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Information Seeking Patterns and Telecentre Operations: A Case of Selected Rural Communities in Tanzania

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Abstract

Information needs assessment is critical in developing and running relevant information services. This article explores the information needs and information-seeking patterns of the people living in communities surrounding telecentres. The research was based in four rural districts in Tanzania which have telecentres. These were Sengerema, Magu, Karagwe and Ngara districts. The research was done utilising the Critical Incident Technique (CIT) to determine how people or communities seek information concerning problem-solving, decision-making or question-answering situations. CIT was also used to determine the extent to which ICTs were used in seeking information. It was found that business and agricultural related information were the main information needs of the people in the communities involved in this study, however this information was rarely provided by the telecentres. The study further found out that face-to-face communication and the radio were the major sources of information that the respondents used. This study recommends that management of the telecentres should regularly assess user information needs in order for telecentres to have an impact on rural communities.

Introduction

The ultimate aim of any information service, including telecentres, is to meet the information needs of its community. Soergel (1976, 257) and Dalton (1992) pointed out that the ultimate objective of an information system (or services) is not subjective satisfaction, as expressed by the users, but improved task performance, problem solving and decision making. The best way to assess the ultimate value of an information system and the information it provides is by measuring the uses that are made of information and the subsequent impact of that information on users' scientific and technical activities. Ikoja-Odongo and Mostert (2006) pointed out that the deciphering of questions concerning information requirements can be done from a systems point of view, as well as from an individual's perspective.

Information needs assessment is critical in developing and running relevant information services (Kaniki 1995, 9). Many of the information services that are based on new technologies such as telecentres are sometimes under-utilised, or are not in line with the information needs of the communities they serve. The study of information-seeking behaviour of the informal sector entrepreneurs in Uganda using Critical Incident Technique (CIT) revealed that modern/exotic models of information transfer based on textual media and ICT exhibit less impact on the entrepreneurs' information needs and use because of poverty, illiteracy and poor information infrastructure (Ikoja-Odongo & Ocholla 2004, 54).

Access to ICTs is growing as the number of community-based ICT initiatives in the form of telecentres is mushrooming in many developing countries (IDRC 2002; Ernberg 1998). The question is, to what extent and for what purpose is this access being used? How is this access used in information seeking and what particular information needs lend themselves to using information provided by ICTs?

The purpose of this research was to determine the information needs and information-seeking patterns of the people living in communities surrounding telecentres. The research was based in four rural dis-

tricts in Tanzania that have telecentres. These were Sengerema, Magu, Karagwe and Ngara districts. The research was conducted using Critical Incident Technique (CIT) as a methodology to determine how people or communities seek information concerning problem-solving situations, decision-making or question-answering situations. CIT was also used to determine the extent to which ICTs were used in seeking information.

Literature review

This section provides the definition of information, information need and information-seeking patterns. These are derived from various sources. These operational definitions provide a common understanding of the concepts that surround the discussion on information seeking patterns and telecentre operations.

Information

Case (2002, 5) defined information as any difference that one experiences in one's environment or within one's self. According to him, information refers to any aspect that is noticed in the pattern of reality. The definition that was adopted in this study is that of Kaniki (1989). He defined information as ideas, facts, imaginative works of the mind, and data of value potentially useful in decision-making, question answering or problem solving (Kaniki 1989, 191).

The information need

The information need concept has been defined by a number of authors. Said (2003, 10) defined information need as the requirement for facts, data or ideas for a certain purpose Kaniki (1989, 191) defined information need as the state of lack of a desirable requisite or commodity (namely information) necessary to deal with a situation, as an individual (or as a member of a given community) sees fit. Case (2002, 5) said information need is the recognition that personal knowledge is inadequate to satisfy a goal that needs to be achieved. Maepa (2000, 11) explained that the concept of information need does not only presuppose the lack of information; it goes beyond this by linking the need with the use of that information to deal with a difficult situation, or to solve a problem. He stated that information need is therefore always situation specific. Ikoja-Odongo and Mostert (2006) further pointed out that an information need is a requirement that drives people to seek information.

The present study defined information need as a situation that arises when an individual or member of the community encounters a problem that can be resolved through some information. Consumption of information results from a need for information. This means that when a person has identified his/her information needs, then he/she is in a position to seek for information to meet those needs and is better prepared to articulate his/her information needs than before.

Information-seeking patterns

Information seeking can be defined as a conscious effort to acquire information in response to a need or gap in knowledge (Case 2002, 5). It is a process by which an individual goes about looking for information and is a complimentary process to information need (Ikoja-Odongo & Ocholla 2004). Maepa (2000, 13) defined information-seeking patterns as the process of identifying, choosing and locating the likely information provider that will satisfy the information needs of the individual. It is concerned with who needs what kind of information, for what reasons and how that information is found by the user, evaluated and eventually used. Information seeking follows the identification of an information need.

This study regards the term information-seeking pattern as synonymous with the term information-seeking behaviour, therefore the two terms are used interchangeably. Kaniki (2001, 195) argues that the concept of behaviour in information-seeking behaviour refers to some stimuli to which a person reacts in order to fill an information gap. The concept of pattern in patterns of information seeking refers to the existence of a logical sequence or order of seeking and searching for or using information which is followed by an information seeker, in trying to locate information.

The concept of information behaviour goes hand in hand with information seeking and it encompasses information-seeking as well as the totality of other unintentional or passive behaviour (such as glimpsing or encountering information), as well as purposive behaviours that do not involve seeking, such as actively avoiding information (Case 2002, 5). Ikoja-

Table 1: Districts, Telecentres and Respondents Involved in the Study

District	Telecentre	No. of Respondents
Magu	Crop and Marketing Bureau (CROMABU) Telecentre	60
Sengerema	Sengerema Multi-Purpose Community Telecentre	53
Ngara	Ngara Multi-Purpose Community Telecentre	50
Karagwe	Family Alliance for Development Cooperation (FADECO) Telecentre	40
Total		203

Odongo and Ocholla (2004) said information-seeking behaviour is a process that requires an information-seeker to apply personal knowledge and skills, or what might be called "personal information infrastructures", such as a person's cognitive abilities, his/her knowledge skills in relation to the problem/task domain, knowledge and skills in general, knowledge and skills specific to a system, and knowledge and skills regarding information-seeking.

Wilson (1981) explained that information-seeking behaviour results from the recognition of a need, perceived by the user, who, as a consequence, makes demands upon formal systems such as libraries, information centres, online services or expert persons, in order to satisfy the perceived need. The present study considered information seeking as a process by which a single individual or members of the communities surrounding telecentres look for information that bridges the gap between their information needs and their information sources.

Overview of telecentres involved in this study

A telecentre is a public facility in the community that affords people the opportunity to use information and communication technologies (ICTs). The major purpose of telecentres in Tanzania, as in other developing countries, is to bring the benefits of ICTs to the people living in rural areas. There are about 19 telecentres at the present time in Tanzania (Chilimo 2009). Up until the time of this research, rural ICT provision in Tanzania was accorded a piecemeal and development project-based approach. Rural ICT provision is mainly done by small-scale, and in most cases isolated, projects in the form of telecentres (Mercer 2005). Different institutions and NGOs, with the assistance of donors, have been starting telecentres in different parts of the country. Because of this approach, the diffusion of ICTs in rural areas has been uneven, with some rural areas completely left out. The research involved four telecentres located in four rural districts in Tanzania as shown in Table 1. The telecentres were selected on the basis of the criteria outlined below.

Location: The telecentres involved in study were those located in rural and peri-urban areas. Were mainly villages or district headquarters

Service offered: Telecentres involved included those offering a full range of ICT services beyond telephony such as Internet, email, photocopying, computer training, faxing and scanning of documents

Telecentre maturity: The telecentres selected were those which had been in operation for a period of at least one year, to justify some kind of successful evaluation

Mode of operation: The selected telecentres had various modes of ownership/operation in order to see the performance of these telecentres on the basis of various modes of operation, for instance privately owned, NGO owned or community owned

Magu telecentre

Magu telecentre is located in Magu district, Mwanza region. The operations of this facility started in 2001. The telecentre is operated by the Crop Marketing Bureau (CROMABU), in collaboration with

the Tanzania Chamber of Commerce, Industry and Agri-culture (TCCIA) and the International Institute for Communication and Development (IICD) (CROMABU 2006; Menda 2004). The focus of Magu telecentre is the agro-information systems aimed at enabling producers to access market opportunities and farm inputs such as fertilisers, seeds, production techniques and packaging. The facility has an Internet connection and offers a range of other ICT-related services to the community. Other services offered were computer-training services, photocopying, printing, faxing and scanning of documents (CROMABU 2006).

Sengerema Multipurpose Community Telecentre

The Sengerema Multipurpose Community Telecentre is located in Sengerema district, Mwanza region. It is a development-oriented, multipurpose community telecentre, which was established in 2001 within the International Telecommunication Union (ITU), the International Development Research Centre (IDRC), United Nations Development Programme (UNDP) and United Nations Educational, Scientific and Cultural Organisation (UNESCO) framework (ITU 1998). The telecentre focuses on ICTs and ICT-related services as its core business. The Sengerema Multipurpose Community Telecentre provides ICT equipment, connectivity and training to the community (UNESCO 2005). The centre has also developed a variety of ICT-related services designed to benefit the community as a whole. This is one of the most developed telecentres in Tanzania and offers a range of ICT services, including computer training to the community (UNESCO 2005).

Ngara telecentre

Ngara telecentre is located in the remote northwest district of Ngara, Kagera region, close to the borders of Rwanda and Burundi. This telecentre was established in 2003. Ngara is a district with a number of camps hosting refugees who fled civil wars in Burundi and the 1994 genocide in Rwanda. Ngara telecentre was established as a unique project to bring synergy between the communication and information needs of the local communities, the relief organisations working to help refugees and the refugees seeking to communicate with their families and friends (ITU 2004). The telecentre is funded by the International Telecommunication Union (ITU), in partnership with the United Nations High Commission for Refugees (UNHCR) and the United Nations Educational, Scientific and Cultural Organisation (UNESCO). At the local level, the executing agency for the project is the Tanzania Commission for Science and Technology (COSTECH) (ITU 2004). Ngara telecentre offers a range of ICT services, including public access to the Internet, computer-training services, photocopying, printing and faxing services.

Family Alliance for Development and Co-operation (FADECO) telecentre

FADECO is a non-governmental organisation located in Karagwe district, Bukoba region. FADECO has a well-equipped information resource centre which was upgraded into a telecentre in November 2004. FADECO acquired Internet connectivity with assistance from the Regional Agricultural Information Network (RAIN) (FADECO 2007). The telecentre is stocked with offline electronic resources such as CD-ROM libraries and audio-visual materials. It offers a range of services, including public access to the Internet and computer training.

Research approach and methodology

This study uses Critical Incident Technique as methodology to study the information needs and seeking patterns of the people living in selected rural communities in Tanzanian. CIT was found useful for carrying out this study because the investigation was mainly qualitative. Furthermore, the ability of the CIT methodology to determine the information needs and seeking patterns using incidents experienced by the respondents was one of the attractions for using this methodology

CIT is a qualitative, open-ended and retrospective method which examines how people or communities seek information concerning problem-solving situations, decision-making or question-answering situations. Respondents were asked why and how they sought information in a particular problem-solving, decision-making or question-answering situation, and through this process various common situations or the critical tasks of a community were identified (Kaniki 1994, 11; 2001, 195; Stilwell 2002, 70).

Kaniki (2001, 191) stated that in daily life every person is faced with decision-making situations or problem-solving situations or questions. These may be abstract, cognitive or real. They may be mental or physical, or both. However, because of one's experience or acquired knowledge, which is an accumulation of information with specific application, some of these situational problems, decision-making processes or questions become 'normal'. In other words, a person would either have developed ready solutions to such 'normal problems', or have ideas on how to solve or seek assistance or solutions to such 'problems.'

Both individuals and groups of persons often encounter decision-making or question-answering situations whereby they lack the solutions. In other words, they experience a gap, or are in a state of lacking some commodity, which must be filled (Kaniki 2001, 191). Kaniki (2001, 192) explained, "this state of uncertainty requires information as a stimulus to create a change in one's level or degree of uncertainty." In order to meet such information needs, the level and nature of uncertainty needs to be assessed. The appropriateness of the information provided in response to a need depends on the extent to which it resolves the given need; here the seeker is the judge. A need for information can be recognised or unrecognised, expressed or unexpressed. Some information needs may be recognised by the information-seeker him/herself or by the information expert in engaging with the seeker. The former and the latter may have to "work together towards 'disentangling' and establishing the actual need" (Kaniki 2001, 192).

The approach to information seeking behaviour using CIT was informed by the broader theory relating to an Anomalous State of Knowledge (ASK) which was advanced by Belkin (Belkin 1980). The ASK approach suggests that the basic motivator of information seeking is an anomalous state of knowledge which exists when a person recognises that there is an anomaly (that is a gap or uncertainty) in their state of knowledge regarding a situation. Faced with an ASK situation individuals may attempt to address their uncertainty by requesting or consulting information (Case 2002, 69).

Stilwell (2002, 70) described ASK as a qualitative approach which assists exploration of how people or communities seek information concerning situations about which their knowledge is incomplete. Insights from both the broader ASK and the CIT informed the design that was used to determine the information needs and seeking-patterns of the respondents in the present study. The approach was used to find out in what particular situations people in these areas seek information and the extent to which ICTs are used in information seeking and what information needs lend themselves to using information provided by ICTs.

The Critical Incident Technique was first developed from work in the U.S. Army Air Forces' Aviation Psychology Program by Flanagan in 1954 (Edvardsson 1992, 9). CIT was originally used to assess performance in professional practice and it has been applied in service research such as in health and in aviation sectors. The technique is used as a tool for reflecting customer-perceived quality and customer dis/satisfaction, based on positive and negative critical incidents (Edvardsson & Roos 2001, 251). The technique has also been used in market research, as it allows detailed descriptions of critical incidents as customers perceive them (Edvardsson & Roos 2001, 251). CIT is regarded as a flexible set of principles which may be modified for the situation under study (Urquhart *et al.* 2003). In recent years the technique has been adopted by information professionals. Various libraries and information science researchers have applied the technique to study the information needs of specific groups of people and communities (Fisher & Oulton 1999; Ikoja-Odongo & Ocholla 2004; Kaniki 1995; Stilwell 2002; Urquhart 2001; Urquhart *et al.* 2003).

A critical incident is defined as observable human activity that is sufficiently complete in itself to permit inferences and predictions to be made about the person performing the act. To be critical, an incident must occur in a situation where the purpose or intent of the act seems fairly clear to the observer and where its consequences are sufficiently definite to leave little doubt concerning its effect (Davis 2006; Edvardsson 1992; Edvardsson & Roos 2001, 252; Flanagan 1954, 327). A critical incident can further be depicted as the one that can be described in detail and that deviates significantly, either positively or negatively, from what is expected.

A critical incident can also be described as interaction incidents, which the customer perceives or remembers as unusually positive or negative when asked about them. Customers recall them and tell them as stories (Edvardsson & Roos 2001, 252). CIT encourages participants to tell their story. The situa-

tions that are explored are those that are memorable and that are more likely to be faithfully recalled, although there is no guarantee that this will be the case.

CIT has been compared to sense-making methodology developed by Dervin in 1972 (Dervin, Foreman-Wernet & Lauterbach 2003, vi). The sense-making technique has been applied in various studies to determine user information needs and information-seeking patterns. These include Savolainen (1993, 2006), Morris (1994), and Ellen (2003, 77). Dervin (1996, 5) argues that information needs are situationally bound, and that information seeking and use occur when individuals find themselves unable to progress through a particular situation without forming some kind of new 'sense'. In sense-making techniques data is collected by framing questions which ask respondents to identify situations, gaps faced, gaps bridged and helps them to make sense of situations.

CIT was chosen in preference to the sense-making method because of its applicability to the current study and the need to focus the investigation of the information needs and seeking patterns on the incidents experienced by the respondents. Both techniques study the information needs by framing questions based on the worldview of the users, rather than from the observer's world view. Like CIT, sense making seeks to situate respondents in a specific moment related to a phenomenon of interest and ask them to discuss an incident. CIT differs from sense making by being more focused on the in-cidents, whereas sense-making takes a wider approach.

Administering the CIT

The instrument used to administer the CIT was adapted from the one used by Kaniki (1995) in an exploratory study of the information needs of two rural communities in South Africa [1]. The decision to re-use Kaniki's (1995) instrument was motivated by its focus on information needs and information-seeking patterns of the people living in rural communities, and the fact that this instrument was tried and found to be successful.

In the present study, a critical incident was defined as one (decision-making, question-answering or problem-solving) where a member of the community had an encounter which was considered to be a critical problem. Respondents were asked to recall, in detail, a critical incident they had experienced. Each respondent was asked to describe a situation or instance which he/she had experienced within the previous month in which he/she was supposed to make a decision, find an answer to a question, solve a problem, or try to understand something. Respondents were asked to explain as many situations as they could remember. For each instance, they were asked to describe the most important questions they needed to answer, the most important things they wanted to learn or find out and the most important things they wanted to understand better or just think about.

Thereafter the respondents were asked to explain the context of each of the instances/situations whether it was work/business, family issues or school related. Respondents were asked to explain whether (depending on the nature of the situations the respondent described) they attempted to reach a decision, answer the question, solve the problem or understand what they needed to understand. Finally, they were asked how, where, from whom, or by what means, they received the answer or help, and the extent to which they were satisfied or dissatisfied with the answers.

Some of the disadvantages of the CIT are the difficulties associated with the ability of the respondents to recall the important incidents and much of the information seeking process. However, it is argued that people will often remember what they consider to be critical to them (Kaniki 2001, 195). The technique is less equipped to explore those situations in which there was no decision to act, or where the user was unaware of the information need or suppressing (consciously or unconsciously) the perception of the information need as a soluble problem. Despite all these criticisms, Kaniki (1995, 11) is of the opinion that the CIT can still be used to assess community information needs. The technique is particularly useful in developing countries, where most people are unaware of the kind of services provided by the information systems.

The research instruments used for data collection from users and non-users of the telecentres were translated into Swahili, because Swahili is the most commonly used language in the researched areas.

Research findings and discussion

Information needs

Of the 203 people interviewed in all four research sites, 114 (56.2%) replied affirmatively that they

Table 2: Categories of the respondents' information needs

Categories	Explanations
The need for business information N=44 (32.1%)	Included respondents who had encountered the need for new business ideas, expanding and financing business and information on how to manage business effectively.
The need for agricultural information N=24 (17.5%)	Included respondents who had encountered the need for information on how to increase production and how to manage pests. It included those who had encountered the need for marketing and price information for their produce. Instances related to information on seasonal variations and information on how to start and finance irrigation schemes fell into this category.
Educational / school related information N=19 (13. 9%)	Included respondents who had encountered a need for information on colleges and scholarship information. It included those who had been in need of information on secondary school and teachers colleges' examination results for themselves or their children.
Career development N=11 (8%)	Included respondents who had encountered the need for information on new skills development and employment opportunities.
Family/personal problems N=10 (7.3%)	Included respondents who had encountered the need for information on issues such as marital problems, dealing with divorce, teenage pregnancy, finance, in case of an emergency in a family, and death of parent or close member of the family.
Health issues N=9 (6.6%)	Included respondents who had encountered the need for information on health issues such as AIDS disease, HIV prevention and management of childhood diseases.
NGO activities N=6 (4.4%)	Included respondents who had encountered the need for information on NGO-related activities such as fund-raising and communication with donors. It included those who needed information on how to retain existing donors and keep in touch with them.
Government- related information N=4 (3%)	Included respondents who had encountered the need for information on taxation and other government programmes, such micro-credit schemes for farmers and small-scale businesses.
Loan and micro-credit facilities N=3 (2.2%)	Included respondents who needed information on loans and other forms of micro-credit facilities from NGOs and other micro-credit organisations.

Other minor categories included were:

- Legal information 2 (1.5%)
- Information on various artistic activities such as promotion and advertising, sponsorship and marketing 2 (1.5%)
- Information on livestock-keeping 1 (0.7%)
- Entertainment 1 (0.7%)
- Research-related information 1 (0.7%)

had experienced a need for information. Those who had experienced such needs for information were asked to narrate instances or situations of the need. In each instance, respondents were asked to indicate the most important question they needed to answer, or the most important thing they wanted to learn, find out, understand better or just think about. One hundred and thirty seven frequencies were recorded on this item. Some of the respondents recorded more than one instance, thus making the number of instances recorded higher than the number of the respondents who had experienced a need for information.

The instances stated by the respondents were grouped into categories, as shown in Table 2.

The context for the majority of the instances/situations mentioned by the respondents was work/ business/agricultural related 98 (72%). The rest

were concerned with personal problems 10 (7.3%); school-related problems (19 or 13. 87%) and health-related problems 9 (6.6%).

The results concerning information needs show that the need for business information was named by the majority of the respondents, 44 (32.1%), as their main need for information. In this case critical instances were related to income, budgeting and financial planning for the future. Respondents needed information that would enable them to be creative and identify new business ideas. Other critical incidents were related to situations in which they had to seek information on loans and micro credit facilities for expanding and financing businesses. Respondents needed information on how to manage businesses effectively. At all the four research sites the need for business information was much more evident in Sengerema, from where 14 (31%) of all the respondents who needed business information came. Magu followed at 11 (25%). The results for Karagwe and Ngara were 10 (22%) and 9 (20.5%), respectively.

Part of the reason for the high demand for business information is the high rate of growth of the informal sector. Due to high unemployment levels, lack of skills for employment in the formal sector, illiteracy and other economic hardships, many people find refuge in the informal sector activities. Informal sector activities mainly include small-scale businesses. Some of the informal sector activities cover those which farmers engage in during off-season periods, when they are not busy with farming activities. In Uganda, the informal sector is considered as the main bulwark against unemployment, destitution and crime (Ikoja-Odongo & Ocholla 2004).

Another reason that may have contributed to the high demand for business information was the circumstances that were prevailing in the area during the data-collection phase of this study. During this period the government had announced a nation-wide micro-credit scheme for people involved in small-scale business. However, the information on how to apply for these kinds of loans, how to get the application forms and how to return them was not well communicated. These comments were made by the respondents interviewed in Sengerema. Many people in the rural areas had great interest in applying for these kinds of loans but were unaware of the application procedures. Business-related information was not provided by any of the telecentres involved in this research. However, people were anxious to get access to this kind of information. None of the telecentres had conducted information needs assessment for their communities.

An additional critical incident that was mentioned by the respondents was related to agriculture, where respondents needed information on how to increase production and manage crop diseases and pests. Respondents needed information on marketing and prices for their produce and information on how to start and finance irrigation schemes. This was reported by 24 (17.5%) of the respondents. In reference to the four research sites, the need for agricultural information was more obvious in Magu, where 12 (50%) of all the respondents who needed agricultural information came from. Karagwe followed at 5 (21%). The results for Sengerema and Ngara were 4(17%) and 3(13%), respectively. The high demand for agricultural information could be expected, given the fact that agriculture is the main economic activity in which people in these rural areas engage. Only two (CROMABU and FADECO) of the four telecentres visited had programmes which aimed at providing agricultural information to farmers. None of these services was available in Sengerema and Ngara telecentres.

Another critical incident that was mentioned by the respondents related to education. This included information on colleges, how to finance college and university education and how to access examination results. This critical incident was evidenced by 19 (13.9%) of all the critical incidents recorded. As far as the four research sites were concerned, the need for education-related information was highest in Magu, where 11 (58%) of the respondents needed education-related information. Ngara followed at 4 (21%). The results for Sengerema and Karagwe were 3 (16%) and 1 (5%), respectively. The need for education-related information was mainly reported by young people, students and those employed in the formal sector who wanted to further their education. Most respondents said that they acquired most of this information by searching the Internet. Except for examination results, where telecentre staff would help people search and print the results, very little of this kind of information (education-related) was available for those who had no skills in using the Internet.

Other incidents were related to career development 11 (8%), family/personal problems 10 (7.3%), health issues 9 (6.6%), NGO activities 6 (4.4%) gov-

ernment-related information 4 (3%), and loan and micro-credit facilities 3 (2.2%). The relatively minor incidents were legal information 2 (1.5%), information on various artistic activities such as promotion and advertising, sponsorship and marketing 2 (1.5%), information on livestock-keeping 1 (0.7%), entertainment 1 (0.7%) and research-related information 1 (0.7%).

The results show that most of the information needs that the respondents faced were related to personal existence, survival and development. Needs related to the informal economic activities that people partake in their survival, such as small-scale businesses, were found to be more than the needs related to a formal work situation. A larger fraction of the needs related to agriculture, education, career development and family health issues. This means the telecentres have a unique opportunity to help the communities in these areas to meet their information needs. This can be done by designing information services that target the various economic activities of the people in these communities. Agricultural information needs are significant and many farmers are desperately in need of information.

Inability to articulate information needs

Since the respondents said that they had experienced information needs, they were asked to indicate whether or not they had made any attempt to obtain information to solve the problem or the critical incident that they were facing. Over 106 (93%) indicated that they attempted to seek information. This was out of a total of 114 respondents who said they had experienced the need for information. Only 8 (7%) of the respondents said that they had not sought the information/solutions to their problems or the critical needs that they were facing.

Respondents gave various reasons for not doing anything about their problems. Some said that they did not know whom to ask, whereas others said that they were afraid to ask anyone. In other cases respondents said they were convinced that it was impossible to get such help/information. Farmers in Sengerema said that they knew they should ask extension officers in case of any agriculture-related problems. They lamented that those officers were always not available to the people. One old woman interviewed in Sengerema described the situation thus:

> My farm has been infested with some pests but I do not know what to do or who to ask. As a result of the infestation, I will not have any harvest this year and all the work I have done on the farm is wasted.

The respondents who failed to articulate their information needs would fall into Fairer-Wessel's (1990) category of respondents who were not consciously aware of their needs. These respondents can be related to respondents in Stilwell's study (2002), who experienced a state of lacking information but were unable to motivate themselves to find a solution. They do not have ready access to the information intermediaries who could assist in addressing the lack. Maepa (2000) found that 65% of the respondents could not clearly identify their needs and lacked an understanding that information or knowledge can alleviate some of the problems they were experiencing. Proactive information services by the telecentre are needed to reach out to the people who are not able to express their own information needs.

Information needs assessment

Information needs assessment is critical in the development and running of a relevant information service (Du Preez 2008, 16; Kaniki 1994; Khan & Bawden 2005). Since telecentres are meant to provide development-related information to the communities they serve, telecentre managers must be aware of the information needs of the communities so as to be in a better position to meet those needs. The concept of information needs and information-seeking patterns of the telecentre users have not been fully embraced in the design and management of the telecentre projects. Benjamin (2001) reported that that one-third of telecentre managers interviewed said they had no knowledge of the needs of its customers, while the other two-thirds said they did not develop services to meet user needs. For telecentres to work they must be linked to the real needs of the communities they serve.

Various investigations have revealed the need for telecentres and other information services to understand fully the information needs of the communities they serve. Jensen and Esterhuysen (2001) stressed that it is important for the telecentre management to know the information needs of the communities

they are serving. Ikoja-Odongo and Ocholla (2004) are of the opinion that information systems developed or adopted must meet the needs of the people to be served. Stilwell (2002) argued that the ultimate aim of any library or information service is to meet the needs of its community. According to Kaniki (2001), one of the most difficult, yet necessary activities, in the provision of community information is the assessment of information needs. Kaniki (1994, 53) advises that the information needs assessment has to be done regularly if established information centres (and those to be developed) are to be relevant to any given community.

It is evident from the findings of the present study that the four rural communities involved in this study experienced a variety of information needs, such as those for business information, agriculture information and information related to education.

Information-seeking patterns

Respondents were asked to indicate how or where, or from whom, they received the answers or information concerning the situation they had experienced. This question aimed at establishing the sources of information used by the respondents. A total of 163 responses were recorded on this question. This means that some of the respondents indicated more than one source of information. The majority of the respondents 65 (39.9%) indicated that friends and relatives were their main source of information. The second largest source of information was the radio. A total of 20 (12.3%) respondents indicated that they used the radio for sourcing information.

Seventeen respondents (10.4%) indicated that Internet services provided by the telecentres were their sources of information. Through probing and asking follow up questions it was discovered that this was mainly for activities such as education and career development.

Other services provided by the telecentres, such as agricultural and marketing information services, were recorded by 16 (9.8%) as their main sources of information. This was mainly the case for people (especially farmers) who came to the telecentre for consultation on various issues such as prices of agricultural products and marketing. Other sources of information that were used by the respondents were personal experiences 15 (9.2%), telephone communication with relevant authorities 9 (5.5%), health centres 5 (3.2%), churches 7 (4.3%), local authorities 6 (3.7%) and extension officers 3 (1.8%).

Sources of information

The present findings show that the two major ways respondents searched for information included listening and talking to friends, relatives and contacting those who knew or had the information. The other means of accessing information, which was mentioned by a majority of the respondents, was the radio. Respondents relied mostly on the interpersonal, informal and oral means of communication as their main sources of information, possibly because of illiteracy and the high cost associated with other sources of information. Radio was preferred because of the low cost involved in obtaining and maintaining a radio. Ikoja-Odongo and Ocholla (2004) in Uganda stated that radio broadcasts were used the most as a source of information. Maepa (2000) added that in South Africa radio is more relied upon in the rural areas. In areas without electricity people use the radio to satisfy their communication needs (Oyedemi & Lesame 2005, 91).

The other advantage of the two sources of information is that they provide information in the local language of the respondents. The same idea was also expressed by Maepa (2000), who found that language aspect has implication on the language formats of the information provided by the ICTs and the telecentres. The results of the present study show the need to combine the new ICTs, such as the Internet and computer, with the old ones, such as radio, to meet the information needs of the rural communities. With the advent of community radio, this source of information needs to be utilized. Creative ways need to be devised to ensure that it becomes a credible source of information to rural communities. The government needs to invest in the production of creative, educative radio programmes.

A number of other studies have stressed the importance of interpersonal and oral communication as a major source of information, especially for rural people (Kaniki 1994; Kiondo 1998; Maepa 2000; Ikoja-Odongo & Ocholla 2004; Mafu 2004; Dansoh, Stilwell & Leach 2007). Stilwell (2002) found that personal sources were favoured information channels even when access to a range of sources was available. Case (2002, 8) stated that, despite the widely perceived belief that information should be acquired

from formal sources, people rarely use formal sources. Instead they gather and apply information from informal sources, chiefly friends and family, throughout their lives.

The informal information systems in rural areas mainly constitute indigenous knowledge, which refers to the knowledge about a variety of subjects that is unique to a given culture or society. The informal source of information may be incomplete and may not provide answers to all the problems that rural communities face. However, the aim of formal and ICT-based information systems should not be to replace the informal communication channels, but to strengthen the existing informal communication channels.

Other sources of information such as the Internet were mentioned as sources of information. The Internet was used mainly for searching for information on education related issues. As noted above, other services provided by the telecentres, such as agricultural and marketing information services, were recorded by 16 (9.8%) respondents as their main source of information and this was only in CROMABU telecentre.

Conclusions

Results on the information needs of respondents were that, for the majority of respondents, business-related information was the main information need. However, this kind of information was not provided in any of the telecentres visited, apart from the occasional broadcasting of such information by the Sengerema community radio. It can be concluded that all telecentres were not aware of the information needs of the communities they serve and were, therefore, not in a position to meet such information needs.

Agriculture-related information was another main information need of the people in the communities in which this research was conducted. Only two telecentres, CROMABU and FADECO, of the four visited, had programmes which aimed at providing agricultural information to farmers. None of these services was available in the Sengerema and Ngara telecentres.

These findings are in sharp contrast with the primary objective of the rural telecentres, namely to meet the information needs of farmers. It is the conclusion of this study, therefore, that most telecentres are not demand-driven. There are many unmet assumptions in the design of the telecentres, which do not translate into meeting the information needs of the communities, given their real information needs. Agriculture is the key sector in the rural areas, judging by the large number of people that the agricultural sector employs in the rural areas (80% in Tanzania). A rural telecentre without programmes to reach farmers and meet their information needs is tantamount to a dire disservice. Indeed, a neglect of the farmers' information needs is not only unrealistic on the part of the rural telecentre but also a recipe for a failure in impacting the rural livelihoods and in reducing poverty. The agricultural sector is even more important now, because of the growing demand for food. The sector offers opportunities for producers to sustain and improve their livelihoods.

The findings of this study are that face-to-face communication and radio were the major sources of information used by the respondents. From this it can be concluded that, even if provided with ICTs, the rural people will most likely continue to rely on face-to-face communication and probably the radio. The two sources are the most easily accessible to rural people and do not require complicated skills to use.

Recommendations

One of the most difficult, yet necessary, activities in the provision of community information is the assessment of information needs. The telecentres, or other information systems developed or adopted to serve the people, must meet the needs of the people intended to be served. This can be done by conducting regular information needs assessments.

In order for the rural telecentres to have an impact on rural communities, meeting the livelihood information needs of these communities should be made the primary objective of the telecentres. The telecentres have a unique opportunity to help the communities in rural areas meet their information needs. This can be done by designing information services that target the various aspects of the agricultural sector, such as crop production, pest management and marketing. ICT can make a contribution to the agricultural sector by increasing the efficiency, productivity and sustainability of small-scale farms. Mwathi (2008) warned that farming involves risks and uncertainties. Farmers face many

threats from poor soils, drought, erosion, diseases and pests. Key improvements stem from basic information about pest and disease control, early warning systems, weather changes, new varieties, ways to optimise production and regulations and quality control. Telecentres should provide information on other topics such as education, health and government-related information.

Computer-based sources of information should be converged with the sources of information that respondents use most. In this study the two sources that respondents indicated that they use the most were person-to-person communication (verbal communication) and the radio. The potential that the community radio station has in meeting the information needs of the communities, when used alongside telecentres, cannot be over-emphasised. Creative ways of combining the two need to be worked out. Content creation/programming for the purposes of educating the communities also needs attention.

Note

1. A copy of the instrument used to administer the CIT methodology in this study is available from the first author.

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