow connection that limit them to access useful materials that can be accessed using the high speed connection. For the case of projectors, there is a need of being increased and staffs be trained for better use of such facilities. It was also observed that there is a need for promoting good use of the internet in working places as it is among the major service used mostly in higher learning institutions almost with everyone. This possesses a challenge of empowering staffs and students on issues related to efficient use of ICT infrastructure and facilities.

There is a very clear relationship between utilization of ICT tools and the users' performance. Those who are utilizing the ICT tools in their day to day activities will have the performance compared to those who are not using ICT tools.

The slow internet connection and lack of support from the top management on the utilization of ICT tools in higher learning institutions can be taken as the challenges so that changes can be made as to allow the utilization of the ICT tools and allow the benefit that can be obtained from the utilization of the these tools.

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