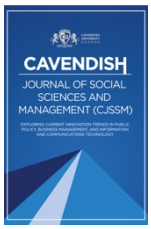

Information and Communication Technologies and Community Development in Ntungamo District, Uganda

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CJSSM
ISSN 2518-8623

Volume 1. Issue I
pp. 1-14, September 2022
www.cavendish.ac.ug
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Abstract
The world has embraced the use of Information Communication Technology (ICTs) to network as either service providers or consumers. Learning institutions, businesses around the world have used different ICT platforms to revolutionize services and enable customers to access services without the need to travel. Teaching, adoption and learning processes have relied on the use of ICTs like computers, internet, networks and software and smart phones. ICTs have been used to enhance, adopt and support new innovations and strategies to improve their produce and find platforms through which to sell them. The use of technology, whether for teaching, learning, trade or farming, has connected people in and outside their communities and regions with the purpose of accessing information. This study aimed at finding out the level of ICT adoption for community development in Ntungamo District. Using mixed methods approach, the study found that the community has knowledge on the use of ICT platforms like radios, televisions, friends and public spaces but with limited training on their use. Emphasis should be put on extensive training to support the community for development purposes. A shift in the adoption of more ICTs for community projects could go a long way in ensuring their sustainability.

Keywords: Information Communication Technology; community development

Introduction

There is a remarkable accelerating use of ICTs worldwide, Uganda inclusive for the purpose of development. This has enhanced initiatives by the governments, NGOs, education institutions, businesses and communities to adopt the use of ICTs to enhance social and economic development (Mulira 2006). Uganda has mainly used the different development initiatives at hand especially those in education, farming and other areas to encourage the sharing of information as well as to realise potential market for goods and services provided (Mulira 2006). Uganda has also taken active interest in protecting its products and services online through ICTs for example, a law like the Geographical Indications Act of 2013, was put in place to realise market potential for Ugandan products (URSB et al., 2013) and the adoption of online learning management systems to enhance education. Although the Geographical Indications Act was enacted, it has not yet been implemented largely because of the lack of a mandatory implementation strategy which also allows for the sharing of information among service providers and seekers (Tesh and Chidi 2018). The ICTs are therefore considered as ways to access market, learn new things and make decisions. The ICTs are like agents that connect the community to opportunities online. Despite the role of ICTs in engaging communities, there is need for a clear insight on the nature of the particular ICTs people use to solve community needs. The kinds of ICTs adopted will help the study find out to what extent community projects are identified, designed and implemented to ensure their sustainability.

The Study Objectives

This study therefore aimed at the following objectives:

a) To identify the various ICTs used for community development

b) To determine the prevailing levels of knowledge in the use of ICTs for community development.

c) To identify the challenges faced during knowledge sharing among community members.

d) To offer recommendations in enhancing the adoption of ICTs in community development.

The information technology revolution is speeding rapidly and more noticeable now because of a number of factors including the covid-19 pandemic. Many people have resorted to increased use of communication of ICTs and various social media platforms. The traditional community systems is rapidly giving way to frequent use of ICTs with significant improvements in teaching and productivity. This has been done by empowering users online with the right information at the right time and place for efficiency. Another advantage of the use of ICTs is that a lot of information can now be effectively generated, stored, analysed, disseminated and used to improve community activities by inclusion of ICTs. For example, one can have information about a development initiative that is packaged in form of a short story. Once shared through relevant ICTs, the community can use it to develop their areas or households. The use of ICTs in communities has therefore created a platform for which people can involve themselves as a community in development related initiatives (Paul, Katz & Gallagher 2004).

The role of ICT in development has improved community development and created a system where members are able to make decisions of what and when to provide services, to what audience and what quality is to be given. (Meera, Anita & Rao (2004). Information is given to ICT users at the right time enabling them to utilize it for decision making purposes. The community is able to plan the type of initiative to share and determine when to provide market orientation for the services (USAID 2010; USAID 2013).

The different ICTs used to communicate information among communities usually include the use of sms, voice calls, whatsApp and other social media platforms. Some of these need the use of a smart phone or prior installed software like whatsapp. This form of communication captures a wide audience and creates a social network through which information is shared. Opportunities are built by accessing a wider market as well. Community members can be able to post and see information about development initiatives and are then given the opportunity to join a wide value chain where more updated services are found, comparisons made and product and service improvements done. The opportunity to join community groups and unions is of an advantage because there is a lot to learn and adopt. For those people in the community who may not know where to access better services, the use of ICTs provides that chance even to compare cost and also get to the most accessible ones (Asenso and Mekonnen 2012).

In Uganda, the Uganda Communications Commission (UCC) and Uganda National Council for Science and Technology (UNCST) are the lead agencies that coordinate the process of ICT and development. The UCC and UNCST, trace, track and document the process of development in the country for public use and that of development agencies, researchers and others (Heeks 2008). Implementation of development related projects have been mandated to be monitored by a consortium of a number of government agencies that include line ministries like Ministry of Finance and Economic Planning, Uganda National Council of Science and Technology among others. These agencies have other major obligations leading to development related projects of which ICT documentation is not priority. This means it is quite hard to trace developments in ICT with these agencies. There is however need to have an ICT agency to track such development initiatives and projects through ICT usage to establish if there is a positive or negative outcome or even impact (Nampijja, 2010).

Literature Review

ICTs for Community Development

The use of Information, communication technologies has significantly increased worldwide with the aim of improving the path to development through institutions of learning, governments, NGOs, CBOs and well-wishers. Harris (2001) asserts that education institutions have embraced the use of ICTs more than other community members and has created a divide in terms of development. People in communities believe that adopting a new and advanced ICT is a waste of time because they do not necessarily need advanced ICTs to develop their communities. Certain smart phones for example have very advanced technologies that are not needed for certain community development initiatives. A simple sms which can be sent using any phone that

does not necessarily need to be a smart phone can communicate development related information easily (Al-Sharjabi 2019).

Uganda has established development initiatives at grass root level through advocacy, policy implementation and local government. Rural communities have embraced projects that have worked through social, economic and political development. All these initiatives have been enhanced with the adoption of advancing technologies. Uganda has not been able to trace development through ICT because it has not had an institution to do this directly (Nampijja, 2010). However, through different indirect initiatives a number of bodies have tried to implement activities but have not been able to trace these developments in ICT because none of the bodies have a fully independent ICT department as its mandate to do so.

Although ICT adoption plays a crucial role in development and improvement of livelihoods, communities at grass root level struggle with adoption and accessibility of services, information and ICT tools. They are limited to public or shared phones that in most cases are not smart phones, community radios, televisions and secretarial bureaus. It is a few members with smart phones and they are mainly the youth who may not use them for community development purposes (Heeks 2008). Adoption to new and advanced technologies may be a limitation because of the lack of knowledge on the updated ICTs.

Knowledge levels on the use of ICTs for community development.

ICT platforms like online spaces, internet, Facebook, twitter, WhatsApp and others have been known as a few of the avenues for sharing knowledge effectively and efficiently. They have enabled users to develop social networks based on the need. Collaborative projects have emerged and participation enabled. Online groups have shared and learnt new ways of implementing projects, developing ways of sharing information on particular products and issues as well as improve on products. This has still widened the social networks for participants and bred sustainable projects and structures for development (Rogan 2009). This kind of approach to development has been embraced by people who have knowledge on and skill in using new ICTs.

Challenges in knowledge sharing among communities.

It is assumed that as technology advances, everybody is expected to embrace and know how to use it in its current form. Participation in new ICTs may be among the few who may afford the gadgets that come with the technology. Affordability and interest in learning something new all the time could be a challenge for people to adapt. Such adaptations must be accompanied with trainings on usability and what is to be gained after the trainings. For someone whose literacy skills and income may not allow the adoption of new technologies may not embrace the new ICTs and could probably opt to share any form of information in places where other community members gather like religious places, markets and others. This definitely limits the need for knowledge on use and adoption of advancing ICTs (Nampijja 2010). Bala et al 2002 highlights the cost of connecting to ICTs, language resources where community members may not understand the language the ICT is to be used and lack of coordinated approaches where a number of professionals are unable to provide the right skills to move forward are some of the major setbacks

that have hindered the adoption of ICTs in development. Not many ruralareas have consistent access to ICTs, internet, electric or solar power to charge gadgets and the knowledge to sustain and use them.

Enhancing the adoption of ICTs in community development

For projects to thrive through the adoption of ICTs, it has been known for implementers to adopt mutual project implementation strategies where by, one of the implementers being conversant with ICTs, and another not so conversant can work together. These implementers learn from each other as well as train on the use of the new ICTs. This widens the social interactions and breeding of new ideas on project implementation. Extending such similar development ideas enhances trainings and adoption of better technologies like the use of a more high-tech phone to share information and provide services with ease (CEEWA 2008).

Methodology

The study concentrated on community members of Bwongyera, Kikuto and Kyaruhuga of Ntungamo District. It is located in western Uganda bordered to the north by Mitooma District, Sheema District and Rwampara District, going from west to east. The general coordinates of Ntungamo district are: 00 53S, 30 16E. The district covers 2,051.4 square kilometres (792.0 sq mi) of which approximately 0.2% is open water, 3.4% is wetland and about 0.01% is forest.

The study adopted a mixed methods approach which included the use of qualitative and quantitative methods of data collection. The qualitative approach was used to mainly understand the problem from the perspective of the respondents to mainly obtain specific information about opinions and behaviours of respondents. The quantitative approach was used to provide measurable evidence to help in establishing the cause and effect to yield efficient data collection procedures to create the possibility of replication and generalization to a population, to facilitate the comparison of groups, and to provide insight into a breadth of experiences.

The motivation for using the mixed methods is it provides a better understanding of research problems and complex phenomena than either approach alone (Clark et al., 2007). Creswell (1999) says one method alone may not give accurate results while a combination of both methods enhances integrity of findings. Several authors pointed out the advantages of using mixed methods (Teddlie et al., 2009, Creswell 1999, Clark et al., 2007) which include participant enrichment, instrument fidelity, treatment integrity, and significance enhancement in order to gain an in-depth understanding of the issues under investigation, the paper employed both primary and secondary data collection and analysis methods to reach its conclusions. The secondary data analysis used an explorative literature review approach which involved a review of peer reviewed publications. The research process and approaches included the selection of respondents, development of tools and the means through which data was collected and analysed.

The population of the study entailed a total of 260 community members whose registration was attained from the local council chair persons of each village under study. These members are

those who are residents of the study areas, are involved in community development projects and have access to at least one form of ICT used for purposes of development related issues. The respondents who took part in this study were selected using a purposive sampling technique and out of the 260 targeted, 210 were chosen using the Krejcie and Mrogan's 1970 sampling determination table. According to Ma (2007), a purposive sampling technique is a non-probability technique of establishing a sample space for a given study. Thus, respondents to this study were selected on their unique qualities that made them likely to provide the desired opinions and experiences about the use of ICTs in their communities for development. The participants were selected from the three communities of Ntungamo district as shown in the table below.

Table 1: Study Respondents as per the village

	Name of Community	Population	Sample size	Sampling technique
1.	Bwongyera	95	76	Purposive sampling
2.	Kikuto	90	73	Purposive sampling
3.	Kyaruhuga	75	63	Purposive sampling
	Total	260	210	

Source: Primary Data 2022, Krejcie & Morgan 1970.

The methods used to collect data included the Focus Group Discussions (FGD), questionnaire and desk review.

Three (3) FGD comprising of at least 12 members each were carried out in each village. The FGDs broadly discussed how the community members acquire their knowledge on the use of ICTs and some of the challenges they face during the process. The focus group discussion guide was used with guiding questions on the subject matter.

Beside the primary data collection methods used. A desk review of secondary data was done. This was done to understand knowledge levels of community members on the use of ICT for development. The existing documents related to the study problem and variables in form of reports, published and unpublished research, journals, electronic journals, websites and databases to gain more information on the study problem. Sekaran (2003) classifies these documents as secondary sources of data and asserts that this method saves time and reduces the cost of gathering information.

The quantitative data collection method used was the survey method to collect information from men, women and youth using the questionnaire. It had both open ended and closed ended questions. Kothari (2005) terms the questionnaire as the most appropriate instrument due to its ability to collect a large amount of information in a reasonably quick span of time because Closed-ended questions can be more specific, thus more likely to communicate similar meanings and questions to the respondents. To ensure reliability and validity of the instrument, the test retest type of reliability was used where a similar question intending to bring out the same response was asked more than once in the tool. This was meant to ensure that the respondents give consistent results thus realizing reliability. The responses of questions were then correlated in order to evaluate the test for consistency and stability. To measure validity, the logical validity was used where the knowledge on use of ICTs, everyday experiences on ICT use on community development projects were measured.

Results and interpretation of findings

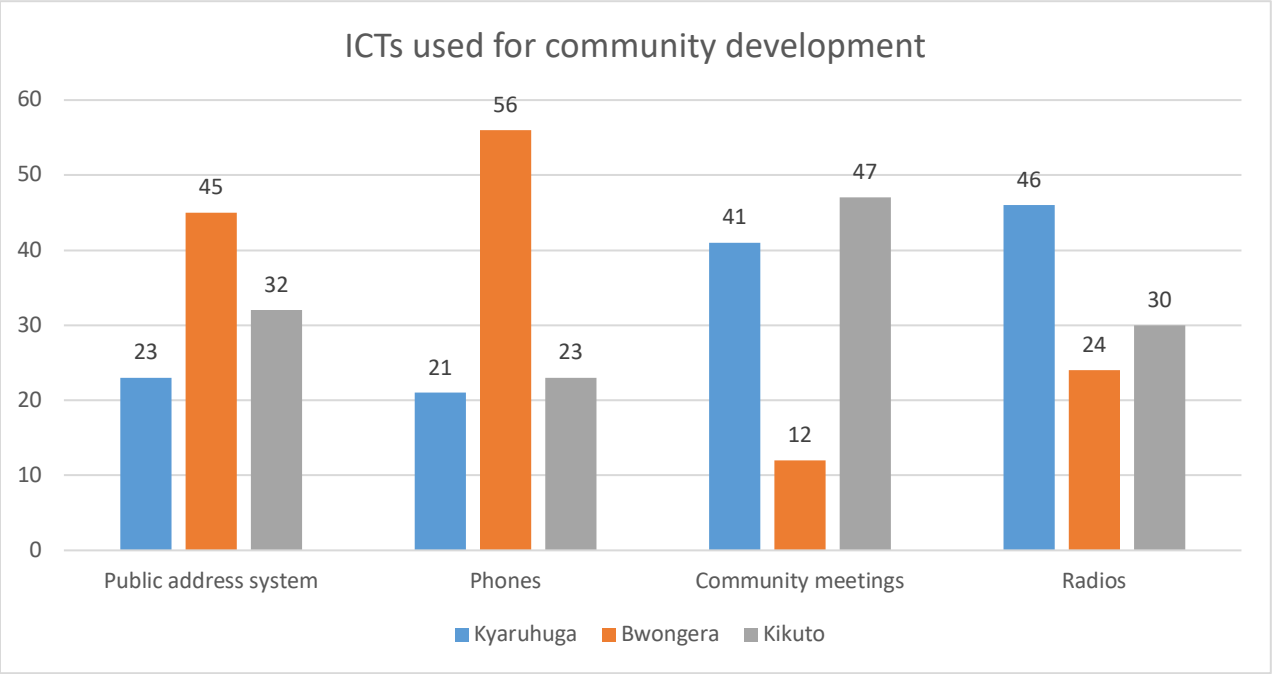
At least a total of 260 respondents were targeted for the study and a total of 210 took part in the study with a response rate of 84% which is considered sufficient to represent the responses of the community members in all the three villages of Bwongyera, Kikuto and Kyaruhuga of Ntungamo District of Uganda. The FGDs were used to gain knowledge levels of community members on the use of ICT in development while the questionnaire was used as a validation step for information collected. Out of the 210 respondents, 53.3% were male and the rest female. One in two respondents (47%) were between the ages of (36-50) while (36.8%) were aged (26-35). 16.2% were the ages of 50 and above. 8 of the respondents were community leaders holding various positions of LC chairperson, woman representative on LC 1 council, religious leaders etc.

Different ICTs used for community development

The study sought to find out the ICTs the community members were aware of that can be used for development related issues. At least 9% of the members mentioned that they use the phone and the 47% public address system mainly to make announcements in public areas like markets, to make calls and sms community members on issues related to 20% community meetings to discuss development projects. 24% of the respondents mentioned the use of the radio to get information on what type of products to use for all development related issues, farming and village meetings. Through the focus group discussions, all members from Bwongyera village highlighted that they use the public address system more as compared to other villages to convene members to discuss problems in the community and how best to solve the issues while involving everyone.

The issues range from improving safety in the area, adopting new farming techniques especially for Kyaruhuga village and others. In Kikuto, the participants highlighted the use of community meetings to discuss community development issues. The fact that respondents are using mainly radios and public address systems, this means that there is limited knowledge on the variety of ICTs that can be used for development related issues. There is also a possibility and implication that using limited ICTs can deter and slow down the community members from exposing themselves to development opportunities.

Figure 1: ICTs used for community development



Level of knowledge in use of ICTs for development

In order to establish the levels of knowledge among community members in terms of access to content through ICTs and ways it is delivered this research sought to establish the current knowledge levels and how the information is delivered to them. This meant inquiring about if members belonged to any community group and how often then meet. The study found that 56% of the members especially those from Kyaruhuga have village committee groups they belong to and mainly share information through sms and public address system.

The focus group discussions held in Kyaruhuga agreed that they also have a few trainings they attend through NGOs at least twice a year. These trainings focus on building their skills on various agricultural innovations as well as wealth creation initiatives. Bwongyera focus group discussion participants also highlighted that they have more NGOs that train community members on development related issues like marketing produce on a platform designed by that NGO. This information is also available on radio stations. At least 30% of the respondents get the information through radio programmes. This means more people not belonging to a community group and participating in trainings or other activities implies lack of knowledge among respondents.

Access to information on community development

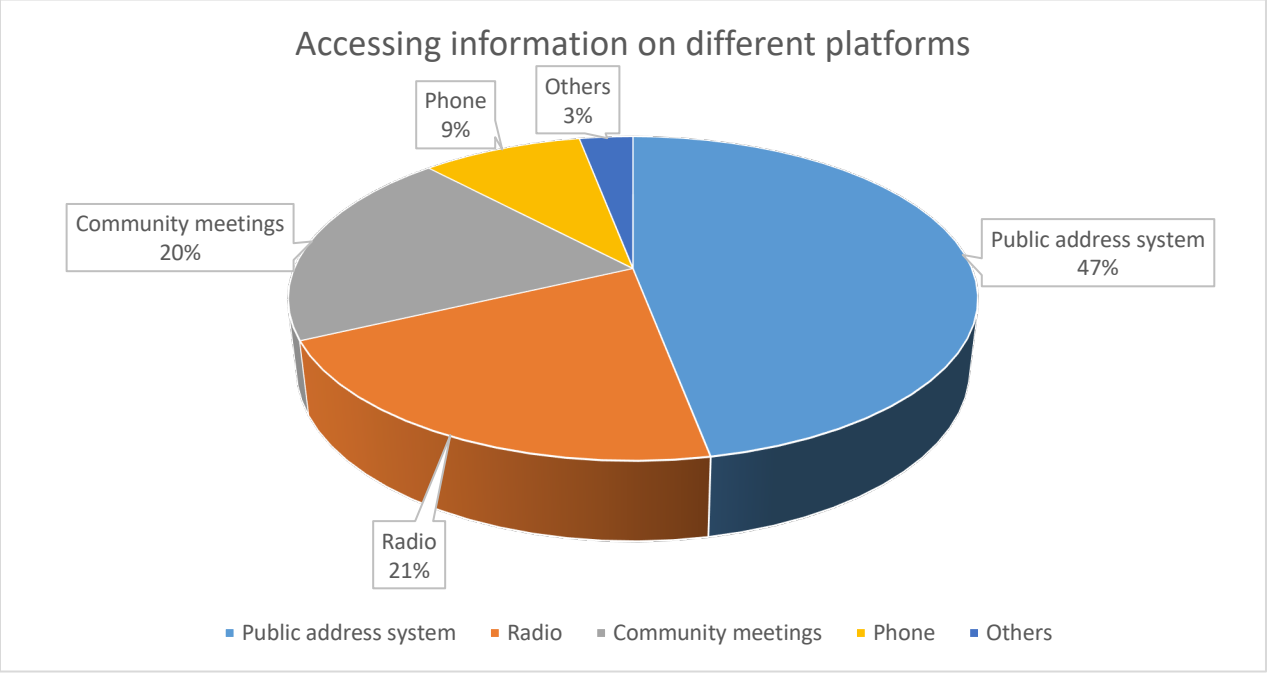
Furthermore this research sought to establish ways in which the community members access information about the different development programmes and the results revealed that majority (100) of the community members indicated to get information from community meetings, followed by Radio adverts (22), followed by weekly markets in the respective villages using the

public address system (180) especially in Bwonjera village, followed by the fellow friends (8) that have got the information in that order of preference while the least indicated to use television (5), social media like whatsApp (5). This implies that respondents stand a high chance of accessing training if the access to information is through the community meetings. All participants in all focus group discussions from all the three villages Bwongera, Kyaruhuga and Kikuto said that they do not get training opportunities often. This means that sometimes when they access certain information through various avenues but have not been trained on its use, they may not be able to develop in any way within the community.

Access to the different platforms

Respondents were asked to indicate on what platforms the access information in relation to community development initiatives. As shown in the figure below and from the analysis of results, it was evident that majority (47%) 99 respondents access information through the public address system that are found in communal areas like markets, (21%) 44 listen to radio daily which they own or owned by a friend or neighbour and (20%) 42 get information through community meetings. While (9%), 19 use their phones to surf the internet and go to social media. However, social media is limited to WhatsApp. (3%) 6 use other platforms like through religious and cultural gatherings. The participants that took part in the focus group discussions of all villages further highlighted that they greatly reduced buying the newspaper because they can access the online version through internet. This implies that if access through other platforms is enhanced, participation among respondents will increase more frequently and development enhanced.

Figure 2: Access to information for development



Preferred time to access information for development

This study further sought to establish the respondents preferred time during the day (morning, afternoon, evening, night, weekend) that they would access information related to development in their community. The results revealed that; majority of the respondents (98) preferred to receive information through community meetings and 83 preferred through radio programmes while 20 through a friend who has attended a meeting or training. All participants that took part in the focus group discussions from all the villages of Bwongera, Kikuto and Kyaruhuga preferred receiving this information in the evening and afternoon time of the day when they are relaxing. These are the also the times preferred to attend any form of trainings. The trainings emphasized on include learning how to use ICTs for community development initiatives, sell and buy things and so on.

Challenges faced during knowledge transfer

As a means to establish the possible ways ICT can be used to improve knowledge transfer and content delivery in the community, this research further sought to establish the challenges faced during this process and they were highlighted as follows.

Through focus group discussions and survey, all respondents highlighted that they do not have a wide knowledge on the use of various social media platforms and ICTs because they do not all have smart phones. Even for those who have access to smart phones, they do not know how to use all the applications that come with them. Most members rely on the radios, public address systems in communal places for information in regards to announcements and development related issues.

Although community members highlighted that they have been trained, these trainings have been accessed through NGOs and for the period of a particular project being implemented. The projects usually have particular outcomes that implementers are not willing to divert and include community training needs that may enhance their knowledge on ICT use in relation to community development. One focus group discussion highlighted that one NGO trained farmers on sharing information about farming where an sms platform was developed. Community members exchanged information on available products at a particular time. Once the project elapsed, the sms platform ceased to function.

It is quite challenging for participants who took part in the focus group discussions to access information on development because they said they do not know how and where to get the relevant information. NGOs are more prominent in creating advocacy as compared to other institutions. However, their efforts are project based. Once a community member becomes part of that community after a project has begun, one may not get the proper information and may also not gain from the project.

Recommendations

The national information and communications technology policy for Uganda (2014) by the Ministry of Information Communications and Technology aims at deepening utilization of ICT services by government, private sector and the wider citizenry by prioritizing awareness creation and mind set change. It also prioritizes increasing penetration of ICT equipment, services and applications. It however does not strategize on the people at grass root level. Community groups or organizations and the government should put in place strategies to improve information access among members at grass root level by implementing advocacy strategies on the available ICTs communities can use in development projects of their communities.

Currently, people at grass root level are not aware of the opportunities that can improve their development initiatives through the use of a wide range of ICTs. There is therefore need to increase accessibility of content on development to community members at grass root level. This can be done with the help of relevant bodies like the Uganda Communication Commission (UCC) to instruct media houses to support in airing out content that can increase knowledge on the use of ICT among communities. For example, if a community has a development related program that they would like to share with other members on a wider scope, they can use the free media space to share the information as part of community outreach. Furthermore, UCC can explore the use of digital advertising boards in strategic public spaces like government markets, hospitals among others to deliver the digitised and localised development related content.

Since there is a big group of community members that have no access to smart phones especially in Kyaruhuga village it is important that development application developers also focus on developing applications that are not internet connectivity intensive and those that can be used by non-smart phones users.

There is also need to widen the scope of those institutions that provide trainings on development. This should not be left to NGOs who when funding elapses, projects die out. There is need to have government aided sustainable ICT friendly projects that the community can be able to embrace for decades.

Conclusions

It is a well-known fact that ICT can revolutionize development in many ways. ICT projects are yet to make a breakthrough in online information dissemination for development. From this study, a number of observations were made and conclusions deduced as discussed below. There is limited use of ICTs in development related initiatives. The levels of participation in community meetings is very high so discussion of community development related issues through ICTs is limited. This means there is lack of awareness of existence of various ICTs to be used to deliver development programmes. Generally, there are several ways through which community members' access vital information and these include radios, weekly markets and friends. The community members seemed to appreciate more the traditional media avenues such radios, public address systems and community meetings since they do not incur extra costs while accessing them as compared to when using the mobile phones.

The community members preferred to converge in the evenings and afternoons when they are relaxing to listen to any development related initiative. The lack of consistent training on the adoption and use of various ICTs hinders community members from accessing development related initiatives. It is recommended to have government aided initiatives that have the communities involved for sustainability purposes. The need for training members on the use of ICT in the community development initiatives is vital for sustainability of projects.

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