THE EFFECTS OF INFORMATION AND COMMUNICATION TECHNOLOGIES ON INDIGENOUS COMMUNITIES IN SOUTH AFRICA: A LIBRARY AND INFORMATION SCIENCE PERSPECTIVE

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ABSTRACT

When information and communication technologies (ICTs) are introduced in an indigenous environment, they bring along with them mass media, popular culture and global languages such as English. This may cause conflict with existing local traditions and may sometimes erode cultural stability. Paradoxically, these technologies can also empower the same community with new tools to create new economic, social and political opportunities besides preserving, promoting, and even safeguarding its indigenous cultural identity. This dichotomy begs the question: under which conditions can ICTs empower indigenous communities? This article investigates this question, focusing on the role of ICTs in promoting indigenous peoples' livelihoods in South Africa. It analyses key factors under which information and knowledge can be instrumental for the empowerment of marginalised groups. The article argues that improved access to information coupled with ICT skills can enhance indigenous peoples' capabilities to make strategic life choices and uplift their own livelihoods. Furthermore, the article develops an alternative evaluation framework for ICT interventions in indigenous communities based on Sen's (1999) capability approach. In contrast to the dominant narrative around the 'digital divide', this framework places the human development of indigenous communities other than ICTs at the centre of the analysis. With examples and experiences from two case studies

from South Africa and Uganda, the article concludes that there is no direct causal link between ICTs and the social development of indigenous communities, but that in fact this relationship is shaped by a dynamic, multi-dimensional interrelationship between technology and the social context.

KEYWORDS

indigenous communities, indigenous knowledge, information and communication technologies, digital divide, social empowerment

1   INTRODUCTION

There is general consensus that information and knowledge can play a crucial role towards the socio-economic empowerment of indigenous communities. However, the potential impact of information and communication technologies (ICTs) to facilitate information access and dissemination within these communities has become a contested issue (Heeks 1999; ITDG 2001; Pahjola 2002; Wilson 2004). In recent years, scholarship from different disciplines in the social sciences has looked at the effects of ICTs on peripheral groups, such as indigenous communities, from three distinct vantage points:

Firstly, proponents of ICTs have taken an optimistic view by highlighting the positive effects of the Internet and other forms of ICTs to create new economic, social and political opportunities for the marginalised within the global society (Braga 1998; Pohjola 2002; UNDP 2001; World Bank 2002).

Secondly, its critics, on the other hand, have taken a pessimistic view, claiming that due to existing socio-economic inequalities, ICTs will only favour the privileged segments within society and not reach the economically and socially disadvantaged. This will then lead to a widening of the socio-economic gap especially in a stratified country such as South Africa which has a huge indigenous population (Gumucio 2001; Panos 1998; Wade 2002).

Thirdly, there is the contextualised approach to ICTs which underscores the importance of the socio-economic and cultural context existing within indigenous communities. This approach argues that the indigenous worldview and its socio-economic realities are linked to the potential effects of ICTs on indigenous peoples (Avgerou 2001; Walsham 1998).

2   PROBLEM STATEMENT

In spite of their differences, the three aforementioned approaches have one significant commonality, namely: the importance of ICTs and their societal, economic and political impact. These different schools of thought distinguish themselves by emphasising either the positive or negative impacts of ICTs on indigenous peoples' lives, or the fact that the impacts will vary depending on the local and social context in which the ICT programme is being implemented. In contrast to these more conventional approaches to ICTs, however, this article seeks to investigate this issue from the perspective of the indigenous peoples themselves.

This approach stresses the capacity of indigenous communities to define their own information needs, whereby outside agents would only come in to work with the community, once the community has developed its own vision and identified its specific information needs for outside support. Based on such a 'people-centred' approach to information access and use, the article will develop an alternative evaluation framework of ICT interventions in indigenous communities. In that regard, it will apply Sen's (1999) capability approach and its theoretical framework to the evaluation of the impact of ICT programmes. Within this analysis, the article will address two important questions: can the improved access to information and knowledge facilitated by ICTs enhance the individual and collective capabilities of indigenous communities to better achieve the lifestyle they value? If so, under which conditions can this be possible?

In order to respond to these questions, the article examines key factors that have to be met in order to enable indigenous people to have meaningful access to ICTs and allow them to appropriate these technologies as an instrument for their own development. In particular, the article examines the following key hypotheses (ITDG 2001):

- A successful mediation process by an effective and local intermediary is required so that ICTs can contribute in a meaningful way to improve the livelihoods of indigenous communities.
- ICTs have to be locally appropriated by indigenous communities themselves, in order to facilitate their empowerment.
- ICTs have to build on and strengthen existing social and organisational community structures, in order to lead not only to the individual, but also the collective empowerment of indigenous communities.

On the basis of two case studies on the use of ICTs by indigenous communities in South Africa and Uganda, the article provides a series of conclusions, which highlight that it is impossible to identify a direct and causal nexus between ICTs and the empowerment of indigenous communities, but stress the complex and dynamic interdependency between people, social institutions and technology.

3 THE ROLE OF INFORMATION AND KNOWLEDGE FOR SOCIAL EMPOWERMENT IN INDIGENOUS COMMUNITIES

The impact of ICTs on indigenous communities cannot be understood without first understanding the role information and knowledge play for their social upliftment. In the ICT for development debate, which is common within the social sciences, the emphasis is frequently placed on providing access to ICTs to the poor before analysing the value information and knowledge exchanges play for development at the local level (Black 1999; Mansell 1998; Norris 2001). The importance of traditional or local information systems, which are based on indigenous knowledge and traditional communication patterns are frequently ignored.

A good example is the World Development Report of 2000 (World Bank 2001) which stresses the critical value that knowledge plays in the development of marginalised communities. While the report acknowledges the existence of different knowledge systems in the world, it only places value on two, namely: technical knowledge (ie, in health, agriculture, accounting, etc) and knowledge about attributes (ie, the quality of products or the credibility of a borrower). It emphasises the importance of closing the 'knowledge gaps' and overcoming information problems in 'developing countries' in order to improve the living conditions of the poor. The report adds that the 'North–South' knowledge transfer is fundamental for development. However, the report does not acknowledge the important role that indigenous and local knowledge play in sustainable development (World Bank 2001).

This view of knowledge transfer is based on a supply-side approach, which identifies the lack of information and knowledge at the local level as an important reason for poverty and marginalisation in developing countries such as South Africa (Wilson 2004). Based on this conceptualisation on the role of information and knowledge for development, ICT proponents frequently highlight the threats of an increasing 'digital divide' and advocate for the rapid diffusion of modern forms of ICTs (Internet, cellphones, videoconferencing, etc) in poor communities in order to enable them to overcome these existing knowledge gaps (Van Dijk 2005).

In contrast to this conventional approach to information and knowledge for development, the article will emphasise that the existing information and knowledge gaps are rather mutual in nature. This means not only that indigenous communities lack access to information and knowledge, but at the same time, policymakers and donor institutions (especially from the North) also lack knowledge and nuance about the local and cultural contexts of these communities. This approach emphasises that it is crucial to first understand the traditional or indigenous information systems and to

assess existing information channels and communication patterns in these communities before introducing ICTs (ITDG 2001).

Thus, rather than the lack of knowledge of poor indigenous communities, the existing political, socio-economic and cultural barriers between the urban elites and the rural poor, inhibit these communities from making their information and knowledge known and disseminated. This in turn blocks their active participation in the dominant society's political and economic system (ITDG 2001). In this sense, the discussion of the role of information and knowledge in development has to be seen within the broader context of existing structural inequalities and the social exclusion of marginalised groups in developing countries such as South Africa.

The analysis in the article will draw on the contextual approach to ICTs, which underscores the importance of the socio-economic and cultural realities, considered crucial for a better understanding of the potential effects of ICTs on indigenous communities (Avgerou & Walsham 2001; Walsham 1998). In contradiction to the technologically or socially deterministic approach, this viewpoint does not assume a linear and causal relationship between technological innovation and social empowerment, but highlights the dynamic interrelationship between the social context and information systems. It stresses that technology only receives meaning once it is being 'enacted' by users and thus people can exert control over its use by interpreting and appropriating it to their specific realities (Orlikowski 2000). In essence, it places human action rather than cutting edge technology at the centre and emphasises the interdependencies between technology and the social context (Avgerrou & Walsham 2001; Orlikowki 2000).

4   THEORETICAL PERSPECTIVES

Based on the analysis above, the article uses Sen's (1999) capability approach as the main theoretical framework, as it seems to best capture the main fundamentals of social empowerment in marginalised communities. In the past, Sen's capability approach has been used to design the theoretical foundations to evaluate development programmes from a human development perspective (Gasper 2002).

Sen's (1999) main thesis is that human development should be viewed first and foremost as a process of expanding people's capabilities. What matters, according to Sen (1999), is what people are capable of doing, with the tools to which they have access. A person's 'capability', therefore, refers 'to the alternative combinations of functionings that are feasible for him/her to achieve' certain goals (Sen 1999:75). Capability is thus 'a kind of freedom: the substantive freedom to achieve various lifestyles' (Sen 1999:75). Capabilities include things that a person actually has done, as well as things he/she potentially can do. In other words, 'capabilities refer to the extent of one's positive freedoms' (Gasper 2002:5).

Sen (1999:75) explains that the concept of 'functioning' 'reflects the various things a person may value doing or being'. In other words, it represents 'various components or aspects of how a person lives' (Gasper 2002:4). Therefore, a person's ability to realise his/her desired and valued 'functionings' very much depends on his/her capabilities as well as entitlements or assets (Gasper 2002:4).

Over the past couple of years, there has been a lot of debate in the literature on whether or not Sen's capability approach can be practically applied to empirical research. On the one hand, some researchers, such as Comim (2001:4), have endorsed this approach, noting that the capability framework is well suited for 'evaluating and assessing social arrangements, standard of living, inequality, poverty, justice, quality of life or well-being'.

On the other hand, however, some scholars (Alkire 2002; Nussbaum 2000) have highlighted practical difficulties in the application of the approach. Comim (2001:2) explains that these difficulties derive from the capability approach's 'theoretical under specification and inclusive view of application which contest not only the evaluative but also the practical foundations of utilitarianism'. A key challenge has been to define a set of basic capabilities, in order to have a base-line from which to start specific evaluations (Alkire 2002; Nussbaum 2000).

Another difficulty related to the application of the capability approach, is that some capabilities are harder to measure than others. For instance, as Comim (2001) explains, it is much more difficult to assess people's ability to have self-esteem, than their ability to write and read. This represents particular challenges for gathering data on the non-material aspects of people's well-being. Comim (2001), therefore, suggests that the capability approach is better suited for micro-level studies, since the approach focuses its attention, to a large extent, on non-income variables. Such an approach, he argues, will reveal more interesting findings at the micro- rather than at the macro-level, since research at this level can focus on the analysis of peoples' ability to choose what to do or be (Comim 2001).

5   DEVELOPING AN EVALUATION FRAMEWORK OF ICTS INTERVENTION IN INDIGENOUS COMMUNITIES

Based on the theoretical foundation discussed above, the article seeks to develop an alternative evaluation framework of ICT interventions in indigenous communities. The core questions that the article intends to examine are: whether the improved access to information and knowledge facilitated by ICTs can enhance the individual and collective capabilities of indigenous people to achieve the lifestyle they value, and if so, under which conditions this can happen.

Sen's (1999) holistic approach to development is well suited to evaluate the potential effects of ICT interventions in indigenous communities, considering that a key characteristic of ICTs is their multi-sectoral dimension. This means that ICTs can affect people's lives simultaneously in the economic, social and political spheres (Heeks 1999). This approach stands in contrast to the majority of existing ICT evaluations which have focused primarily on the issue of 'access', 'usage' and 'dissemination' (Heeks 1999). This assumes that the mere improved access to ICTs will have a direct positive impact on the lives of the poor. These evaluations focus on measuring more immediate and quantifiable output indicators, such as an increase in the total number of Internet hosts or an increase in the number of computers per capita (Heeks 1999).

However, the present approach is in favour of going one step further and placing the individual and collective capabilities of indigenous people at the centre, with information and ICTs playing a supportive role. This underscores the fact that ICTs are not a means to an end by themselves and that in fact under certain conditions can act to expand the capabilities of the marginalised in society to realise improved economic, social, political and cultural opportunities. Although it is argued that the right to information and knowledge is an important entitlement and its absence can be a contributing factor to poverty, this notion needs to be balanced against the broader context of existing social and economic inequalities, which may reinforce themselves through the technology (Castells 1997; Hewitt de Alcántara 2001). On that basis, the sustainable livelihoods framework will be integrated to attempt a more holistic socio-economic analysis of the possible effects of ICTs on indigenous groups (Kenny 2003).

As a starting point, it will be argued that it is important to introduce information as an additional asset or capital into the sustainable livelihoods framework. The analysis of the role that information and knowledge can play in development and the view that the right to information represents an important entitlement of indigenous communities calls for the inclusion of 'informational capital' into the livelihoods approach (Kenny 2003). This concept is defined and analysed through the following four components (Gigler 2001):

a. the extent to which indigenous people have access to information from the formal institutions of the market, state and civil society;

b. the ability of indigenous people to process and evaluate that information;

c. the extent to which indigenous people do not only consume, but also produce and share information within their community and networks; and

d. the extent to which indigenous knowledge plays a role in the lives of indigenous people.

Thus, this framework aims to underscore the fact that the inter-linkages between informational capital and all the other capitals are crucial for evaluating the role of information and ICTs in the livelihoods of indigenous people. At the same time, it is

accepted that information in its own right is an important asset for indigenous people to improve and/or secure their livelihoods.

This approach underscores the fact that the capability of individuals and social groups to transform valued 'functionings' into realised 'functionings' depends to a large extent on their livelihood resources or capitals. The expansion of capabilities is thus, understood as the strengthening of peoples' capitals (Gigler 2001). What, howeve, is the role that information plays in this context and what justifies broadening the livelihood approach by the additional dimension of the 'informational capital'?

The main argument for including this dimension into the framework is that information and ICTs can play an important role not only in their own right, but can act as an 'agent' for the strengthening of indigenous people's capitals in multiple areas (Bebbington 1999; Kabeer 1999). As the review of the literature above has demonstrated, only the combination of strengthened resources and agency can lead to enhancing individual and collective capabilities. This approach, therefore, suggests that analysing the conditions under which the expansion of the informational capability can have a positive 'multiplier effect' on the other capabilities. In other words, does the expansion of indigenous people's capability to make meaningful use of ICTs strengthen their capabilities to achieve valued functionings in multiple areas?

This notion comes from Sen's (1999) concept about the role that human capital plays, not only in enhancing a person's ability to generate income, but also in expanding his/her capabilities to lead a freer and more fulfilled life and to reach his/her valued 'functionings'. In this sense, the focus is on the agency role of human capabilities to bring about social change. The article suggests applying this concept to the field of ICTs, and further argues that better access to information and enhanced ICT skills similar to the enhancement of a person's writing and reading skills can enhance indigenous peoples' capabilities to make choices in their lives in various areas, including the economic, social and political spheres.

As a result of the enhanced informational capabilities, indigenous people will then be able to expand their control over important life choices. In that sense, information and ICTs can contribute towards the empowerment of indigenous communities. It is, however, important to emphasise that in this scenario, the improved access to ICTs has indirect rather than direct consequences on the livelihoods of indigenous communities (Avgerou & Walsham 2001; Walsham 1998).

Thus, this framework suggests that a complex process needs to occur for ICTs to have any positive impact on the lives of indigenous communities. The framework cautions that there is no direct causal link between ICTs, information and empowerment in indigenous communities, but that the relationship between these variables is much more multi-dimensional and needs to be seen within the broader context of sustainable human development. Additionally, the framework is based on the contextualised approach to ICTs and, as such, stresses the importance of the local socio-economic, political and

cultural context in the analysis of the effects of ICTs on indigenous empowerment (Avgerou & Walsham 2001; Walsham 1998).

Moreover, the framework highlights the need to recognise and assess, at the outset of ICT programmes in these communities, existing traditional information systems and patterns (Nakata 2002). A common reason for the failure of ICT projects – especially in marginalised communities – is that key community members perceive the new technologies as a mechanism to undermine existing information systems and as a challenge to the 'knowledge brokerage' role of key stakeholders (Etta & Parvyn-Wamahiu 2003; Robinson 1998). Thus, it is necessary to carry out an information needs assessment prior to introducing ICTs, and to use this tool in identifying the key stakeholders and their interests in the information system. Such an assessment will make explicit the role that information plays for the community and which information and communications channels (eg, oral tradition, community-radios, etc) are traditionally being used in the communities (Farrell 2001; Robinson 1998).

Finally, this framework emphasises that a successful mediation process by an effective and local intermediary is required before ICTs can make a positive contribution towards expanding the livelihoods of indigenous people. Local intermediaries can play a decisive role in:

   a. identifying and providing access to ICT products and services that suit the local community's information needs;
   b. supporting the generation of local and relevant content; and
   c. providing ongoing support in the areas of training and capacity-building (Ballantyne 2002).

Within this process, the local appropriation of technologies by indigenous communities and the contextualisation of information provided through ICTs is required before indigenous communities are able to derive meaningful benefits out of its use. Mere access to ICTs by the local community will not enable users to add value to their lives (Ballantyne 2002; Delgadillo, Gomez & Stoll 2002).

Detractors have sometimes described the Internet as a medium of the Western elite (Ballantyne 2002). Therefore, it needs to be appropriated by local communities before they can derive any meaningful value from it. Frequently, the content on the Internet does not reflect the realities of these communities (Ballantyne 2002). The language of the Internet is often written for an audience reading at an average or advanced literacy level, representing a major barrier for many indigenous Africans. Finally, a continuous programme to support the capacity-building of people in using ICTs is necessary to ensure that these technologies can be used in a meaningful way and that in fact they are being used in the first place (Delgadillo et al 2002).

6   RESEARCH METHODOLOGY

The current study was based on applied research, which emphasises the provision of information that can be used to solve actual problems. The study used the descriptive research design utilising the case study approach (Cilliberti 2004; Ngulube 2002). Data on the two cases under review was collected from the literature (both online and print) and via email questionnaires. Although the methodology used does not allow results to be generalised (Ngulube 2002), it still provides an in-depth insight into issues relating to the impact of ICTs in indigenous contexts. The objective of the study was to explore these issues from the perspective of indigenous communities themselves.

7   CASE STUDIES OF THE USE OF ICTS BY INDIGENOUS PEOPLES IN AFRICA

Throughout Sub-Saharan Africa, an increasing number of indigenous communities are embracing ICTs as an instrument to promote their own development and to fight for their rights (Africa Media Online 2011). What follows is a discussion of two cases of concrete applications of ICTs by indigenous communities both at the community and organisational levels. The cases are the Nakaseke telecentre in Uganda and the Bhamshela telecentre in South Africa (Chisa 2006). For the purposes of the article, a telecentre will be understood as:

> an integrated information and communication facility that houses a combination of both new and not-so-new ICTs (e.g. television, video, radio, facsimile, telephone, computers with Internet connectivity, printer and sometimes books). This type of facility in which a number of different information and communication technologies are housed and used in integrated manner is commonly called a multipurpose community telecentre (Etta & Parvyn-Wamahiu 2003:13).

Access to ICTs in multipurpose community telecentres (MCTs) has become increasingly important to promote widespread access to and use of ICTs in indigenous contexts, as evidenced in both academic and industry literature on ICTs and development (Bertot et al 2008; Heuertz et al 2003; Kamssu, Siekpe & Ellzy 2004; Kuriyan & Toyama 2007; Selwyn 2003; Van Dijk 2005; Wilson 2004). While the two cases are focused on the use of ICTs by indigenous communities in South Africa and Uganda, many of the findings may also be relevant for marginalised groups in other cultural and socio-political settings throughout Africa.

7.1   NAKASEKE MCT (UGANDA)

Nakaseke MCT is located in the rural Nakaseke sub-region in the Luweero district of Uganda. It is about 50 kilometres north of the Capital City, Kampala and 16 kilometres from the nearest town, Wobulenzi. At the time of its establishment, the MCT served

not only the local people but also the 24 neighbouring primary schools, four secondary schools, a primary teacher's college and the nearby hospital (Dagron 2001: 332).

The Nakaseke MCT became operational in March 1999. The general concept was to provide a centre where the rural community could access ICTs and where it could be shown whether providing ICTs to indigenous communities could catalyse their development and improve the quality of their lives. The effectiveness of the MCT strategy would be measured against the level to which the community had received increased access to lCTs, local content and the community's participation in documenting and using their own information (Mayanja 1999). The telecentre's aim was to serve the two communities of Nakaseke and Kasangombe but most particularly the following core user groups: women, youth, government workers, teachers, students, small-scale farmers and local leaders (Mayanja 1999).

The content and programming for the MCT was, therefore, primarily tailored towards meeting the information needs and aspirations of its core target groups (Mayanja 1999). In this case, a CD-ROM offering direct access to information for small-scale businesswomen was developed. At the time of the study, the CD-ROM was available in English and the Luganda languages (Women of Uganda Network 2002).

According to Benjamin and Dahms (1999), the services offered by the Nakaseke MCT included computer applications, computer training, Internet, email, photocopying, telephony, fax, video shows, audio recordings and community radios. Community members were asked to endorse a list of community leaders identified for a free-of-charge training programme to ensure that a core group of selected trainees would in turn train the rest of their community on the use of computer programs.

When the telecentre became operational in 1999, there was only one fixed telephone line in the entire Nakaseke neighbourhood. However, by 2001, telecommunication infrastructure in the area had expanded to 250 lines and two public phones in the sub-region in addition to the two in the telecentre (Etta & Parvyn-Wamihau 2003:83).

Despite its popularity and usage, however, the Nakaseke MCT experienced a number of problems. Firstly, frequent power outages were a constant feature. Moreover, while the telecentre was, at the time of its opening in 1999, just about covering costs subsidised by the community, Benjamin and Dahms (1999) observe that there was no expectation that it could generate enough income to replace obsolete equipment, let alone repay the major capital investment from donors.

Poor telephone connectivity was another challenge. The landline telephone system at the time of inception was 16 kilometres away from the telecentre site. Although the project plans provided for a special telecommunication system, it could not be implemented in a short period. It was later decided, therefore, that a land line be established to run the 16 kilometres to the telecentre. The plan allowed for limited voice connection to the telecentre, but accessing the Internet remained difficult due to the poor quality of the

telephone line (Dagron 2001). Huge telephone bills were also a constant burden (Etta & Parvyn-Wamahiu 2003).

Finally, Internet and email services were the least utilised services at the telecentre. Etta and Parvyn-Wamahiu (2003) attribute this to poor electricity supply and expensive connectivity which resulted in high user rates. However, most people did not use the Internet either because the content was not yet relevant to their daily needs or due to lack of computer skills (Benjamin & Dahms 1999; Dagron 2001). Thus, despite its relative success, the general opinion in Nakaseke was that the operational model at the telecentre at the time would not ensure sustainability. Benjamin and Dahms (1999) also note that the telecentre required huge donor support and so was unlikely to be a model that could be replicated everywhere in Africa.

7.2   BHAMSHELA TMC (SOUTH AFRICA)

Despite its new democratic dispensation, South Africa still remains a divided society. The apartheid heritage has left a strong connection between race and socio-economic status. Under apartheid, from 1948 to 1994, a person's race influenced his/her occupation, place of residence, education, choice of partner, freedom of movement, and use of facilities and amenities (Institute of African Development 2010). This legacy will take decades to erase. At the dawn of democracy in 1993, indigenous South Africans made up 76 per cent of the population but earned only 29 per cent of the country's total income. Whites, who constituted only 13 per cent of the population, accounted for 58 per cent of total income. For coloureds the shares were 8 per cent of the population and about 7 per cent of the income; for Asians, 3 per cent of the population and 5 per cent of the income (Institute of African Development 2010).

Since the end of apartheid, attention has focused on other problems in South African society. The most prominent of these issues are unemployment, lack of housing, poverty and crime. Indigenous South Africans continue to be disproportionately affected by these problems. These social issues are closely related to one another, and to some degree they are also the legacy of apartheid (Institute of African Development 2010).

According to Internet World Stats (2013), South Africa has by far the largest number of fixed line and mobile connections in Africa. The country also has the most advanced ICT sector on the continent. However, access to ICTs in the country tends to follow lines of existing inequalities (Etta & Parvyn-Wamahiu 2003).

The main telecommunications operator is the former state-owned giant Telkom, which still has a monopoly on fixed lines. The Telecommunications Amendment Act (No. 64 of 2001) made way for the introduction of a second network operator. The government has introduced special licences to small, medium and micro enterprises to operate Public Switched Telephone Networks (PSTN) in rural areas. The cellular phone share of the market has also grown rapidly over the past few years, with three main providers, namely: Vodacom, MTN and Cell C. Virgin and 8ta, which are relatively smaller, have

also recently joined the market. There are currently more mobile than fixed lines in South Africa, a situation similar to that in Uganda and most parts of the African continent (Deloitte & GSMA 2012).

Since the democratically elected government led by the African National Congress (ANC) came into power in 1994, it has attempted to share and spread the riches of the country to a wider majority of the people (Institute of African Development 2010). For example, when the Telecommunications Act (No. 103 of 1996) was enacted, the government declared universal access to telephony as the cornerstone of this policy (Benjamin et al 2000). The Telecommunications Act created the Independent Communications Authority of South Africa (ICASA) in 2000 as the telecommunications regulator after merging the South African Telecommunications Regulatory Authority (SATRA) and the Independent Broadcasting Authority (IBA).

The Telecommunications Act also established the Universal Service Agency (USA) as the primary mechanism for the provision of ICT access throughout the country. The USA has largely focused on setting up MCTs and cyberlabs (ie, commercially operated telecentre models which charge clients for services) in South Africa (Benjamin et al 2000; Burton 2002). Benjamin et al (2000) add that 12 of the telecentres set up by the USA in the country were with assistance from the International Development Research Centre (IDRC). One example of the USA/IDRC funded telecentres in South Africa is the Bhamshela MCT.

Bhamshela is a small rural town about 90 kilometres east of Pietermaritzburg in an area called Ozwathini. According to Burton (2002), the process of establishing the MCT arose from a call of expressions of interest by the USA to which the community responded by forming an organisation to take the initiative forward. Two community groups owned the telecentre, namely, the Bhamshela Arts and Cultural Group and the Open Window Network, which was a Cape Town-based non-governmental organisation with a chapter in Bhamshela.

It was expected that the telecentre would work as a small business enterprise whereby clients would pay for the use of telephone and fax, photocopying, computing, email and Internet services at a rate that would generate income for the initiative (Burton 2002). It was projected that this income would enable the telecentre to become viable after a year, and that any profits would be ploughed back into the telecentre to upgrade and develop resources. The telecentre officially opened in April 1998. It started with six telephone lines, a fax machine, a photocopier, a printer, six computers and a scanner. Its two managers, both women (significant, given the entrenched patriarchy in the area), were trained in computing and management by the USA (Schreiner 1998).

However, what began as a promising information resource centre soon became a technological nightmare and financial burden to the community. The Internet facility was only successfully installed at the end of 1999, one year after the MCT's inception. The printer stopped working after the first week. Consequently, staff members had to

walk a long distance to print at a different facility since they were unable to raise enough capital from the telecentre income to buy a new printer (Schreiner 1998). Schreiner (1998) adds that services such as scanning, email and the Internet were underutilised due to low literacy levels amongst potential users. Moreover, the telecentre was unable to generate enough income to keep prices at an affordable rate. The telephones were the largest source of revenue. However, the revenue realised by the telephones was insufficient to ensure financial security. By March 1999, prices for telephone services had increased by 150 per cent since the telecentre's opening, rising from 40 cents per phone call unit to one rand per unit (Schreiner 1998).

In response, the telecentre decided to curb spiralling costs by beginning to offer basic computer training courses. Seemingly, there was demand for such a service due to the high priority many people placed on finding employment and the perceived importance of computer skills in formal-sector jobs. However, many students defaulted on their tuition payments because they could not afford them. Furthermore, very few graduands from the telecentre found jobs because their training was not professionally recognised (IDRC 2002). As time went on, Bhamshela MCT declined in popularity. The telecentre was temporarily closed after experiencing problems with Telkom resulting from a large bill it could not pay. Although the MCT later resumed operations, it continued to be hampered by chronic operational problems (Burton 2002:45).

8 CONCLUSION AND RECOMMENDATIONS

The analysis of the two cases above has shown that under certain conditions, ICTs can significantly enhance the human and social capabilities of the marginalised, thus empowering them at the individual and community level. At the core of this empowerment process stands the notion that ICTs can enhance people's control over their own lives. As is the case with literacy, newly acquired 'informational capabilities' can act as an agent for change for individuals and communities, thereby enhancing their abilities to engage with the formal institutions in the economic, political, social and cultural spheres of their lives.

In this context, the question of whether ICTs are channelling resources away from the real priorities and needs of indigenous communities in South Africa seems to be misplaced. Instead this question should be rephrased to address the issue of how ICTs could be used to meet the informational needs of these communities. This, however, will require a shift in focus of ICT interventions to address such challenges as the fight against HIV/Aids; helping to provide information for employment opportunities; and supporting the fight against crime.

At the same time, the two case studies have demonstrated that due to the existing euphoria around the potential benefits of ICTs, the high expectations of indigenous

communities cannot be met. The case studies showed that ICTs are only able to address certain aspects of the development challenges facing indigenous communities and that in fact they are unable to change the existing structural, social, political and economic inequality. For instance, while ICTs can act as an effective tool in improving the access of small-scale businesswomen in Uganda to market price information, they are unable to address the underlying structural market inequalities between small-scale business and the global market.

Furthermore, the article has illustrated that there is no direct and causal relationship between ICTs and poverty reduction. This relationship is much more complex and indirect in nature, whereby the issue of its impact on the livelihoods of indigenous people depends to a large extent on the dynamic and iterative process between people and technology within a specific local, cultural and socio-political context. As demonstrated by the two case studies, the most immediate and direct effect of ICT programmes seems to be the psychological empowerment of indigenous people, whereby newly acquired ICT skills provide the people with a sense of achievement and pride, thus strengthening their self-esteem.

A key recommendation of the article, therefore, is that the human development of people, rather than technology itself should be at the centre of the design and evaluation of ICT interventions in indigenous communities. As has been shown, the important advantage of using the 'capability approach' as the basis for the evaluation of ICT programmes is its emphasis on the ability of ICTs to improve the daily livelihoods of marginalised communities, in contrast to more conventional approaches which overemphasise the significance of technology itself for social change.

Furthermore, evaluations of the impact of ICT programmes should focus on an analysis from the vantage point of the local community, rather than from the perspective of outside players such as donor organisations. In addition, the analysis provides the following concrete recommendations on the manner in which ICTs programmes should be designed and implemented in order to be most effective on facilitating the empowerment of indigenous groups.

Firstly, the potential benefits of ICTs are largest when they are being fully integrated into other sectoral development programmes (ie, education, health or small-scale business). At Nakaseke MCT, for example, a donor/local community collaboration came up with a CD-ROM that offered direct access to information for indigenous women who are among the most marginalised in development. The CD-ROM, which provided guidelines on small-scale entrepreneurship, was available in both English and the Luganda languages (Women of Uganda Network 2002). It is, however, important that marginalised communities first identify and define their own needs and development priorities before other role players can define whether and how ICTs can support the community's development goals. As has been demonstrated by the Bhamshela case,

in cases where such a process was not undertaken and the exact objectives of the ICT project were not defined, ICT programmes frequently falter.

Secondly, ICT programmes are most effective when combining traditional media with new forms of ICTs. As the Nakasake case has demonstrated, the convergence between two different technologies – the Internet and community radio stations, for example – combined the advantages of both media. While the Internet is a powerful tool to connect networks and to exchange large amounts of information across long distances, community radios have a very broad reach and represent the most accessible and inclusive technology for the poor. Due to the oral tradition of indigenous communities, this is of particular importance, considering that its use does not require literacy.

Thirdly, it is essential that any ICT programmes in indigenous communities need to carry out a detailed assessment of existing information flows and information needs before initiating any project activities. Thus, the analysis should focus on how the new technologies can strengthen existing communication and information exchanges within and in between communities. The assessment should furthermore identify key 'information intermediaries' in the community and analyse existing power relationships as they relate to the transfer of knowledge within the communities. As the Nakaseke case has shown, indigenous elders and other leaders play a crucial role in the sharing of knowledge within communities. If these stakeholders perceive ICTs as detrimental to their existing power as an institution, they will attempt to undermine the ICT enterprise and the consequence could be the failure of the entire project. ICTs can easily disrupt existing social structures and alter the power relationships within communities as the Bhamshela case has demonstrated where the two centre managers were both women.

Fourthly, in order for the evaluation of the impact of ICTs on the empowerment of indigenous communities to be successful, it is crucial to analyse the process of how ICTs are introduced in these communities. In this regard, outside agents such as donors or government officials can play a key role in supporting the local community in appropriating the technologies to meet their own local and cultural needs. Within this process, it is key that community members gradually gain the skills to make meaningful use of ICTs as well as gradually take ownership of the management of the project. As the two case studies have demonstrated, capacity-building activities and the provision of local content through intermediaries are two important factors which influence whether or not an ICT project will indeed strengthen the community's capabilities and thus contribute towards improving people's livelihoods.

Finally, the article has demonstrated that the most important factors that influence whether an ICT programme has positive outcomes or not are social, political and cultural in nature, while the technical issues involved in the provision of ICTs frequently play a secondary role. The analysis has highlighted that frequently ICT programmes do not respond to concrete needs expressed within the communities. Rather, they are designed through a top-down supply-driven approach. In order to avoid the potential

social negative effects, it is crucial to base any ICT intervention on the existing social community structures. In that way, the projects will strengthen traditional information systems; build on existing indigenous knowledge; and enhance existing information channels rather than undermine existing structures.

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