Effectiveness of Information and Communication Technologies in Promoting and Disseminating Information to Users at the Museum and House of Culture, Dar es Salaam, Tanzania

Sophia Fred

&

Julita Nawe
jnawe2015@yahoo.com

ABSTRACT

This study mainly investigated the effectiveness of Information and Communication Technologies in promoting and disseminating information to users at the Museum and House of Culture (MHC). Spesifically, the study sought to identify information and communication channels used, examine the application of ICT in online and onsite museum services and the patterns of ICT use, and to determine the challenges faced in applying ICT in promoting and disseminating information to the users. The sample size consisted of 72 respondents (48 staf fand 24 museum users). Data for this study were collected using documentary review, questionnaires, interviews, focus group discussion and observation. Whereas quantitative data were analysed using SPSS qualitative data were subjected to content analysis. The study findings revealed that MHC uses various channels of communication and that electronic and computerised communication channels were preferred by the majority of the respondents. The challenges to effective utilisation of ICT at the Museum included inadequate skills, inadequate funds, technological obsolescence and technophobia among staff. The study concludes that, although MHC uses various channels of communication and different ICTs in its operations, communication links at the MHC have a lot of weaknesses and challenges. Thus, the study recommends the formulation of the Museum Information and ICT Policy to have in place a staff development plan in addition to increasing public awareness on museum potentiality.

Key words: ICT Application in Museums, Museums, Tanzania

Introduction

Museum communicating system shifted from traditional approaches based on manual communication systems and service to electronic communication systems in the tewnty-first century. In practice, electronic and digital models of communication in museum configured new different ways of enhancing interpretation, making explicit associations and linkages that can only be implicit in the physical site (Parry & Sawyer, 2005). In fact, the advent of Information and Communication Technology (ICT) application in museums has resulted in a wider accessibility and presentation of museum information in different formats for different people, which has enhanced the general appreciation of the role of the museum in the societies (Ambrose & Paine, 2012).

Furthermore, the selective adoption of ICTs by museum also constitutes an acknowledgement of new technologies as a powerful tool across many aspects of museum work. To some people, the new technology posed a threat to the authenticity and authority upon which their institution was apparently built (Parry & Sawyer, 2005). However, new communication media could support learning, disseminate information and provide new ways of seeing and experiencing (Bailey, 2010). In fact, the application of ICT has helped to facilitate globally public awareness of the role and functions of a museum.

The trend of the evolution of ICT application in the museum can be traced back to the 1960s. By then, the technology was not an integral of the museum communication system. From the 1980s up to 1990s some museums started applying the technology in museum galleries whereby websites were designed to provide links between museum gallery and users (Parry & Sawyer, 2005). From the 2000s to the present ICTs applications were integrated in the provision of online and onsite services in museums (Parry & Sawyer, 2005); however, the degree of application and integration varies from museum to museum.

This study, therefore, investigated the effectiveness of ICTs in promoting and disseminating information to users and how this technology allows users to access information found in the Museum and House of Culture (MHC). In the past, the common media or channel which the Museum and House of Culture (MHC) deployed to communicate with its users was the permanent exhibition (Masao, 2010). Yet, the world has embraced digital technology. As a result, many services nowadays are increasingly provided electronically. It was, thus, found prudent to investigate the effectiveness of ICT in promoting and disseminating information to users at the MHC to create a base for making informed decisions in the development of strategies for the provision of services in line with the current and future demands.

The main objective of this study was to investigate the effectiveness of ICTs in promoting and disseminating information to users at the MHC. Specifically, it sought toidentify information and communication channels used, examine the application of ICT in online and onsite museum services and the patterns of ICT use, and determine the challenges faced in the application of ICT in promoting and disseminating museum information to users.

Literature Review

Global View and History of Museum

Museums have a long history, springing from what may be an innate human desire to collect and interpret and having discernible origins in large collections built up by individuals and

groups before the modern era (Lewis, 1992). Lewis (1992), went further and categorised the history of museums into two phases. The first phase is pre-modern museum development which comprises private collections in ancient and medieval periods and the second phase is the development of modern public museums from renaissance period to the present.

An Overview of Museums in Africa

The concept of museum in Africa before the early contacts with traders, which lingered on designated sacred places for rituals and ceremonies (by African societies), can be equated to modern museums vaults. They included areas such as forests, caves,waterfalls, lakes, mountains and burial places which the ancients visited to solve specific social and religious problems. But this traditional Africa museum concept changed with the introduction of European way of life which was at odds with the African way of life (Msemwa, 2005).

The development of museums in Afica with the concept of European way of life can be traced back to the twentieth century with the introduction of various museums. For instance, in Central and Southern Africa, museums were founded early in the tewntieth century. Zimbabwe's national museums in Bulawayo and Harare were founded in 1901. The Uganda Museum originated in 1908 from collections assembled by the British District Commissioners, and the National Museum of Kenya in Nairobi was established by the East Africa and Uganda Natural History Society in 1909. Mozambique's first museum, the Dr. Alvaro de Castro Museum in Maputo, was founded in 1913. Meanwhile, in North Africa the Egyptian Museum in Cairo was relocated to its new building in 1902, and the collections were transferred to form two new institutions: the Museum of Islaiih (1903) and the Coptic Museum (1908). In South Africa, there was a steady museum development in a number of the provinces, for example, in Grahams town in 1837, Port Elizabeth in 1856, Bloemfontein in 1877, Durban in 1887, Pretoria in 1893, and Pietermaritzburg in 1903 (Lewis, 1992).

After the WWII museum collections went beyond usual limits to include a geological section of ores found in the area, anthropological objects and collection of musical instruments (Caple, 2000; Masao, 2010). These museums created a base for today's museums. Yet museums today vary enormously, ranging in size from great international museums such as the Washington's Smithsonian Institution to the smallest one-room village museum (UDSM, 2004).

Moreover, museums broadened their scope to cover natural and cultural aspects. Museums today are regarded as educational, research, cultural and development institutions and information centres (Kayombo, 2005). Currently, the museum works as an information centre that allow researchers, students and the public to visit it to retreive and utilise the information and other resources available therein. The functions of museums now include acquisition, documentation, conservation and restoration and exhibition of information and objects (Masao, 2010).

History of Museums in Tanzania

In Tanzania, museum development, roles and functions can be viewed into two phases: Pre-independence and post-independence phase.

Pre-independence Phase

By 1911, there was an interest in establishing museums in different German colonies in Africa. Tanzania Mainland was also under the German Imperial Power of German East Africa Colony. Prio to the German East Africa, care of heritage of different ethinic groups was vested in the hands of chiefs and clan heads (Msemwa, 2005). The first museum was built on Shabani Robert Street. Later on Tanganyika was under British rule after First World War (WWI). Sir Harold Mac Michael, the governor of Tanganyika Territory (1934-1938), was the first to conceive the idea of having a museum in Dar es Salaam, which was named King George V Memorial Museum (Masao, 2010).

The purpose of the museum at that time was first to enlarge and supplement the existing collection until they formed a full representation of all the country's resources and activities. Second, there was a need to have a scientific library and to have a solid foundation and common ground for cultural, scientific and art societies in the territory (Masao, 2010).

Post-independence Phase

The post-independence phase comprises the period from 1961 to the 2000s. As alluded to by Msemwa (2005), immedietly after gaining its independence from Britain Tanzania Mainland museum was expanded purposely to provide more space for storage and exhibitions. Consequently, there was an obvious need to diseeminate research findings from Olduvai Gorge in Arusha region and from the coast; documenting the history of Tanganyika to the people.

In 1965, the King George V Memorial Museum changed its name to the National Museum of Tanganyika. Later on the institution was renamed as the National Museum of Tanzania. Furthermore, in 1980 after the amendment of the Museum Act, the National Museum of Tanzania became a corporate body with several museums in the country and developed more branches all over the country. These branches include the Museum and House of Culture, the Village Museum in Dar es Salaam, Butiama Museum in Mara, and Majimaji Museum in Ruvuma, Arusha Declaration Museum and Natural History Museum in Arusha. They vary in size, purpose, collections, runners and the target public they seek to serve (UDSM, 2004). In 2011, the name was changed from National Museum of Tanzania to become the Museum and House of Culture, an autonomous and a separate branch from the headquarters of the National Museum.

ICT Application in Museums

Global Perspective

The changes in technology have brought changes in museum operations generally. ICTs provide museums with a very powerful set of tools both for the day-to-day work of managing a collection and for reaching out to visitors, sometimes in new and interesting ways (Poole, 2007). Calderon (1990) asserts that these changes have ushered in a new terminology pertaining to the museum career known as electronic museum. Museums can do more to expand opportunities for people to engage with their collections. The web provides museums with novel ways of interacting with the public through blogs and wikis. The use of ICTs encourages visitors (users) to escape the physical barriers of traditional museums, which are based on manual systems. Anyone with access to Internet connectivity can view information in the museum before incurring the cost of travelling. Also, users can access information at any time with no museum working hours limitations (McTavish, 2006). Indeed, the online museum services allow for increased access to museum information, and increase a broad array of opinions which challenge hitherto traditional museum practices. Also, Baca *et al.* (2008) argue that online access to museum resources and information may help visitors planning to visit a particular museum to prepare a trip by downloading important information such as highlights of the museum collections.

Furthermore, the use of broadcast media and the Internet gives museum access to the global audience in their own home. The Internet reaches people who may visit the museum as well as those who may not (Jordi, 2007). Today, museums throughout the world enjoy

unquestioned popularity and public respect as millions of people visit museums and relevant websites on the Internet, which has enabled museums to expand beyond their physical walls and reach out to a larger audience (Masao, 2010). On the whole, it is the duty of museums to engage users more closely with the services they provide (Ambrose & Paine, 2012).

With this new paradigm shift scholars have been interested in studying the use of ICT. Hywel *et al.* (1999) conducted a survey of the current museum practice and anticipated the use of ICTs in the museums. The study identified and evaluated the relevance of other related current and recent research and training needs. The findings of the study revealed that museum community generally recognises that ICTs have an important role to play in the future development of museums.

Although ICTs play an important role in museum operations they require a permanent plan and continuity of staff supervision (Poole, 2007). In any information society there is a need for technical staff to operate technical works. Marty (2003) interviewed 21 information professionals who worked in the museum, asking them about their background and experiences with information resources, tools and technologies in the museum. The results indicate that the museum operated with no information professionals. He underscored the need to run museum works by employing technical staff capable of applying ICTs in their daily duties. Indeed, the effective use of ICTs requires people and staff to have basic knowledge of ICTs.

Currently, many museums use ICT to promote their collections. Through the application of ICTs, museums become profitable institutions primarily because the Internet brings collections and users into market ground (Gilmore & Rentschler, 2002). Gilmore and Rentschler (2002), who conducted a study in Ireland and Australia on the importance of museum marketing, found that educating the public on the nature and scope of the museum collections, exhibition, services and products directly markets museum resources. The increase in the capacity of networking museum service within and outside the museum strengthens relationship between staff and users. Notably, ICTs serve as tools for improving the information network in different communities, organisations and people. Also, ICTs connect people with education opportunities available and help different people to access relevant information on time.

Application of ICT in African Museums

Africa has access to various types of ICTs such the Internet via Vsats and Fibre Optic Cable, satellite based telephony, mobile cellular phone services, digital satellite and cable television, computers, and satellite radio services (Van Brakel & Chisenga, 2003). Butcher (2003) and Van Brakel and Chisenga (2003) noted that, compared to the rest of the world, Africa still lags behind in many areas of ICT application. There is a gap of ICT use between Africa and the rest of the world as well as within African countries. Butcher (2003) argues that many African countries still have erratic or non-existent electricity supplies, severe tax regimes, and lack of skills on ICTs usage and have to contend with the problem of brain-drain, which cumulatively hinder most of Africans to tap fully into ICT potentiality.

The current spread and use of ICTs in various sectors including museums in Africa is the function of three factors: the first is infrastructure availability, operation and maintenance; the second has to do with public access facilities and the existence of relevant content; and the third refers to the supportive enabling environment, including regulatory framework and policy (ECA & NEPAD, 2008). William *et al.* (2011) argue that Africa's ICT infrastructure has grown as a sector which resulted in a complex designing structure capable of carrying interconnected networks. Every country has an independent communication network (s) which accelerates the high cost of Internet connectivity and access that results in low rates of Internet usage. By 2006, there were about 44 million people subscribing to the Internet and one million broadcast users (ECA & NEPAD, 2008).

According to Baca (2003), many people in Africa have access to ICT but the African people have great challenges when it comes to affording the use of technology, to see its value and actually apply it. These apparent hurdles explain various technologies that are used to deliver information such as print which can be used to produce books, magazines and brochures; computer systems which can be applied for electronic publication, generating instructional materials for users and marketing museum services; audio technology such as cassettes, audio compact disc, radio broadcast, telephones for museum inquiry; video technology for documentary, advertisement, exhibition and training; and Integrated Multi-media for presentation of information and networking using the computer within organisation for information distribution. In Africa, the radio is the most accessible and consumed media (ECA & NEPAD, 2008).

Generally, many African museums have onsite display rather than outdoor displays. Under this traditional set-up, materials are there waiting for users to come and see what is inside the museum (Masao, 2010). This conservative approach discourages people from viewing museum as a good source of data, especially primary and secondary data because people are not aware of what is available in the museum. On the other hand, those few who visit the museums do it for leisure not for gaining knowledge. Hence, a few users access and use information from museums to improve their knowledge on natural and cultural history.

ICT Application in Tanzania

Information and Communications Technologies (ICTs) in Tanzania started to develop from the end of the tewntieth century. In Tanzania, this development can be traced back to 1965 when the first computer was installed at the Ministry of Finance (Mgaya, 1994). By 1974, there were seven computers in the country. During that period, the installation was totally dependent on foreign experts. In some cases these experts were not adequately qualified, and applications tended not to be accurately documented and were ran only when foreign experts were around (Mgaya, 1994). The development of ICT in Tanzania led to many convergences of content, computing, telecommunications and broadcasting. It brought about changes in areas, such as knowledge management and human resources development (URT, 2003).

The growth of ICT has further been empowered by the growth of a global network of computer networks known as the Internet. ICTs brought changes that affected irreversably how business is conducted in addition to facilitating learning and knowledge sharing, and engendering global information flows, empowering citizens and communities, and spurring economic growth, and above all in spearhearding the emergence of a global information society. Specifically in Tanzania, the country adopted a national policy in 2003 that identified the development of infrastructure as key in the development and use of ICTs in the country (URT, 2003). Subsequently, the number of telecommunication service operators (Internet Service Provider/Data Operators) increased from 11 in 2000 to 62 operators (Yonazi, 2010) and 89 in 2017 (Tanzania Business Directory, 2017).

According toYonazi (2010), the effective utilisation of ICT in Tanzania is constrained by inadequate international communication infrastructure; limited ICT production capacity, dependence on imported hardware; very limited local contents, which are largely available in

the English language rather than in Kiswahili; lack of quality leadership, planning, organisation momentum and implementation of ICT projects which have been undertaken; and people, especially in rural areas lacking adequate skills and awareness to operate ICT tools; lack of skilled personnel; and failure of decision-makers to grasp the potentials of ICTs.

ICT Application at the Museum and House of Culture

After independence, a major communication channel between museums and users were exhibition and display. Museum exhibition after independence involved the use of cabinets, show cases and display of ethnographical materials. There were three main types of cases such as wall-desk and the multi-leaf. The style in all of them is modern and essentially functional. The showcase display approach leads to many problems. For example, in 1948, a thief stole a piece of a diamond and gold from King Gorge V memorial museum (Meyer-Heiseberg, 1972). This challenge has persisted to today, especially during exhibition activities whereby many objects are stolen. Museums try to overcome this problem by registering museum objects worldwide.

Tanzania has an ICT policy in place but does not have an Information Policy to guide formal and informal procedures, laws, practices and rules governing the information lifecycle. In consequence, information is not well treated in organisations, especially in institutions, and the public has a limited opportunities of accessing public information. Stephen (2003) comments that all information in museums requires an information policy and system plan. These two aspects should address issues of intellectual property compliance with the Database Protection Act or equivalent regulations and museum management's orientation and participation in database or other dissemination of museum information.

Since independence, the situation of information infrastructure and information flow in the Museum and House of Culture developed very slowly. The application of ICT in museum takes position in information system to improve information acquisition, storage, and dissemination (Ambrose & Paine, 2012). It also improves the quality of services within the institution and saves the user's time.

The development of ICTs in the Museum and House of Culture can be traced back to 1988 when a museum staff member, Dr. Msemwa, came with a first laptop from abroad after

completing his PhD studies. The computer was kept in a special room with a great care and security. Later on in 1989, Ash Macho Wang bought a computer for museum activities. Subsequently, the Arusha Declaration Museum received the grant networking computer from China which could be used for the provision of Internet services (National Museum of Tanzania Annual Report, 1990).

The application and use of ICT in Museum and House of Culture started in earnest in 2000 when the museum database was generated. ICTs use in museum was specifically directed to senior curators. Staff were not given an opportunity for exposure to computer technology as the computers were kept in a special room and were password-protected so that only assigned staff could use them. From 2000 up to the present the uses of ICTs in the Museum and House of Culture has expanded. Computer applications such as Microsoft Word, Access, and Excel are used by accountants, administrators and curators to run various museum activities and in addition to serving as communication channel within and outside the museum (National Museum of Tanzania Annual Report, 2001).

Channels commonly used for communications by the Museum and House of Culture are exhibitions, seminars, in-house displays and festivals to promote and disseminate information on their services and activities. Records show that most of the people in Tanzania do not visit museums. For instance, the 2008/2009 records show that the museum had 92,787 local visitors (Masao, 2010) and in 2016 the number of visitors had declined to 14,136 (NMT Annual Report, 2016).

Role and Function of Museums in Tanzania

Museums in Tanzania collect, conserve, display, and conduct research on all material objects relating to Tanzania's cultural and national heritage (Masao, 2010). These museums play a significant role of educating public through exhibitions, publications, festivals and other media in addition to disseminating information on perverse collections using exhibitions, publications and seminars to develop national museum (Masao, 2010). The National Museum of Tanzania plays a significant role in disseminating information to users about museum collection.The current changes and developments in socio-economic, cultural, science and technology require museum and museum staff to cope with emerging responsibilities.

Challenges to the Effective Application of ICTs in Tanzania's Museums

While appreciating the difficulty of forecasting what would happen in the future, Veltman (2005) outlines one of the major technical challenges as a shift from ICTs to Universal Convergence Technologies (UCT). The others are in the cultural realm, which have to do with the problems of repositories, the changing scope of cultural heritage, new links between national, regional and local as well as between culture, knowledge and scholarship. At the level of developing contries and Africa, in particular, the challenges are even much more complex. Africa still lags behind in ICTs application. Butcher (2003) argues that many African countries still have irregular and non-existent electricity supplies, tax regimes, and lack skills in ICT usage, in addition to suffering from brain-drain, problem that museums grapple with.

Methodology

This paper is mainly based on a case study design that used a flexible research design. The research design involved a combination of qualitative and quantitative research approaches. The sample size for this research was 72 made up of 48 staff and 24 museum users). Data for this study was collected through documentary review, questionnaires, interviews, focus group discussions and observation. Quantitative data was analysed using SPSS whereas qualitative data was subjected to content analysis.

This study was guided by four research questions: What information and communication channels does the Museum and House of Culture use? How are ICTs applied in the provision of online and onsite museum services and operations? What are the patterns of ICT application at the Museum and House of Culture? and What challenges do staff face in ICT application at the Museum and House of Culture?

Findings

Demographic Characteristics of Respondents

The staff respondents belonged to four age categories (Less than 30, 30-39, 40-49 and 50 and above) with the majority belonging to the age category of between 30 and 49. The implication is that the young staff who could take over top positions in the future at the institution following retirement of senior staff are very few. The majority (29 out of 48 i.e. 60.4%) of the employees were female; this was uniform across the major departments of the organisation, that is, the Collections Management Department, the Programme Department

and the Support Services Department. During interviews it emerged that the Museum and House of Culture employed more females than males to empower them, implying that all the departments at Museum were conscious of gender equality. However, it was observed that in all the departments the majority of the female staff were in administrative positions with male staff occupying the top management positions. As Pfeifer and Wagner (2012) argue, that gender balance and age diversity among workers tends to maintain organisational performance and productivity over time.

As Table 1 illustrates, respondents had different educational levels, as 20 (41.7%) of the respondents had basic education, followed by eight (16.7%) who had certificate, seven (14.5%) who had diploma, two (4.2%) who had postgraduate diploma, two (4.2%) who had bachelor's degree, seven (14.5%) who had master's degree, and two (4.2%) who had PhD qualigfications. During interviews, the respondents told the researcher that staff who have basic education faced many challenges in applying ICT in various museum-related operations as compared to those with higher education qualifications. Through observations, it was established that respondents who had basic education were implementers of various museum plans. It also appeared that museum staff who had basic education affected the quality of various museum commucatation services that are offered to users via ICT due to the education and skills barrier. Edson (1995, 1997), and Marty (2003) call ofr the use of professional workers in the museum field to shoulder more responsibilities regardless of their status and support the effective provision of quality service and institutional productivity.

Table 1: Distribution of Respondents by Level of Education (N=48)

Education Level	Frequency	Percentage
PhD	2	4.2
Masters	7	14.5
Bachelor	2	4.2
Postgraduate Diploma	2	4.2
Diploma	7	14.5
Certificate	8	16.7
Primary Education	20	41.7
Total	**48**	**100**

Source: Field Data (2012/13)

Information and Communication Channels used at the Museum and House of Culture

The Museum and House of Culture uses different communication channels. The findings show that 45 (93.8%) respondents use phones as the easiest communication channel compared to other communication channels. This implies that the majority of the respondents have access to mobile phones and use them as their first communication channel. Ambrose

and Paine (2012) propose that the museum should understand its users and learn their information-seeking behaviour and the communication channels that they mostly prefer. With regard to the Internet, 37 (79.0%) respondents indicated that they used it for communication purposes. The Internet was regarded as the best communication channel for them to access information concerning the museum. These findings corroborate with those of Jordi (2007), who found that the Internet gives museum access to global audiences in their home in addition to reaching many people at an unprecedented scale.

Fourteen (29.2%) respondents used workshops and seminars as communication channels between the museum and users. During interviews and focus group discussions, it emerged that the museum conducts workshops and seminars to market its products before various museum stakeholders including users. Masao (2010) asserts that workshops and seminars helped the museum to educate users on museum issues and brought awareness among users on the importance of museums in the country. Radios and televisions were used by 12 (25.0%) and magazines by eight (16.7%) of the respondents to communicate with users. For reaching users effectively and efficiently, as proposed by Ambrose and Paine (2012) museums should promote and market their products and services by understanding the nature of museum users so that they can expand the number of museum visitors.

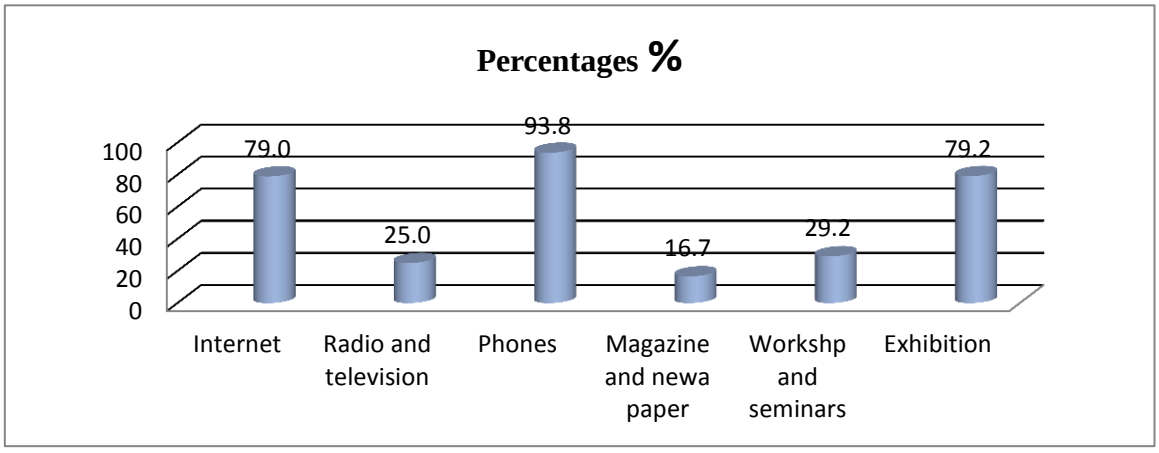

Figure 1: Communication Channels Used at the Museum and House of Culture to Communicate with Users (N=48)

Source: Field Data (2012/13)

The respondents were further asked to suggest contents that they think should appear in the computerized communication channels to facilitate information sharing among museum users. The findings are presented in Figure 2.

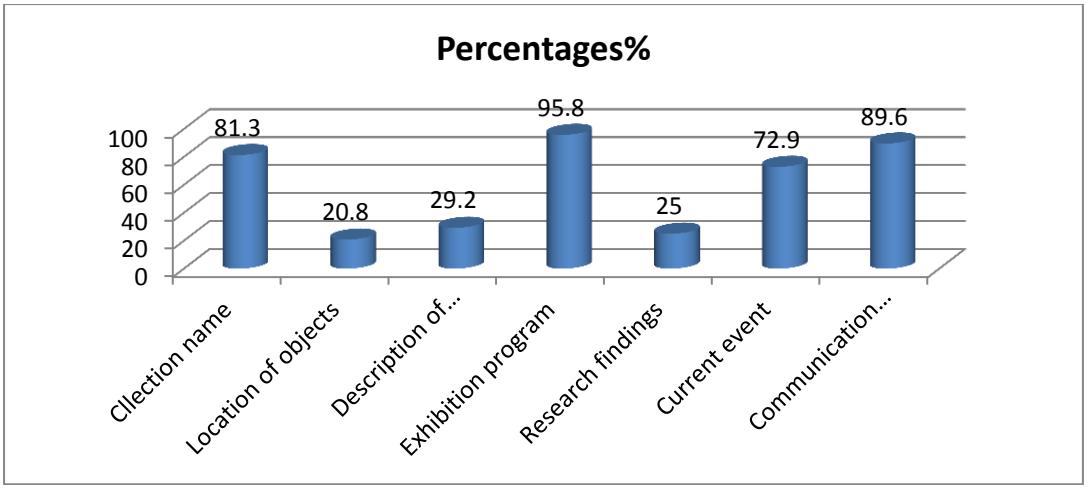

Figure 2: Views by the Respondents on the Contents for Computerised Communication Channels (N=48)

Source: Field Data (2012/13)

Results presented in Figure 2 show suggestions from the respondents on the contents that should be included in computerised communication channels. In all, 46 (95.8%) of the respondents underscored the use of exhibition programmes. The findings revealed that the majority of the respondents have a clear understanding of the role and function of museum of disseminating information to users. Lord (2001) proposed that museum exhibition is a unique and powerful means of communication between museum collections and museum users. Moreover, Lord (2001) considers museum exhibition as a primary method of educating museum users on the awareness and valuation of many aspects of themselves and their world through physical display or audio-image display. Masao (2010) and Gilmore and Rentschler (2002) insist on the necessity of museums to display their collections for the public.

Related to communication link, the findings revealed that 43 (89.6%) of the respondents supported the idea. This means that respondents were aware of the importance of having reliable museum communication links. Through observation, it was established that the Museum and House of Culture had outdated communication links, some of which were not active. For example, the Museum and House of Culture's website has some outdated and inactive communication links. Ambrose and Paine (2012) suggest that museums should extend the audience and promote museum information using broadcasting media, print and audio visual materials and social networks media after understanding the of the audience. The museum should also use those communication channels to attract users by providing reliable communication links.

The findings show that fewer respondents (12-25.0%) indicated that it was impotant for reports on research findings to be included in computerised communication channels. This means that most of the respondents were not aware of the research reports available and would like to have the information accessible to them. This result also indicates that possibly the museum rarely conducts research, hence their response indicating their need to have reports included in the computerised communication channels. Masao (2010) explains that one of the museum's functions is to conduct research on related museum objects. Similarly, Paine and Ambrose (2012) identify of the fundamental task of all museums, large or small, as adding to knowledge by undertaking or facilitating research. The publications should be presented in museum collections papers, conferences and websites so that users can get new information on those collections. Moreover, Masao (2010, quoting Das, 1989) said that research and publication constitutes one of the integral functions of the museum movement that feed users a general education and provide data to research scholars.

Only a few respondents (10-20) (8%) indicated location of object, implying that the majority of the respondents disagreed with placing such information on various computerised communication systems for security purposes. During interviews, museum staff told said that disclosure of information pertaining to the actual location of the object in computerised communication channels or online museum services can compromise security as doing so can abet stealing of museum objects. Indeed, Ambrose and Paine (2012) comment that one of the biggest challenges in museum safety is theft of the museum objects.

Application of ICT at the Museum and House of Culture

The second specific objective was to examine the application of ICT at the Museum and House of Culture and how it facilitates online and onsite museum services. The findings are presented in Figure 3:

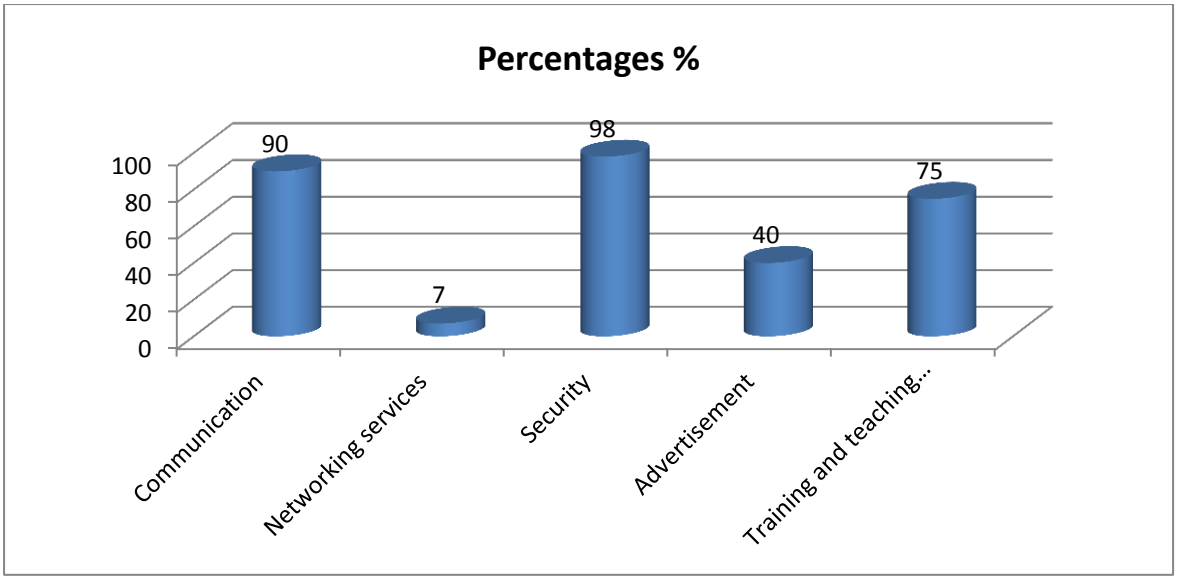

Figure 3: Areas for ICT Application at Museum and House of Culture (N=48)

Source: Field Data (2012/13)

The findings indicate that 43 (90%) of the respondents use ICTs for communication purposes within and outside their work environment. The use of science and technology in communication system by the Museum and House of Culture was also confirmed during interviews, focus group discussions and observations. The also noted during observations ICTs being applied in communication, hence providing an opportunity for museum users to deploy various communication channels to communicate with the museum without distance limitations. Ogbomo and Ogbomo (2008) emphasise on technological changes in all aspects of life, that ICTs have made it possible to disseminate quickly information to many users. Ambrose and Paine (2012) commented that communication, specifically through ICTs, serves as a bridge that connects museum and users because museums are for the people.

With regard to networking services, the study results indicate that three (7.0%) respondents indicated that the application of ICT has facilitaed the networking of all museum services. This fact was also noted during focus group discussion. However, only a few respondents realised the necessity of having networking service to combine all of their services in a single link whereas the majority of Museum and House of Culture's staff did not know the potentiality of networking services in museum operations. Taylor (2007) explained that the purpose of networking services is to reduce distance, reduce time length, get the lowest cost between points in the network to enhance the museum communication capacity within and outside the museum and strengthen the relationship between the museum and relevant stakeholders.

Forty-seven (98.0 %) respondents said ICTs are used for security purposes. Through interviews, focus group discussions and observation, it was established that there were several CCTV cameras that were used at the MHC to maintain the security of museum collections beyond staff's eyes and ears. During an interview, one respondent said that it was important for an institution such as the museum to have CCTV cameras to protect collections against theft and maintain the security of the museum environment. The Council for Museums, Archives and Library listed various benefits of CCTV cameras in the public buildings such as museums (Resource, 2004). The main benefits of CCTV cameras are deterrence, an aid to invigilation, recording for post-incident investigation, entry control and site management of out of hours (Resource, 2004).

Moreover, 19 (40%) of the respondents indicated that ICTs are applied in advertisements. Through observation, it was established that ICTs are the least applied for advertisement purposes. The MHC website, for example, had outdated advertisement on museum events and programmes. This indicates that MHC does not utilise ICT effectively to promote its products and services to museum users. Oshunloye (2009) commented that effective use of ICT in marketing helped the museum to maintain its business value and competence, with the Internet bringing the collection and the user into the market ground. In addition, online museum service is needed to capture the visitors' attention and interest.

Thirty-six (75.0%) of the respondents support application of ICTfor training and teaching aids in the museum. This implies that there are onsite and online training and teaching programme that are conducted at the Museum and House of Culture. Through observation, it was established that the museum had a special television programme known as *Nyerere's Grandchildren* for primary school pupils aired once a year for remembering the late President Julius Kambarage Nyerere, the father of Tanzania. This programme is shown in various media so that pupils can learn and see associated materials Mwalimu Nyerere used. Kayombo (2005) explains that today's museums are regarded as educational, research, and information centres. Moreover, Masao (2010) explains that museums play an educational role in providing original and real data through research, which contributes to the body of knowledge.

Patterns of ICTs Utilisation for Communication Services at the MHC

As Table 2 illustrates, various ICTs are extensively applied in the provison of services and in in-house work at the MHC. The availability of such facilities enable users to access the museum information even for hard materials such as brochures, magazines, and research reports. Also, the Museum had a publication entitled *Museum Annual Report (MAR)* diseeminated to its stakeholers. Ambrose and Paine (2012) suggested that after understanding the information user needs and their behaviour, the museum can utilise various technologies to reach all the users as determined by the user needs because a museum is essentially for the people.

Table 2: Pattern of ICT Use for Communication Services at the MHC (N=48)

Facility	Frequency	Percentages
Radios	47	97.9
Television	45	93.8
Phones	46	95.8
Printers	48	100
Scanners	40	83.3
Photocopier	48	100

Source: Field Data (2012)

Application of ICT Facilities for Communication

As Table 3 illustrates, various ICTs facilities are deployedd at MHC for different purposes. The findings indicate that 42 (87%) of the respondents use them for e-mail, eight (16.7%) for Instant Messages, six (12.5%) indicated using it for Frequently Asked Questions, 32 (72.9%) for Facebook, 30 (62.5%) for Twitter, 25 (52%) for YouTube, whereas 40 (83.3%) mentioned Websites. As Table 3 demonstrates, Frequently Asked Question and Instant Messaging are the least areas that the respondents indicated applying ICTs for. This implies that the online user's desk for remote access is not active for users to ask various questions concerning the museum as compared to other communication activities indicated in Table 3. This was also noted during interviews and focus group discussions (FGDs). Parry and Sawyer (2005) assert that the use of different telecommunication services in museums help to capture the mind and interests of museum users. Moreover, Poole (2007) insists on using ICTs in many ways regardless of the need of the people and the environment.

Table 3: Application of ICT Facilities for Communication at the MHC (N=48)

What ICTs are Used For	Frequency	Percentages
Email	42	87
Instant Messages	8	16.7

Frequently Asked Questions	6	12.5
Face Book	32	72.9
Twitter	30	62.5
You Tube	25	52
Websites	40	83.3

Source: Field Data (2012)

Challenges to effective Use of ICT at the Museum and House of Culture

Technological obsolescence was indicated by 34 (70.0%) of the respondents as one of the challenges. Frequent updates were found to be rather costly to MHC as alluded to by one of the respondents:

> *Rapid changes in science and technology have brought about changes in ICT products. For example, frequent changes in computer softwares and hardwares is very costly. Coping with technological change poses a big challenge to us.*

Technologies such as audio-visual, printing and scanning, and integrated multimedia technology keep on changing as time progresses. This challenge indicates that the museum somehow failed to cope with scientific and technological changes to run and manage museum activities because the new innovations came up with updates on the technology that might be independent of the version in present use. In fact, some of the new innovations in the computer technology industry do not support previous technologies.

Forty-five (95.0%) of the respondents reported having inadequate skills in the application of ICT in the museum. Through interviews, it was also established that MHC had no IT/ICT personnel. As a result, ICTs facilities remained underutilised at the MHC. Moreover, the majority of the staff had little basic skills and the aged group working largely as technicians did not have adequate skills in ICT application. Marty (2003) explained that museums need to employ technical staff capable of using ICT. Moreover, Arinze (1987) and Edson (1997) stressed the need for having professional workers in various fields to provide quality service.

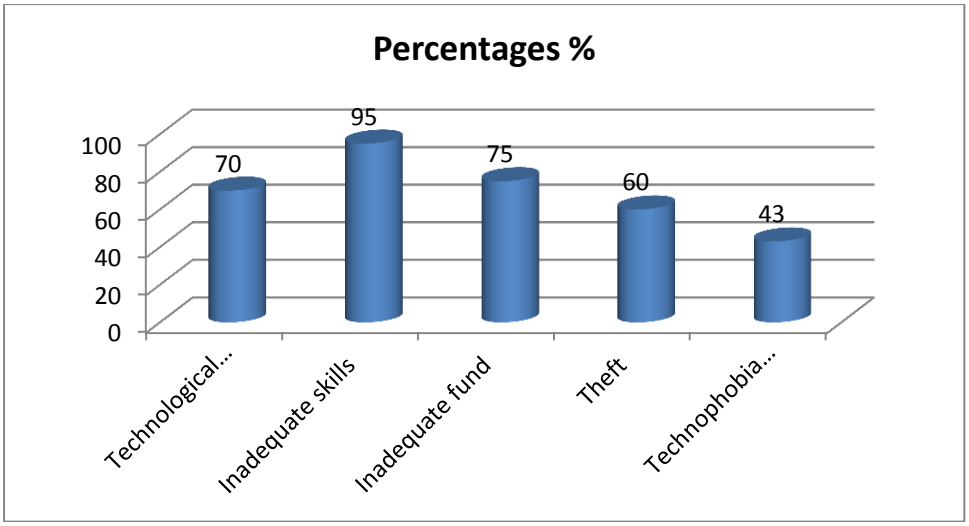

Figure 4: Challenges to Effective ICT Use at the Museum and House of Culture (N=48)
Source: Field Data (2012/13)

Some 36 (75.0%) respondents at the MHC identified financial constraints as a big challenge to the institution. The Museum and House of Culture as a non-profitable organisation depends on the government financial support to run its activities. According to the *National Museum of Tanzania Annual Report of 1972-1973*, most of the African museums face the challenge of shortage of funds in running their organisations. During interview, one management staff said:

> *The government allocates inadequate funds for museum research and development. Museum has to depend on external funders for their research and development activities. The external funders contribute a lot on museum research and development project. For instance, Sida has funded museum building extension and covered all in-house requirements such as furniture and ICT accessories.*

Another interviewee lamented that "the electronic access requires us to have things such as the computer, Internet accessories, and phones that have Internet connectivity because accessories are expensive, hence a few people access electronic information from the museum".

Another challenge mentioned by the respondents was theft. In this regard, 29 (60%) of the respondents indicated that museum collections are sometimes stolen. Also, during interview one respondent said:

> *The disclosure of information on various ICT tools may influence the rate of the loss of the museum collections through theft and computer hackers*

> *can tamper with sensitive electronic data and delete some information in museum collection databases.*

This means that the museum can apply ICT for various activities as Ambrose and Paine (2012) have explained. Indeed, where ICT can be applied, for example, in collection management, documentation of museum objects and operations, displaying and exhibiting various collections, communication, and in administration area, there is a need for a policy to guide the application of ICTs to be in place for security and ethical issues. As Lord and Lord (1997) have argued, museums should have an information policy and information systems plan to address the issue of intellectual property, Database Protection Act and museum regulations and rules to control museum information database against hackers.

Technophobia among staff was mentioned as another challenge. The study findings indicate that 21 (43.0%) of the respondents fear to use ICTs in their daily activities. During an interview one respondent admitted this challenge by saying:

> *Museum and House of Culture as an institution faces challenges as some staff members are afraid to apply the technology [available] in their daily duties. The technophobia challenge is mostly found among the aged staff and some few young staff.*

This implies that the museum needs to solve this problem. It is common for workers to feel shy to utilise ICT and also to treat it as a threat. After all, workers feel threatened to use ICT in institutions, as Parry and Sawyer (2005) have confirmed.

5.2 Conclusions

On the whole, MHC uses various channels of communication. It uses different ICTs in its operations, with electronic and computerised communication channels being the most preferable to the majority of the respondents. This implies that the potential for using ICTs effectively and efficiently in both promoting the museums and disseminating information that would raise the profile of the museum, as well as the dynamism in-service provision in line with new developments is there but this would depend very much on the strategies that would be in place for addressing the challenges hampering the effective use of ICT in museum promotion: inadequate skills, inadequate funds, technological obsolescence and technophobia among staff.

Recommendations

Based on the study findings and the attendant conclusions, the study recommends that the Museum and House of Culture should control the information flow in all museum operations by formulating an appropriate information and ICT policy within the museum; having in place a policy on database management toprotect museum information and collections against theft in addition to having a clear staff development programme. The museum should also poblish regularly museum annual report and researches; increase public awareness on museum potentiality; network with stakeholders and diversify funding strategies to generate income instead of over-dependence on government financial support.

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