

Perceptions of Members in a South African Rural Community about the Prospects of Becoming a Digital Village

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Abstract

This article addresses the need for a Telecentre in the community of Bayview, a rural community in KwaZulu-Natal on the eastern seaboard of South Africa. The researchers reviewed various refereed sources from which was concluded that in order to access information prospective beneficiaries first need to know what information is, what information is available digitally and how the information that they require can be accessed via a Telecentre. A questionnaire was distributed in the community, the data was collated and analysed. The major findings are that the community would benefit if a central information accessing facility were created, provided that people are being taught how to use such a facility and what they need to do to ensure that the facility remains viable and to ensure that inequalities in access are removed.

Introduction

The provision of access to electronic information services is currently seen as a key to accelerating development in a community. The increasing use of electronic information has made possible new methods to deliver services and to supplement existing ones (Ellen, 2000). New technologies, if used innovatively, can help in bridging technological, knowledge and income

However, the use of electronic media involves constraints (Cornu, 1997).

- Humans need electronic tools to read the data.
- Electronic media generally have a shorter lifespan than paper or microfilm.
- It is easier to duplicate or alter an original (which raises problems of proof and authentication).
- The rapid pace of change in technology and on the information market makes it difficult to find stable and long-lasting formats to use (Cornu, 1997).

Benefits of Electronic Information

According to Maxwell (2000), some of the potential benefits of universal access to electronic information can include: Significantly increasing the speed of achieving universal based on the achievement of universal access to information, communication technologies and appropriate content and applications; Decreasing poverty around the world, through the linkage of access to information and communication technologies; Opening up global markets through Internet commerce to any individual or entity that can gain access to the Internet and to online communications tools; and Increasing the spread of democratization through increasing civic discourse and citizen involvement in government.

Electronic communications provide new options for accessing people and resources through online discussion groups, mail services, library catalogues, encyclopaedias, dictionaries, newspapers, and other information resources. Computers, when appropriately adapted for access, allow people with disabilities to use computer software to communicate with family and friends, and to access electronic information without assistance (Burgstahler, 1998).

Main Challenges to Electronic Information

It is important to understand that lowering the barriers to Internet access is helpful to everyone in the context of gaining easier access to information. An

argument can be made that every individual should have the right to access information regardless of disability, economic situation, or geographic location. Global access itself is not enough. Cost of access has to come down to where not just the elite in emerging nations can afford to get on the Internet (Maxwell, 2000).

Much has been written about "wiring the last mile" (that is, bringing the network to the home) and about making computers more available to those who can least afford them (John, 1996). Yet according to Keery (1997), electronic information is still only accessible to a privileged few. Access requires equipment, there are connection costs, and some training is required. Information on the Internet, which is often currently treated as if it were free, will cost more as the mechanisms of electronic charging become well-established. According to Ellen (2000), the cost of providing even basic telecommunication services limits the potential for widespread access to electronic information in a community that is poverty stricken. People in a poverty stricken community are unable to use the Internet because they do not have Internet access. They therefore look for the information elsewhere.

Role of Electronic Information in a Community

The benefits of access to electronic information for a community can be viewed as having both private and public components. Private benefits of access are measured by the utility received by the individual as a result of connecting to the network (e.g. to facilitate business transactions, to minimize transport costs, to contact family and friends). Although difficult to quantify, the public benefits of rural telecom service can be substantial. Public benefits of access to electronic information to a community can improve living standards in communities by providing important commercial, social and educational benefits. The potential benefits of access to electronic information for a community can include (Whu, 2002):

- Economic efficiency due the reduction in the costs of market transactions (i.e., need for less travel)
- Links local businesses to the trade, transportation and commerce systems

- Improved community services, such as education and health
- Stronger cultural ties and improved national and social cohesion
- Contact with families and friends who migrate to urban areas for work and education
- Access to services (health, education, information, etc.) that enable urban people to improve their lives

Socio-economic Characteristics of Rural Communities

Rural communities are economically undeveloped and focus on subsistence activities. Rural villages in specific geographic areas rely on mining or fishing (coastal regions). Other villages depend upon agriculture which is also an important activity for rural towns. Small grocery stores are the main private business in all rural villages. In larger rural towns, restaurants are also a dominant category of business. Rural villages sell their produce and purchase goods and services from larger, more developed, rural population centres. Many rural communities have no sewage, although smaller and medium-size towns and larger population centres have piped water. Some rural villages have a primary school, but secondary schools are less common. Capital towns, though possibly small in size, are particularly important to surrounding villages, since they are generally the nearest site for secondary education, health services and other basic infrastructure. Province or district capitals also often provide the focus for market and trading activity as virtually none of the satellite villages have market sites. Transportation, accessibility by road, and types of road surface of rural villages to their hub town varies widely. Dirty roads, narrow paths and trails connect most of the rural communities; however, foot paths are sometimes the only access to remote villages (Whu, 2002).

Digital Inclusiveness

More than 80% of people around the world have never heard a dial tone let alone surfed the Web. The gap between the information haves and have-nots is widening. The digital divide refers to the gap between those people who

have access to digital technologies and information on the Internet, and those who do not. It is evident from that the bulk of Internet users come from first world, developed countries (Singh, 2004).

Kagan (1998) argues that in order to understand the information gap, one must first look to the context on the ground. The growing gap between the information rich and information poor both within countries and between countries is determined by the class structure and treatment of minority population groups within and between countries. While IT are spreading widely in rich countries, only the elite have access to such technologies in poor countries.

According to Butzen and Liston (2005) the Internet and other types of electronic communication have reinforced the disadvantages of rural areas. Advanced electronic communication has become integral to almost every kind of business activity and a prerequisite for competitive advantage in nearly every industry, as well as dominating many cultural and social activities. The economic impact of the Digital Divide is felt not only in the infrastructure, but also in the workforce. In many rural areas, the majority of the workforce is not computer literate, and the cost of upgrading the skills of an entire workforce is prohibitive to most employers (Butzen & Liston, 2005).

The existence of the digital divide attributes to high levels of poverty, lack of telecommunications infrastructure, and high costs of connectivity. Although the digital divide exists, steps are being taken at a macro level to develop technology centres or digital villages in townships and rural villages. However, it is these digital villages that will contribute to the healing process. The digital divide does not only exist at a macro level, it has also manifested itself at a micro level in organizations where people are educated, well paid, with access to hardware and telecommunications infrastructure (Singh, 2004).

Community Inclusiveness Based Access to Electronic Information via Telecentres

According to Whu (2002), Telecentres are community owned and operated facilities which house modern information and communication technology

made available for the community's use. The facilities provide communities with access to electronic information and education services and can perform important developmental roles. Delgadillo and Gomez (2003) argue that community Telecentres also provide training for facilitators and promoters, covering not only the technical aspects of information and communication but also the strategic uses of digital technologies for social change. Community Telecentres are places for social encounter and interaction, for learning, for personal growth, and for mobilizing efforts to address community problems and needs. Telecentres differ from Internet cafes in that Telecentre operators provide users with personalized computer training as well as support in applying ICT for specific purposes.

According to Ernberg (2005), community Telecentres offer access to new and more diversified sources of information such as information to new, appropriate, environment friendly methods and technologies for agriculture, aquaculture, forestry, mining and other activities in rural areas. In addition, information on markets and prices for their products and services in other parts of the country and the world is offered. Delgadillo and Gomez (2002) argue that Telecentres gives communities their own voice, strengthening the exchange of experiences and collaboration with groups and networks at the national and international level, and facilitating communication with emigrants and displaced persons.

Telecentre is a concept of rural development which would help rural people gaining access to economic, social, educational and training opportunities through the use of modern ICT. Due to poor connectivity, inadequate infrastructure and other limitations, most of the centres provide very limited services. Low levels of communication infrastructure in the rural areas make it difficult for these to be linked electronically. As Richardson (1997) notes, rural communities represent the last connectivity.

Socio-economic Benefits of Telecentres in Rural Communities

Short (1998) argues that Telecentres have moved from being "a service" in the community to being a focal point. Benefits derived effect the community as a whole as well as the individual. According to Oestmann & Dymond (2001), community Telecentres expand access to information and

communication technologies based services; extend the reach of public services such as education, health and social services. It provides information of general interest to the local community, including government information, and of special interest to specific groups such as farmers, local businesses and non-governmental organisations, and provides access to infrastructure, technology support and advice for the development of businesses.

Oestmann and Dymond (2001) argue that these services provided by community Telecentres can develop rural and remote infrastructure; provide rural regions with better public services and improved local administration, generate employment and foster socio-economic development, integrate relatively isolated communities into the national and international information network and thus accelerate exchange of private goods and services, transfer expertise in areas such as agriculture, to and from the community, and give producers access to market information, thus reducing the need for middlemen and increasing rural incomes.

Research Questions

This study explores community access to electronic information and the extent to which electronic information is being used. This study examines and analyses the use of electronic information in a community, by addressing the following research questions:

1. What information do people need in a community?
2. How do they go about finding it?
3. What factors affect use of electronic information?

Concluding Remarks about Literature Surveyed

This section has discussed relevant research relating to the lack of electronic information in a community. Information on the Internet and the WWW was introduced which provided a better understanding of what is electronic information. Previous information seeking studies were reviewed focusing on the challenges to electronic information, this was important for

examination of how people approach finding information needed in everyday life. The majority of work in this area was found to be community focused. A number of studies were identified which explored factors affecting use of Telecentres.

New technologies, if used innovatively, can help in bridging technological, knowledge and income divides (Mrayati, 2001). An important trend is the emergence of community access to both basic and value-added communications as a key means of achieving universal access. While individuals in many poor locations may not be able to afford the upfront and recurrent costs of owning a telephone line or an Internet-enabled computer, a community as a whole may be able to effectively share such facilities (Whu, 2002).

Research Methodology

The Respondents

The participants selected for this research were members of the Bayview community. The community consists of approximately 1000 people all of different age groups. The reason for choosing this community is that members of this community come from disadvantaged backgrounds. Particular respondents were selected because they are computer literate, but lack access to electronic information. A convenience sample of 200 members of the Bayview community was selected. Because it is not known exactly how many of the approximately 1000 members of the community are computer literate, is cannot be stated with confidence that a representative sample of computer literate residents completed the survey.

The Survey Instrument

The questionnaire consisted of 23 questions. A total of 200 questionnaires were collected which compromised of respondents from the Bayview community.

Questions 1 – 5

These questions focused on demographic particulars such as the respondents' age group, gender and ethnicity.

Questions 6 – 9

These questions were used to determine the types of information the respondent needed in everyday life and their understanding of the various ways in which that information could be accessed.

Questions 10 – 15

These questions were used to determine the levels of IT skills of respondents and how they acquired information communication skills.

Questions 16 – 20

These questions were used to determine the respondents' own perceptions about how useful it would be to access information electronically.

Questions 21 – 23

These questions were used to determine the respondents' knowledge of Telecentres and whether or not building a Telecentre in the community would improve access to electronic information.

The questionnaire will provide information of most relevance to the research which will enable a picture to be built up identifying the interaction and levels of involvement between the community and electronic information. The researchers used XLSTAT to compare and analyse the data collected from the questionnaire depicted in tables and graphs next.

Presentation of Results

This section deals with the analysis and presentation of the data collected. The data was collected using a questionnaire. The questionnaire was designed to investigate the extent to which electronic information is used the Bayview community to access electronic information.

Data Analysis

Education and Employment Status of Respondents

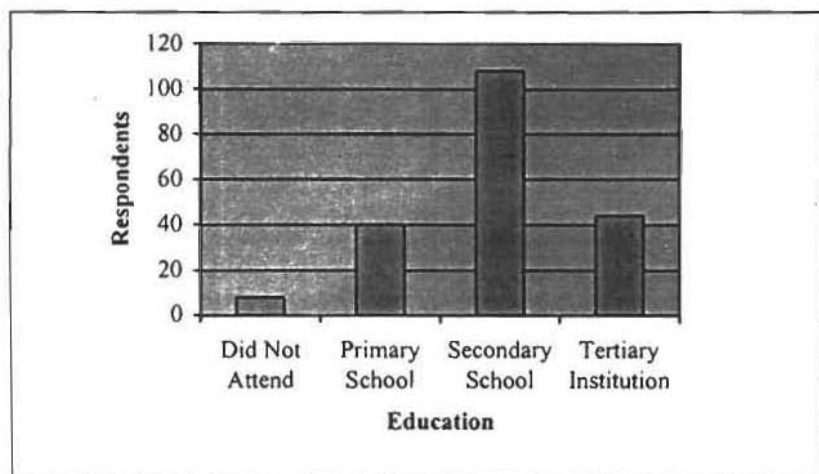


Figure 1: Level of Education

Figure 1 shows that the members of the Bayview community do not have a high level of education. About 4% (8) of the respondents have no educational qualification. 20% (40) of the respondents attended only primary school, 54% (108) of the respondents attended secondary school. Only 22% (44) of the respondents attended a tertiary institution. The members of the Bayview community lack further education and that could be a reason why the members lack access to electronic information.

Electronic information is being used in different ways for educational purposes. Many students have e-Mail addresses to communicate with their colleagues, their lecturers. The development of the WWW as tool has resulted in departments developing student project work and placing it on the Web (Wilson, 1995). Through the Internet students and educators can register with educational institutions anywhere in the world, access archival material or receive online instruction from central national services (Jensen & Esterhuysen, 2001).

Unemployed respondents made up 29% (58) of the total sample, slightly fewer than the percentage of part-time respondents. The remaining groups include 19% (38) full-time workers, 16% (32) students and 6% (12) pensioners. According to Falch (2005), provisions of access to electronic information are important for creation of local employment opportunities.

Information Requirements in Everyday Life

A piece of information is an indication or an event brought to the knowledge of a person or a group (Cornu, 1997). According to Kagan (1998), information has become global and has become king of the global economy. In earlier history, wealth was measured in land, in gold, in oil, in machines. Some respondents had multiple information needs. The most frequently mentioned need was employment (15.7%; 22). This contributes to the fact that 29% of the respondents of the Bayview community are unemployed and 33% of the respondents work part time while 15.7% (22) of the respondents also need crime and safety information. This is due to the high crime rate in South Africa. Following crime and safety is consumer information. 12.9% (18) of the respondents need consumer information for everyday life. Consumer information includes information about services available, service price, product information and quality of service etc. Nearly 10% (13) of the respondents need education and school information and another 13% of the respondents need health information.

Response	Percentage
Consumer	12.9
Employment	15.7
Education and schooling	9.3
Child care, family and personal	5.9
Financial matters	2.9

Miscellaneous	5.7
Recreation	5.9
Crime and safety	15.7
Housing	4.9
Health	9.3
Social security	8.6
Internet related concerns	1.4

Table 1: Everyday Information Needs

The researchers also investigated the approaches to finding information in the Bayview community. 100% (200) of the respondents use television and radio to find information. Nearly 95% (188) of the respondents use printed materials such as newspapers to find information. Only 10% (20) of the respondents use the Internet to find information. The reason for this could be the lack of access to electronic information.

Knowledge and Access to Electronic Information

Electronic information is a term that is widely used in this study, and denotes any information which is available via the Internet. This includes information obtained from the Web, e-Mail, discussion lists, Newsgroups, and community networks and Internet Relay Chat (IRC) (Ellen, 2000). The provision of access to electronic information services is currently seen as a key to accelerating development in a community. The increasing use of electronic information has made possible new methods to deliver services and to supplement existing ones (Ellen, 2000). Access to electronic information is essential for describing and understanding the deficiencies of the present, building visions of a better future, developing practical ways to achieve those visions, and educating and inspiring those who must make the

future. The problem with this vision is the lack of access to the electronic information in the developing world (Godlee & Horton, 2000).

Response	Percentage
Home	8
Library	8
School	2
Work	26
University or Colledge	14
Internet café	12

Table 2: Places where Respondents Access Electronic Information

Twelve percent (24) of the respondents at the Bayview community did not know what electronic information is. It is mostly elderly members of the Bayview community that lack the knowledge of what electronic information is. The other 86% (172) of the respondents of the Bayview community claimed to know what electronic information.

Thirty percent (60) of respondents don't have access to electronic information while 70% (140) of respondents do have access to electronic information. Nearly 30% (52) of the respondents access electronic information via work while 14% (28) of the respondents access electronic information at university or college and 12% (24) at an Internet café. Only 8% (16) have access to electronic information at home. The remaining 10% (20) of respondents access electronic information at the library and school. Of 70% (140) of respondents that have access to electronic information, 52% (104) of this access is not in the provision of the Bayview community. The solutions listed below cannot be separated out from the overall solutions proposed for achieving Universal Access (Maxwell, 2000).

- Improve infrastructure on a global basis using an affordable, maintainable structure

- Explore building accessible electronic and information technology features for services offered by Internet Service Providers
- Recognition of the right to access information regardless of disability, economic situation or geographic location.
- Raise awareness of accessibility issues throughout the world.
- Encourage organizations working for the validation, management and distribution of speech, text, and terminology resources and tools, and to promote their use within the global telematics RTD (research and technological development) community.

Maxwell (2000) argues that to accomplish global access and access to all content, outreach and educational programs should be initiated and sustained to raise the awareness of accessibility issues. The system should be based on the principles of Universal Design since it must as much as possible be usable by everyone not just a privileged few (Maxwell, 2000).

IT Skills of Respondents

Figure 2 shows that only a small percentage of the respondents have a good knowledge and experience on electronic information (8% or 14). These percentages could be due to the lack of access to electronic information or lack of knowledge to utilise the service. The highest percentage accounts for respondents who have foundation skills (48%), 15% (30) of the respondents have intermediate skills.

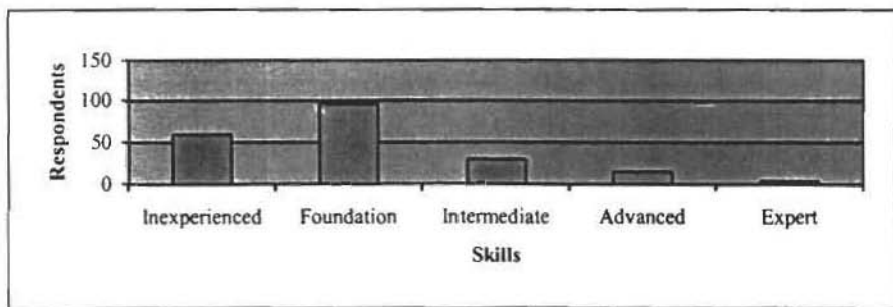


Figure 2: IT Skills of Respondents

Response	Percentage
Trial and error	23
Self taught	18
At Work	8
Advise from friends and family	15
Courses offered at educational institutions	6

Table 3: How Respondents Learned to Use Electronic Information

The most popular method of acquiring the necessary skills to use electronic information was via trial and error (23%). The second most popular method for learning to use electronic information was self taught. Nearly 20% (36) of respondents used this method to use the Internet, while 15% of the respondents received advice from friends and family. Eight percent (16) of the respondents acquired their skills to use electronic information at work. According to Ellen (2000), long experience of user education programmes has shown that teaching information retrieval skills to students should be embedded into the curriculum and done at a time when the user can understand its appropriateness. This training should also be adapted to the varying abilities of the users. If students are aware that the skills required for using electronic resources are not insular, and indeed provide them with valuable transferable lifelong skills, skills which employers will be looking for, they may be more likely to learn how to use them. Therefore, if academic staff were to promote electronic resources, with references for students to locate, this may increase the number of students acquiring the necessary information retrieval skills.

Reasons for Using Electronic Information

Web-based e-Mail proved to be the most popular facility used that does not require specific software and can be directly accessed from anywhere in the world. The next most popular use was searching for information on a

specific subject (18% or 36). The other 3% (6) of the respondents used electronic information for chatting and 4% (8) for downloading software.

Response	Percentage
Chat	3
Download software	4
e-Mail	35
Specific subject search	18
Other	10

Table 4: Reasons for Using Electronic Information

Ten percent (20) of the respondents used multiple services, or had several reasons for using electronic information. However, this means that the majority the respondents, 60%, had only used the Internet for one purpose. The reasons for limiting use to one purpose could be time and cost, but it may also indicate a lack of awareness of web sites which could be relevant to them or a lack of skills needed for searching. The use of e-Mail was popular (15% or 30) while keeping in touch with friends and family was also common, but other types of use included job hunting (10%), checking entertainment sites, using chat rooms and booking holidays. According to Ellen (2000), the Internet can provide people with a variety of information about health.

Response	Percentage
e-Mail	15

Keep in touch with friends and family	9
Job hunting	10
Booking holidays	6
Searching for materials related to courses or current projects	11
Checking fan sites	4
National newspapers	2
Music and films	8
Health information	5

Table 5: Types of Electronic Information Use

Access to Electronic Information Hindering and Improving Everyday Life

Limited time and lack of effective information retrieval skills seem to be the main barrier to using electronic information. Day and Ray (1998) argues that with effective information retrieval skills and knowledge of the most useful databases to search for a specific query, a smaller amount of information is often retrieved, and the time spent searching databases reduced. However, with more effective search engines and user-friendly interfaces, in-depth information retrieval skills would not be as essential and therefore the time spent using electronic information would also be reduced.

Response	Percentage
Too much information retrieved	16
Time consuming	18

Limited access to a computer terminal	14
Lack of IT knowledge to effectively utilise the services	14
Using electronic resources often detracts from doing work	8

Table 6: Access to Electronic Information Hindering Everyday Life

More than 10% (28) of the respondents stated that limited access to a computer terminal hindered their everyday life. This shows that the members of the Bayview community appear to experience difficulties locating a terminal. A number of comments on the questionnaire distributed to respondents highlighted concern as regards having limited information retrieval skills. This has led to a number of respondents relying upon the printed material they are familiar with, instead of trying to use the new resources.

Response	Percentage
Access to current up-to-date information	9.9
Easier access to information	19.2
Faster access to information	22.1
Access to a wider range of information	25.1

Table 7: Access to Electronic Information Improving Everyday Life

Twenty percent (40) of the respondents who answered stated faster access to information as a benefit of using electronic resources, yet 18% stated it was time consuming to use. This suggests respondents are, on the whole, confused about the potential benefits of electronic information. More than 10% (28) of the respondents felt that the main benefit of electronic information was to be able to access current up-to-date information.

Factors Affecting Use of Electronic Information

The most common factor respondents said would prevent them from using electronic information was that they had difficulty accessing electronic information (28%). This contributed to the fact that 52% of the respondents access electronic information outside the Bayview community. Another factor which contributed to the difficulty of accessing electronic information was financial factors. More than 10% (24) of the respondents noted that financial factors prevent them from accessing electronic information. This is supported at the fact that only 8% (16) of the respondents have access to electronic information at home.

Response	Percentage
Need support	19
Lack of experience	17
Perception	7
Interface problems	2
Financial factors	12
Distrust and E-Commerce difficulties	3
Lack of immediacy	28
Problems finding information	6
Lack of time	2
Other	4

Table 8: Factors Affecting Use of Electronic Information

Nearly 20% (38) of the respondents said that they would need support to be able to use electronic information effectively. Closely linked to this was a lack of experience (17% or 35). This highlights the need for the Bayview community to include technologies for disabled people and those with different needs. The remaining respondents said that what prevented them from accessing electronic information were problems finding information, lack of time, distrust and e-commerce difficulties.

Acquiring Significant Information from the Internet

According to Burnett (2000), Internet-based tools of Computer Mediated Communication (CMC) such as e-Mail and other communication applications have become widespread.

Twenty one percent (42) of the respondents agreed with the statement. More research is required to determine whether this is due to a lack of information retrieval skills on the part of the respondent, or the problems associated with the lack of organisation of information on the Internet. Conversely, respondents may indeed lack the relevant information retrieval skills to use the Internet, hence resulting in find nothing of any significance from that source.

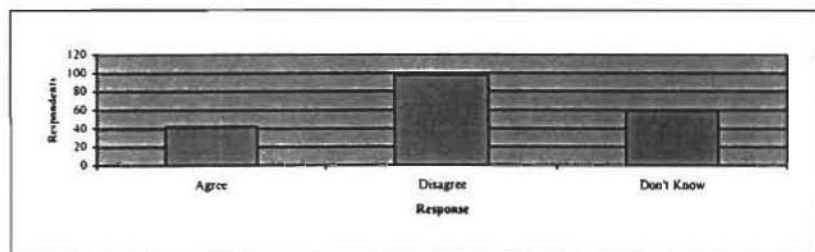


Figure 3: Whether Respondents Acquire Significant Information from the Internet

More positively, 49% (98) of the respondents felt they had acquired significant information from the Internet but with no indication of the nature of the information retrieved.

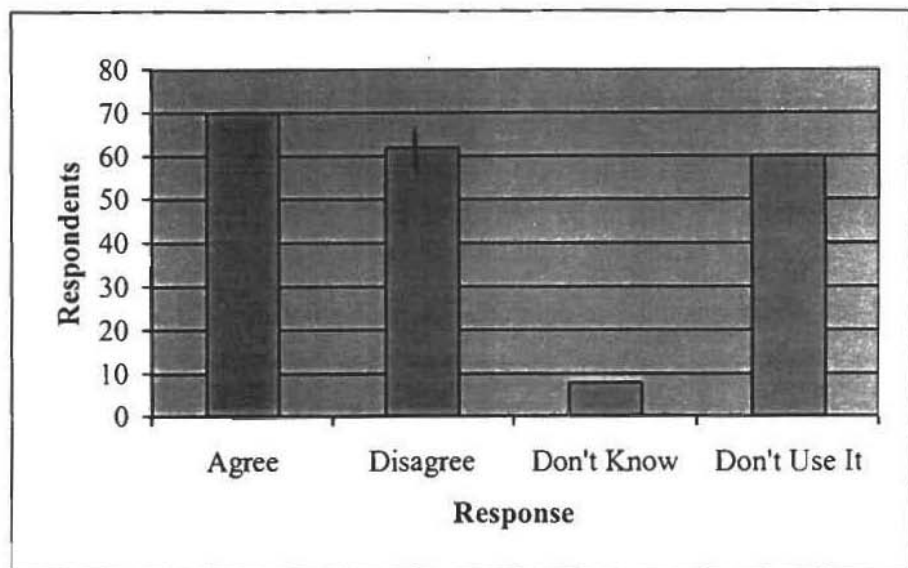


Figure 4: Whether Respondents feel that their Lifestyle would suffer without Electronic Information

Nearly 40% (70) of respondents declared that their everyday life would suffer without the use of electronic information, although a similar number have yet to be convinced. This shows that respondents, who place greater emphasis upon printed material, also utilise electronic information for everyday life. With the advent of the Internet, nations, regions, cities, villages, and individuals are able to work and to come together within global, networked communities based on shared interests at a speed and inclusiveness never before possible (Maxwell, 2000).

Use of Telecentres to Access Electronic Information

Community Telecentres represent an experiment in using digital technologies as tools for human development within a community. The stress here is on the social use and appropriation of the technological tools and the information that can be accessed through them, as part of a project for social change aimed at improving living conditions (Delgadillo and Gomez, 2002).

Eighty three percent (166) of the respondents have knowledge to what a Telecentre is. The remaining 17% (34) of the respondents have no knowledge to what a Telecentre is. Suzuki & Chamala and Suzuki (1998) argue that recent developments in information and communication technologies are remarkable and bringing about great changes in the quality of life. There is also an expectation that the benefits must reach rural and remote communities by application of these technologies. However, it has been recognised that diffusion of such new technologies is rather slow in rural communities compared with the urban counterparts. One reason for this is that they have disadvantages in terms of opportunities to access to technologies. In this context, the Telecentre concept has been implemented by communities as a new tool to introduce new information technologies to rural areas. According to Crellin (1992), 'Telecentre' is a new concept of rural development which would help rural people gaining access to economic, social, educational and training opportunities through the use of modern information and telecommunications technologies.

Willingness to Use Telecentres to Access Information Electronically

Eighty one percent (162) of the respondents in the Bayview community think that building a Telecentre in the community will help improve access to electronic information. Only 19% (38) of the respondents think that building a Telecentre will not improve access to electronic information.

According to Ernberg (2005), access to information and communication technology in a Telecentre also enables people to produce their own information resources, (e.g. products and services offered, skill profiles of people wanting a job, social and cultural events, and hotels, transport, tourists' sites, etc). All this contribute to improving living conditions in remote areas and to saving in transport cost and time but access to information and learning resources available through computer networks, such as the Internet, would have a much greater impact on social, economic and cultural development.

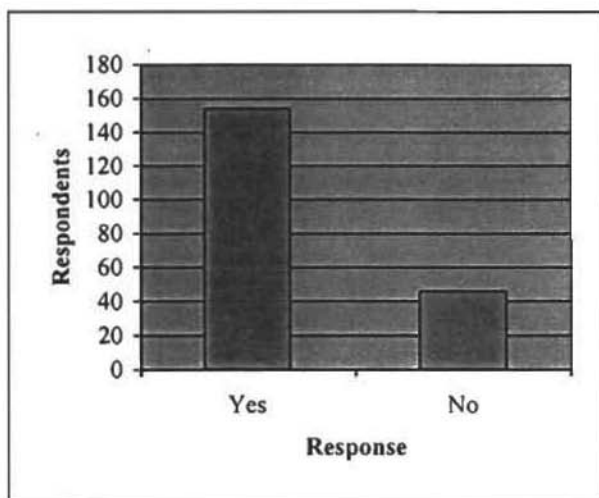


Figure 5: Use of Telecentre to Access Electronic Information

Figure 5 shows that 77% (154) of the respondents in the Bayview community will use the Telecentre to access electronic information. Only a low 23% (46) of the respondents will not use the Telecentre to access electronic information. The reason for this could be because the respondents lack the knowledge about what a Telecentre can offer. According to Komoski (2001), this describes an urgent nationwide need. It is the need to empower communities, families, and youth with digital tools and skills needed to bridge the learning and earning divides that disenfranchise.

Latchem (2001) argues that it is vital to ensure that learning and information are available to all, regardless of user circumstances, community-based Telecentres can provide people with the information and literacy skills to maximise their learning opportunities. However, Telecentres should not be seen as a quick solution to every social or economic problem. Telecentres must be carefully designed according to established needs, sound business planning and realistic expectations of what can be achieved within a certain timeframe. Telecentres are essentially about linking resources, knowledge and people without physical proximity. Telecentre support for distance learning will be most effective where they

are connected in a unified, coherent and innovative national or regional system for educational and social reform.

Summary

New technologies if used innovatively can help in bridging technological, knowledge and income divides (Mrayati, 2001). An important trend is the emergence of community access to both basic and value-added communications as a key means of achieving universal access. While individuals in many poor locations may not be able to afford the upfront and recurrent costs of owning a telephone line or an Internet-enabled computer, a community as a whole may be able to effectively share such facilities (Whu, 2002).

Access to information has become crucial to a sustainable economic development and poverty reduction. Electronic information can help to reduce poverty and can bring many benefits to communities (Whu, 2002). A factor that affects the use of electronic is a lack of immediacy of electronic information. To some extent, this comes from a lack of familiarity with the Internet, whilst for others there seemed to be a lack of understanding about the range of information available in electronic form and a series of financial factors. This describes a community need. It is the need to empower families and youth with access to electronic information and skills in a community (Ellen, 2000).

Immediately following the conclusion of this chapter the researchers will provide recommendations based on the findings of the data collected. The researchers will thereafter provide recommendations for future study and outline the recommendations for improving access to electronic information.

Recommendations and Conclusions

The preceding chapter analyzed and presented the data that was collected. Access to information has become crucial to a sustainable economic development and poverty reduction. Electronic information can help to reduce poverty and can bring many benefits to communities. This describes a community need. It is the need to empower families and youth with access to

electronic information and skills in a community. Immediately following this brief introduction the limitations of the study will be discussed. Thereafter the researchers will suggest some recommendations followed by future research. Finally the researchers will present concluding remarks based on the findings reported.

Limitations

The overall goal of the research project was to examine the access and use of electronic information from a community-centred perspective by exploring issues primarily from the viewpoint of users and non-users to identify factors affecting access and use of electronic information. The results should be extrapolated circumspectly from the Bayview community to similar ones in view of the fact that it is not known whether the 200 computer literate respondents constitute a representative sample of all the computer literate members of the community.

It should also be kept in mind that the data analysed here, was initially collected by the first author as part of a research methodology project, in partial fulfilment of an Honours degree in Information Systems and Technology at the University of KwaZulu-Natal, and that after the completion of the qualification it was subsequently analysed by all three authors as part of a mentoring project aimed at teaching students how to use meritorious research results to produce a peer reviewed scholarly article.

Answers to Previously Posed Research Questions

The following are the questions posed previously. The researchers will answer these questions based on the analysis and findings of chapter four and the reviewed literature from chapter two.

What Information Do Ordinary People Need in a Community?

This study demonstrated the wide variety of information needs experienced in everyday life. The most frequently mentioned need was employment. 22% of the respondents needed employment information. This contributes to the

fact that 29% of the respondents of the Bayview community are unemployed and 33% of the respondents work part time. 22% of the respondents also need crime and safety information. This is due to the high crime rate in South Africa. Following crime and safety is consumer information. Consumer information includes information about services available, service price, product information and quality of service etc. About 13% of the respondents need education and school information and another 13% of the respondents need health information. The remaining respondents need information about financial matters, recreation, housing, social security, Internet related concerns, miscellaneous, child care, family and personal.

The study found a wide range of information needs amongst the respondents, which confirmed previous research in this area. Amongst respondents, only a small number involved use of electronic information (10%) which suggested that use of electronic information had not been integrated into everyday information seeking strategies. Nevertheless, the study showed that when electronic information was used it was an important strategy.

How do They Go about Finding it?

The researchers also investigated the approaches to finding information in the Bayview community. All the respondents use television and radio to find information. 94% of the respondents use printed materials such as newspapers to find information. The reason for the remaining 4% of the respondents not using printed material may be because of the lack of education in which the respondents are not able to read and write. A low 10% of the respondents use the Internet to find information. The reason for this could be the lack of access to the Internet.

What Factors Affect Use of Electronic Information?

In terms of use of electronic information in the context of everyday life the need for support, a perceived lack of experience in using electronic information, lack of immediacy and a series of financial factors were all factors hindering use of electronic information amongst respondents in the

Bayview community. The cost of using electronic information meant that alternative ways of addressing everyday information needs were sought, either by using more traditional methods or by using electronic information at locations where the cost of access was borne by others (college, friends, etc.). Respondents also mentioned a lack of assistive technologies (such as screen readers) as a factor preventing them accessing electronic information independently, as well as training in their use. Such technology should be available at Telecentres as it can be expensive for individuals to buy, thus creating a barrier to using electronic information in their own homes. These results are important for future Telecentres, because they clearly point to the need for staff resources to support people in using electronic information. They also suggest that unless access to electronic information is free people will continue to find other ways of addressing their everyday information needs. Consequently for Telecentres to be meeting the needs of communities and to be sustainable secure revenue funding will be essential.

Recommendations

The main goal of the research project was to ensure that everyone has ready access to electronic information. In order to reach this goal, the researchers make the following recommendations. They suggest the launching of a special initiative to improve access to electronic information in the Bayview community. As first steps towards achieving universal access, the researchers recommend that some key areas need to be considered:

- Determining the everyday information needs of community members
- Researching barriers to using electronic information
- Providing speedy access to electronic information
- Providing affordable means to access electronic information
- Improving Internet connectivity
- Launching skills development training

The Provision of Information

It is important to note from this research that the key is information provision, in a form that may or may not involve the use of computer applications, Internet or email. Access to produce prices may be a matter of having access to a regular newspaper or a telephone, something that some of the worlds population takes entirely for granted. Many forms of information provision require improvement to facilitate the process of development to alleviate poverty, improve health and education and empower people. Nonetheless, public access to electronic information can play a role in this, and in lessening the digital divide.

The Bayview community face the dilemma of information and communications technologies further deepening the divisions between themselves and the developed communities whilst simultaneously recognizing that information and communication technologies provide the means for reducing that divide. Other than the simple acquisition of technology, specific mechanisms will be required to overcome the disadvantages suffered by the vast numbers of people who are unlikely ever to own their computer.

People Affected by Issues to Access Information and Communication Technology

People experience disability problems in many populations. Not all disabilities affect access to information technologies. As we age, the probability of developing a disability increases.

- Eye-sight may diminish
- Hearing may diminish
- Arthritis, injury or other causes may limit mobility

The number of people using the Web and other information technologies is steadily increasing. Access to these types of information mediums may be more critical for people with disabilities, who cannot easily access traditional information sources (e.g., print media by the visually

impaired; auditory media by the hearing impaired; the mobility impaired who cannot hold print materials, pens/pencils or interact with other communications media).

Information Systems to Support Permanent Public Access

The information systems to support permanent public accessibility need to be designed with a careful technological balance. On one hand, systems should incorporate technologies and features to best serve the users of electronic information. On the other hand, systems must be easily useable for the large majority of the population. This goal affects assumptions regarding typical hardware and software configurations that citizens will have available and suggests that electronic information needs to be made available in popular, easy-to-use formats. User interfaces to electronic information need to be designed to enable the large majority of citizens to use them in a straightforward way. A possible conflicting force may exist the use of formats that will make future maintenance simplest is also desirable, and these formats may conflict with the optimal formats that should be used to serve citizens today.

Conclusions

The results of this study have indicated that there are inequalities to the access of electronic information. The results indicate that 30% of respondents have no access to electronic information and 52% of the respondents' access electronic information outside the Bayview community. However if given the opportunity to access electronic information at a Telecentre in the community 77% of the respondents agreed that they would take up this opportunity. The results have indicated that by building a Telecentre in the Bayview community, it will improve access to electronic information.

Telecentres provide local centres where individuals can utilise information and communication technologies for personal or business use in order to gain access to electronic information. These developments are aimed at providing access to information and communication technology to

those who do not have such facilities in their own home or workplace, to ensure that they are not excluded from accessing increasing amounts of electronic information. Telecentres can contribute to narrowing of the digital divide by offering a wide range of information and knowledge services for social and economic development for the Bayview community. Community Telecentres are also places for social encounter and interaction, for learning, for personal growth, and for mobilizing efforts to address community problems and needs. If Telecentres are implemented in this manner then the members of the Bayview community will be able to access and use electronic information.

Access to electronic information is essential for describing and understanding the deficiencies of the present, building visions of a better future, developing practical ways to achieve those visions, and educating and inspiring those who must make the future (Godlee & Horton, 2000). The problem with this vision is the lack of access to the electronic information to the Bayview community.

References

- Burgstahler, S 1998. Disabilities, Opportunities, Internetworking and Technology (DO-IT) on the Electronic Highway. Available online at <http://staff.washington.edu/sherylb/CSUN94.html>. Accessed on 09 August, 2005.
- Burnett, G 2000. Information Exchange in Virtual Communities: A Typology. Available online at <http://informationr.net/ir/5-4/paper82.html>. Accessed 20 August, 2005.
- Butzen, S & CD Liston 2005. Rural Community Colleges and the Digital Divide." Available online at: <http://www.league.org/publication/abstracts/learning/llabs0305.htm>. Accessed on 09 August, 2005.
- Chamala, S & A Suzuki 1998. Role of Telecentres in Rural Development in Australia. Available online at <http://www.jsai.or.jp/afita/afitaconf/1998/P08.pdf>. Accessed on 20 August, 2005.
- Cornu, JM 1997. Guidelines on Best Practices for Using Electronic Information: How to Deal with Machine-readable Data and Electronic documents. Available online at <http://europa.eu.int/ISPO/dlm/documents/gdlines.pdf>. Accessed on 09 August, 2005.

- Day, J & K Ray 1998. Student Attitudes towards Electronic Information Resources. Available online at <http://informationr.net/ir/4-2/paper54.html>. Accessed on 09 August, 2005.
- Delgadoillo, K & R Gomez 2002. Community Telecentres for Development: Lessons from Community Telecentres in Latin America and the Caribbean. First edition. Available online at http://www.web.idrc.ca/uploads/user.S/10400104800Community_Telecentres_for_Development.pdf. Accessed on 19 April, 2005.
- Ellen, D 2000. Telecentres and the Provision of Community Based Access to Electronic Information in Everyday Life. Available online at <http://www.hlss.mmu.ac.uk/infocomms/research/ellen/dellenphdthesis2000.pdf>. Accessed 10 March, 2005.
- Ernberg, J 2005. Universal Access by means of Multipurpose Community Multipurpose Community Telecentres. Available online at http://www.find-articles.com/p/articles/mi_qa3991/is200404/ain9397110. Accessed on 22 March, 2005.
- Godlee, F & R Horton 2000. Global Information Flow. Available online at <http://bmj.bmjournals.com/cgi/content/full/321/7264/776/>. Accessed on 20 August, 2005.
- John, R 1996. Putting Content onto the Internet. Available online at <http://www.firstmonday.org/issues/issue2/content/>. Accessed on 9 August, 2005.
- Kagan, A 1998. Social Responsibilities Discussion Group Paper: The Electronic Information Gap. Available online at <http://www.ifla.org/VII/dg/srdg/srdg5.htm>. Accessed 09 August, 2005.
- Keery, N 1997. The Challenge of Openness as European Union Information goes Electronic. Available online at http://www.firstmonday.org/issues/issue2_12/keery/. Accessed on 09 August, 2005.
- Komoski, K 2001. The Digital Stepping Stones Conference. Available online at <http://www.linct.org/>. Accessed on 9 August, 2005.
- Maxwell, C 2000. Global Trends that will Impact Universal Access to Information Resources. Available Online at on <http://www.isoc.org/isoc/unesco-paper.shtml>. Accessed 09 August, 2005.
- Mrayati, M 2005. Possible models of initiatives to promote ICT for

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- Employment and Poverty Alleviation 1. Available online at <http://www.escwa.org.lb/mtecpr/docs/eradication.pdf>. Accessed on 20 August, 2005.
- Short, G 1998. The Socio-economic Impact of Telecentres in Rural and Remote Western Australia. Available online at http://www.itu.int/ITUUD/univ_access/seminar/buda/papers/final/f_short.pdf. Accessed on 20 August, 2005.
- Singh, AM 2004. Bridging the Digital Divide: The Role of Universities in Getting South Africa Closer to the Global Information Society. Available online at <http://www.sajim.co.za/default.asp?to=peer4vol6nr2>. Accessed on 22 October, 2005.
- Whu, EU 2002. Rural Telecommunications and Stanford Initiative on Community Corporations: A New Approach to Universal Access. Available online at <http://www.stanford.edu/~eulffe/ee391/Paper.pdf>. Accessed on 22 March, 2005.
- Wilson, TD 1995. Education for Information and the Internet. Available online at <http://informationr.net/tdw/publ/papers/efori.html>. Accessed on 9 August, 2005.

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