The Internet as an information conduit in developing countries: an investigation of World Wide Web usability among small and medium textile enterprises in Botswana

by

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TABLE OF CONTENTS

List of tables

List of figures

DEDICATION

I dedicate this work to my sons,

Inkosiphile Ndabezinhle Jahalami Mbambo

and

Bekithemba Mayibongwe Jahalamajaha Mbambo

ABSTRACT

The Internet has been called *the technology of the century* because it is expected to reduce the development gap between developing countries and developed ones. This thesis examines the validity of that assertion. The researcher examines Internet use at two levels: the first level is the macro level of issues of Internet connectivity in developing countries, and the second level is the micro level of the usability of the World Wide Web for information management in a developing county, Botswana.

The two research methodologies of *content analysis* and *case study* are used in this study.

The findings of this study are that while there is a need for macro policy to create national and global environments for using the Internet, sustainable connection should not be universal but should rather be based on the information management needs of a target population. Inherent infrastructural and socio-technical challenges should then be tackled as part of the effort to create a sustainable Internet use.

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CHAPTER 1

OVERVIEW

1.1 Introduction

This thesis investigates the role of the Internet in information management in developing countries. The literature describes the Internet as an essential part of the development process (Kole2000; Ngwainmbi 2000; Hoffman, 2000 1999; Mansell and Wehn 1998). The literature appeals to development organizations to speed up the development process by adopting the Internet and modern information communication technologies (ICT) (Kgegwenyane 2000; Thaphisa 2000; UNDP ICT Experts 2001; World Bank 1998) This work examines the validity of those calls and assertions.

The present work examines the relationships between those technical and social phenomena that determine the relevance and usability of the Internet for information dissemination in developing countries in general, and in Africa in particular. The work examines the role of the Internet in development in two ways:

- It considers Internet use environments in developing countries.
- It examines the usability of the World Wide Web (WWW) as an information conduit for entrepreneurs in a specific developing country, namely Botswana.

1.2 Objectives of the research

Internet enthusiasts, together with the World Bank and UN bodies, have stated that the Internet is "the technology of the century" and that will it help Africa to move from being an underdeveloped continent to being part of a worldwide information society. My question is: "How can the factors that have contributed to Africa's underdevelopment (colonialism, war, famine, etc) be solved by the availability of the Internet?"

This research sets out to examine the extent to which the Internet can be a development tool in developing countries in general and in Botswana in particular. It seeks to identify and describe the kind of socio-technical environments that could promote or inhibit the use of the Internet. The main objectives of the research are therefore:

- to ascertain what existing technical and socio-economic environments affect the usability of the Internet as an information resource in developing countries
- to establish the degree of usability of the WWW as an information conduit in Botswana and other developing countries

1.2.2 Research problem

United Nations agencies have identified information as a tool for development and access to information has been recognised by the UN as a right since 1948. The 1948 United Nations Universal Declaration of Human Rights calls for freedom of access to information. It describes such access to information as one of the basic freedoms of humans.

The World Bank and UN agencies have all cited the Internet as a key factor in the development of Third World countries because the Internet offers opportunities for storing and exchanging large quantities of information. In developed countries, large and small business concerns alike transact business on the Internet and items on the WWW are at the disposal of anyone with access to the Internet. (Braun, 1999)

In developing countries, however, the cost of the Internet makes it inaccessible to most individuals. "The monthly connection cost of the Internet far exceeds the monthly income of a significant portion of the population" (United States Internet Council 2000: http://www.usic.org). Other factors that inhibit the use of the Internet in Africa are the very small number of people who own computers, poor telephone infrastructures, a lack of understanding of what the Internet does, and illiteracy (Kole 1999; Ngwainambi 2000; United States Internet Council 2000). African presence on the Internet generally, and on the WWW in particular, is very low. In the light of such problems and difficulties, what can be done to make the Internet a usable (and indeed indispensable) information storage and retrieval tool for Africa and other developing areas?

Botswana is a relatively rich developing country. While its gross domestic product is US$3.5 billion, its growth rate is 6.9% per year. Its foreign exchange reserves are enough to pay for imports for the next 26 months (Government of Botswana 2000: http://www.gov.bw). Its telephone density is 17.95 per 100. Most of the problems and deficits that are endemic to Africa are not typical of Botswana. The telecom infrastructure has been developed to the point where the Botswana Telecommunication Corporation has been able to establish a subsidiary Internet Service Provider (ISP) called Bosnet, and an economic and telecommunication infrastructure exists to support Botswana participation on the Internet.

By using Botswana as a case study, the researcher investigates the extent to which the users of WWW can obtain access to information for business purposes. The researcher also investigates the extent to which and the form in which the WWW has become a development tool in Botswana. In the research, she focuses specifically on the textile sector and investigates the extent to which the sector uses the WWW.

As we noted above, Botswana is not a typically poor developing country because an economic and technical environment exists to support the Internet. What are the issues that need to be considered in using the Internet in Botswana?

1.2.3 Research questions

The research questions are grouped under the two objectives of the research. These are:

(1) To identify and describe the existing technical and socio-economic environments are that affect the usability of the Internet as an information resource in developing countries. This objective generates the following additional questions:

(a) What are the prevailing environmental conditions that encourage or discourage Internet connectivity?

(b) What measurable benefits accrue to communities using the Internet?

(c) What policy considerations affect Internet usage?

(2) To establish the degree of usability of the WWW as an information conduit in Botswana and other developing countries.

Table 1 below outlines the research questions that establish the degree of usability of the WWW as an information conduit in Botswana and other developing countries (i.e. fulfil the second research objective).

Table 1: Research questions for objective two

Research theme	Research questions
Information needs	1. What type of information do SMME (small, medium and micro enterprise) entrepreneurs need? 2. What sources are currently used to provide information? 3. Are the available information sources adequate?
Access: 1) Socio-cultural barriers	1. To what extent are gender, education and literacy levels limiting factors in accessing information? 2. What are other socio-cultural hindrances to information access?
2) Physical barriers	To what extent do potential users have access to a computer with Internet connectivity?
Solutions: 1) Identify an IT (Information Technology) solution.	1. What computerised databases exist to provide current information? 2. How much do users know about IT? 3. What are their opinions about IT?
2) Design and install a web site.	1. Describe the specifications for an information web site? 2. How should these specifications be adapted to meet the needs of my target population? 3. Does my database meet these specifications? 4. To what extent does my database fulfil the needs of my target population? 5. How should it be improved?
3) Relevance of the web as an information delivery tool in Botswana	1. What is the degree of web connectivity? 2. What are the policy issues around Internet connectivity and web availability? 3. To what extent can the WWW be a tool for information delivery in Botswana?

1.3 Background

Although only 6% of the world's Internet users live in the developing countries, 84% of the world's population lives in such countries (Futurist 2000). The exponential growth of business transactions on the Internet threatens to exclude the bulk of the world's population who live in the developing world and who have no access to the Internet. Business on the Internet is concentrated among the 12% of the world's population who account for 94% of Internet use, and who control much of the world's wealth and information. (Hegener, 1995)

The United Nations Economic and Social Council recognizes the need to harness the growth of the Internet and use it as a tool for information exchange in developing countries.(United nations Public Information (1999) http://www.org.esa/coordination/ecosoc/itforum). Another United Nations organ, UNDP notes that "information communication technology is perhaps the central development issue at the dawn of the new millennium. Not only are the technologies the key to economic growth, they can impact on most pressing global issues" (UNDP Panel of Experts: 2001: Wysiwyg://66/http://www.undp.org/info21/new/n-ecosoc.html). This assertion emphasises the link between development (which often includes business growth) and indispensable information communication technology such as the Internet. The United Nations Development Programme (UNDP) has also indicated its commitment to a similar view. Its Cyber Villages Project brought the Internet to remote villages in Chile, Indonesia and Argentina. The UNDP has plans to

expand these to other developing countries. (*Futurist* 2000:19). A similar view is expressed in *The Economist* (2000. 8189:38) when it states that the "Internet can help developing countries catch up with developed ones". This view is corroborated by other researchers and scholars (Jensen 2001; Kole 2000; Thaphisa 1999).

Ticoll (2000) presents a contrary point of view. He reports that anti-globalisation demonstrators at a G8 summit in Japan denounced Internet connectivity by asserting, "the Internet connection will not cure malaria". There is obviously a degree of truth in the statement in that connection *alone* is not a panacea for development problems. The value of the Internet is not directly proportional to the volume of connectivity that it creates. Its development value is directly proportional to the degree to which those who use it can apply the information that they obtain from it in the management of their day-to-day activities in business or industry (Reinecke 2000). The Internet has to be used to store, manage and disseminate information that is relevant to development if it is to be useful to developing countries.

The World Bank is concerned that unequal access to the Internet within developing countries may create a "digital divide" between those who have access to the Internet and those who do not. One may also predict with some certainty that an unplanned, unfocused and uncoordinated spread of Internet connectivity will further the process of globalisation without securing any real benefits for developing countries (Ticoll 2000). This kind of unplanned and incoherent increase in Internet connectivity will merely make people in developing countries consumers of information from developed

countries. Such a wholesale consumption of information, ideas and trends from the Internet could very well become a new form of imperialism or cultural colonialism if Western values, interests and agendas are transmitted to developing countries without any kind of reciprocal transmission from developing countries to developed ones (Mbambo 1999). What people in developing countries need is not Internet connection as an end in itself. They need rather to be able to use the resources of the Internet for the effective management of knowledge, resources and ideas. They need also to benefit from a reciprocal exchange of information with people in developed countries. Both developed and developing countries need to cooperate in mutually beneficial enterprises as equal partners in global society (Reinecke 2000). Such a process would facilitate an efficient transfer of information. It would also accelerate speed of communication and create specifically African spaces and content on the Internet.

This work seeks to establish the degree to which the Internet generally and the WWW in particular can be translated into a knowledge management mechanism in developing countries. It investigates Internet environments in developing countries and factors that encourage or inhibit the dissemination of information within small micro and medium enterprises (SMMEs) in developing countries.

1.3.1 SMME sector in Botswana

The strength of Botswana's economy is dependent on the export of diamonds and beef (Kgengwenyane 2000). There have been calls for a diversification of Botswana's

economy from one that is dependent on diamonds and beef to one in which several other growing sectors complement the economy's emphasis on diamond and beef exports. SMMEs have been identified as a sector that could be a vehicle for growth and development in Botswana.

SMMEs employ 50% of the workers in the private sector, and contribute 15 to 20% of GDP (Lisenda 1997). The national strategic planning document "Vision 2016" highlights the critical role of SMMEs in the development of Botswana when it states that "these form the bedrock of any economy and give stability against external shocks" (Vision 2016:40). "External shocks" include drops in commodity market prices, fluctuations in foreign currency and similar occurrences over which Botswana has no control.

It is the policy of the Botswana government to encourage SMMEs. Activities mentioned in the SMME policy document include micro lending, financial assistance and training and creation of export markets. The governments lends to SMMEs indirectly through the National development bank. In a similar manner the *Small Medium and Micro Sized Enterprises Act* of 1998 states that access to timely information will be crucial for the success of SMMEs. The act further makes provision for increased access to and use of information technology (IT) to promote and sustain SMMEs.

Kgengwenyane (2000) appeals for a concerted national effort to embrace Information and Communication Technology (ICT) so that Batswana will be empowered to participate in the global economy. In his address, he calls for the development of a national information

technology policy and the innovative use of technology for the benefit of the business sector and the nation as a whole. What Batswana most urgently need, in Kgengwenyane's opinion, is to begin to transact various kinds of business on the Internet on an ever-increasing scale. His call is predicated on the assumption that the whole of Botswana is ready technologically, socio-politically and economically for this technological leap into the future. The question which this researcher raises is, "May we confidently assume that the people of Botswana are in fact ready for this quantum leap?"

SMMEs may be divided into various categories all sectors such as manufacturing, trade, textile, and service. The target population for this research is the **textile sector** of the SMMEs. The sector was selected because it employs mainly females and the researcher wanted to include a significant gender variable in her research.

1.3.1.1 Textile sector SMMEs

According to the Ministry of Commerce, 106 of the registered 858 small-scale manufacturing enterprises are involved in the textile sector, which includes garment making, household linen, and weaving. The sector therefore constitutes 12% of the total manufacturing sector. (Ministry of Commerce and Industry, (1999) Botswana's textile sector's activities are always conspicuous at trade fairs and fashion shows and are a source of pride for the country. At the Botswana International Trade Fair and Exhibition (2000), the textile sector occupied 15% of the stalls. In addition, entrepreneurs within the sector have formed themselves into an association called the Botswana Textile and Small

Scale Business Association (BOTSBOA.) This association represents the interests of entrepreneurs at various forums and encourages government and the large-scale sector to work in partnership with the small-scale sector. It is the Gaborone chapter of this association that constitutes the research population of this study.

The textile sector was chosen because it reflects a wide spectrum of entrepreneurs from highly trained operators to semi-literate workers (Botswana Enterprise Development Unit 1997). This diversity of skills, education and occupation makes it easier to compare the extent to which information is provided to educated and less educated entrepreneurs, and to compare their methods of accessing information. Ninety per cent of the entrepreneurs in this sector are women who are involved in dressmaking and linen making (*Botswana Chamber of Commerce and Industry Annual Report*: 1996). Studies have shown that women are among the least educated sector of the population in Botswana, and are more likely than men to have dropped out of school (Kereng 1993; Khan 1993). It was only after 1996 that the Botswana government created provision for school dropouts to receive the formal education that they missed by dropping out of the schooling system. Since many women lacked significant formal education, they learned practical skills that equipped them to earn a living. Linen making and dressmaking were among the most popular skills that women learned. Since this sector accounts for such a significant proportion of the population (individuals who have little formal education but who are often sole breadwinners), they urgently need a mechanism for accessing current information about activities such as banking, financial assistance – and whatever other

new programmes and services might be available to them all that might assist them in a business activities.

1.4 Definitions

What follows are the working definitions of terms that are used in this thesis.

Information. The question of what information is has been frequently raised in the literature. The American Library Association, quoted in List (1998), defines information as "all ideas, facts and imaginative works of the mind that have been published, repeated and/or distributed formally or informally". Shannon and Weaver (1949) quoted in *The Encyclopaedia of Library and Information Science*, state that information "is a quantity, which is measured in bits and defined in terms of the probabilities of occurrence of symbols". They define information in mathematical terms. This definition of information is not related to my thesis. Stonier (1990:21) states that "information exists, it does not need to be perceived to exist. It does not need to be understood to exist. It requires no intelligence to interpret it. It does not have to have a meaning to exist." Roszak (1986:13) says "information has come to denote whatever can be coded for transmission through a channel that connects a source with a receiver, regardless of semantic content." To an engineer, information is about *numbers*; to an economist, it is about *price* (Arrow, 1979).

Our working definition of information is an adaptation of the ALA definition. Information is all imaginative works of the mind that have been communicated, distributed or published. When it is received, processed and applied to a specific case it has a capacity to enrich the recipient's decision making.

Development. The *Collins English Dictionary* defines development as the process that brings a society to a more elaborate, more advanced stage by industrialization. The International Labour Organisation (ILO), and the World Bank concur in their understanding that development means alleviation of poverty, meeting basic needs of target populations and achieving certain desirable sociable objectives. The word "alleviating" in this definition suggests that the process of development is an action (or series of actions) that is performed by those who are already developed so that those who undeveloped are assisted, empowered and provided with skills and resources. In this research, the term "development" is used in the sense of "sustainable development". There is no single definition of sustainable development. In this work the researcher understands it to mean that those who undertake development fulfil a variety of human needs through the initiation, maintenance and delivery of socio-economic and technological progress in a continuous fashion while at the same time conserving both the earth's natural resources and the skills, possessions, resources and opportunities of human beings. Sustainable development of this kind always includes an increase in productivity in both its qualitative and quantitative forms, and it also leads to an increase in production and/or quality of service.

Internet. By *Internet* we mean a worldwide network of computers using telecommunications devices that include satellite and fibre optic links

World Wide Web. A hypertext system for publishing information on the Internet.

SMMEs. Small Medium and Micro Enterprises refer to enterprises that have a turnover of less than P100 000 a year and that employ less than 25 people.

1.5 Information and development

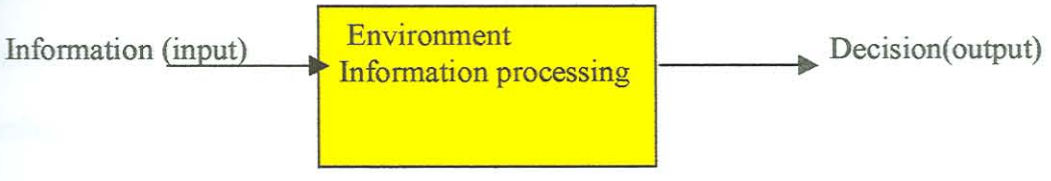
The main point of departure in this research is that *information is a development resource*. Development resources are those resources that a community utilises to fulfil its basic and advanced human needs as a result of the benefits that it receives as a result of being the beneficiaries of socio-economic and technological progress. Some of these resources include finance, education, health, skilled personnel, infrastructure, appropriate environments in which to perform tasks, and raw materials. It is not the mere *availability* of these resources that facilitates development, but rather their *use* in a specific context that facilitates development.

The Universal Declaration of Human Rights, adopted by the UN in 1948, first stated that information is a resource in the development process. Schram (1964) says that information is a national resource that is required to facilitate the development process. Information facilitates informed decision-making in the development process. Without

information people cannot make informed decisions (Mchombu,C. 1996). Poser (1990) suggests a whole new dimension of information in development when he identifies the emergence of an "information mode" of production in which productivity depends on information. He argues that the current era in human development is called *the information society* because of our dependence on information for production and productivity. Those who have crucial information can make informed decisions and meet their gaols and production targets. Conversely those without vital information simply cannot function effectively in this era of the information mode of production.

The role of information in decision-making is illustrated in the diagram below. Information is input into a specific situation. This input is then processed. As a result of this process, decisions are made. Mchombu (1996) is of the opinion that relevance and timeliness of information input is critical to a decision-making process. It is this *usability* of information in application to a specific situation that allows us to distinguish between *information* and *knowledge* Mchombu (1998).

Figure 1 Information in decision-making



1.5.1 The role of information in development

Schram (1964) identifies the following three roles of information in development.

(1) *The watchmen role*. This role is largely performed by the mass media as they keep citizens informed about crucial issues and developments in their society.

(2) *The policy role*. In this case, the role of information is to provide whatever information governments, corporations, and community leaders need so that they can make decisions and apply them at all levels of society.

(3) *Teacher role*. In this role, information facilitates socialization through social institutions such as schools, families, religious organisations and various kinds of groups and associations.

Although these roles were identified several decades ago, each of them is still prominent in the field of information science today. They serve to demonstrate the multi-faceted role of information in the development process and remind us that information is vital for all sectors of the community. Nothing of importance in society can happen without the availability of appropriate information.

The optimal *quantity* of information that is necessary if these roles are to be fulfilled has also been the subject of debate. Schram (1964: 49) says, "information availability and the wideness of its distribution is directly related to the level of development". However, Bell (1979) argues that it is *content* rather than the *amount* of information that is crucial to the development of society. Rao (1963) – writing before Schram (1964) – and Bell (1979) takes a middle approach when they note that while it is true that economic development leads to an increase in the flow of information through the greater purchasing capacity of people it is also true that increased information in turn furthers economic development.

Menou (1993:25), however, contends, "contrary to the views of 1950 and 1960, information is no magic recipe for development". Menou states that this view erroneously assumed that *all* information is good for development and that information is free. He concludes " the value of information may lie more in its versatility… than in its straight application to the activities for which it was originally meant" (Menou 1993: 25). In other words, information is valuable, not primarily because it enables one to solve a particular problem, but because it has potential for multi-sectored application.

The relationship between the information and development is both complex and intricate. Whether a causal relationship exist between these two factors is not immediately clear. What emerges in the literature cited above is that the relationship between information and development is both dynamic and cyclical. While information

is an essential catalyst in development, the development process also produces information.

1.5.2 Information, media and development

Several tools exist for transmitting information. These include books, radio, television, oral presentations, art, newspapers and the Internet. Marshall McLuhan's dictum that "the medium is the message" implies that the medium and the message are intimately connected. This statement suggests that the tool or medium of transmission "interferes with", influences or affects the transmission and delivery of content.

Schram (1964) states that the medium in which information is communicated affects the amount of information delivered and the impact that it has on the lives of recipients. He further states that the *efficiency* of a medium also affects development. The more widely available and accessible information is, the more development may be facilitated. Conversely, if information is restricted, controlled, highly priced, limited, censored and constrained, the less likely it is that development will take place. The capacity of a medium to spread information, according to Schram (1964), affects the degree of development. Schram states that the availability of information in whatever media provides a "climate for national development" (Schram 1964: 43).

Schram (1964) first demonstrated the relationship between socio-economic development and the type of medium for disseminating information by asserting that every stage of development has its own appropriate media for transmission. While pre-

industrial society may have used drums to communicate, post-industrial society might use radio or cables. He further notes the close interaction between social development, the type and quantity of information and the type of medium used for transmission.

In the 21st century, Ngwainmbi (2000) concurs with Schram (1964). He argues that there is a relationship between medium, information and socio-economic development. He states that information technology developments in the twentieth century can be used to correlate IT with socio-economic development. The extent of IT usage is directly proportional to the extent of development. One might however argue that although a relationship may exist between information technology and development, it is not necessarily a causal one. The relationship may be an example of reversed causality: the more the development that takes place, the more are the information technology applications that occur.

Ngwainmbi (2000:2) further argues that the distribution of information technology equipment can "affect and influence development". He adds that information technology promotes economic development. The United Nations shares a similar position when it asserts that the Internet will hasten African development (*The Economist* 2000). The research will focus on how the Internet facilitates the transmission of current information. While it is assumed that making the Internet available will ease access to information, this research will make no value judgements about the *type* of information that should be transmitted on the Internet.

Bell (1979) and Daly (2000) argue that it is neither the medium nor its ability to transmit large quantities of information that is important to development, but rather the depth and relevance of the content. This researcher concurs with Bell (1979) and Daly (2000) that the content of information is more important than the amount and the medium. It is my belief that the subject of information is more critical to the development process than the mechanism for transmission and the amount being communicated. Choice of media should depend on the context of the recipients and be appropriate for their level of economic, cultural and technical development.

1.5.3 Translating theory into research

This work engages to some extent in the debate on the relationship between medium and development. It examines both the medium and information in two ways:

(1) It examines issues relating to the Internet and development by reviewing various questions raised in three specific discussion lists on the Internet and development.

(2) It considers how useful the WWW may be as an information medium among small business entrepreneurs in Botswana.

1.5.4 Working framework

The role of information in development has been widely discussed in the literature (Braun 1999; Mbambo 1996; Raseroka 1992; Menou 1993; Schram 1964). The critical role of information in Botswana is well articulated in Botswana's SMME Act, which recognizes the growth of SMMEs as a factor in the socio-economic development of Botswana. The facilitating role of information in development requires an appropriate delivery mechanism. The Internet has been clearly identified as a 21st century information delivery mechanism (Ngwainmbi 2000; UNDP panel of experts 2001 ; World Bank 1998). This research considers the extent to which the Internet can be a useful vehicle for exchange of business information in the SMMEs sector in Botswana.

The process of measuring this factor requires the isolation of measurable variables within an established framework of analysis. Daly (2000) discusses several frameworks for analysing the impact of the Internet in developing countries. He notes that measuring the impact of the Internet on development is a complex issue, and he suggests that selection of either a quantitative or qualitative framework should be determined by the context of the situation in question. He cites the following frameworks:

- *Internet counts*. These are quantitative indicators that can be used to illustrate the penetration of the Internet in a sector.
- *Technology transfer*. This measures the extent to which an organization incorporates technology into its operations, and how this affects the organisation and its environment.

- *Acacia Telecentre Evaluation*. This framework was formulated to examine the extent of use and impact of telecentres in Africa. (Telecentres are community information centres that provide non-profit telecommunication services to communities). It uses both quantitative tools (questionnaires, interviews, surveys) and qualitative methods (observation, key informants, participatory research).
- *IDRC framework*. This framework compares objectives of the ICT project with user studies and relies on feedback from group being studied.
- *Press framework*. This framework was developed by Larry Press and his associates and examines the extent of the penetration of the Internet in a nation. It examines density of Internet use, sectoral absorption, and degree of sophistication in use.
- *Pimienta model*. This uses a series of indicators (such as national connectivity, international connectivity, users, social impact) and allocates scores on a scale of 0--100% .

Other less frequently used frameworks are:

- The Lan-Franco Meta-Level Framework The Graham Study
- Framework for the Study of Civil Organization
- The Lefebvres Framework
- The CTA Model

- Life Cycle Model
- The Barton Bear Framework
- The Stages Theory

After considering all these frameworks, researcher found that no single one was completely appropriate. She therefore decided to utilise a hybrid model that incorporates features of both the IDRC framework and the Acacia model. In both these models a service (based on user analysis) is provided, and then the use of that service is evaluated. By using the same premises, the researcher designed a website in the case study section of this thesis. The researcher then followed this up with formative and summative evaluation to test the effect and usability of the web site.

1.6 Significance of the research

The results of this research will have the following significance:

(1) Those issues that need to be considered when using the Internet in developing countries will be identified.

(2) A foundation for further research into the Internet and SMMEs in Botswana will be provided.

(3) Appropriate mechanisms for either harnessing the Internet or for discarding it if it is found to make no really helpful contributions, will be identified.

(4) A contribution to the body of knowledge on the relationship of design, information, the Internet and development will be made.

1.6.1 Similar research

Several studies have been conducted into the use of the Internet in developing countries. The International Centre for Research and Development (IDRC of Canada has funded several such studies (IDRC: Http://www.idrc.ca). The Association of Progressive Communication (APC) and Femnent (2000) conducted a study to establish how African women were using the Internet. Mbambo (1999) did a study on Internet connectivity in Botswana. Duncombe and Heeks (1999) carried out a study into the use of Information Communication Technology among small-scale businesses in Botswana. There was a significant gap in the literature on the use of the Internet by women in business in Africa.

In order to compare the case study material to other web sites, the WWW was scanned for similar sites. Several search engines run small business information sites. Netscape.com has a small business section. Alta Vista.com also has a similar site. In the United Kingdom, the Department of Trade and Industry also runs a site for small-scale business. The researcher however was not able to find a site that is dedicated to the textile sector in Botswana or elsewhere in Africa.

1.6.2 Research plan

The research was done over a 24-month period. A detailed discussion on the research methodology used is presented in chapter two.

1.6.3 Methods

Two methods were used to gather data: content analysis and case study. Content analysis is used in the analysis of the discussion lists on the Internet and development, while the case study method was used in evaluating the web site. This study uses both qualitative and quantitative techniques. In this study the views expressed by individual people are more significant than the mere numbers who expressed a particular opinion.

1.6.4 Population of study

There are two target populations in this study. The first target population comprises the virtual community of participants in three e-mail discussion lists. These discussion lists are: the Global Knowledge listserv, GK List; the United Kingdom Department for International Development List (DFID) List; and the Africa, Technology, Information and Development (AFTIDEV) List. The second population is the Gaborone Chapter of BOTSBOA. Sometimes they are referred to as *entrepreneurs* in this study. Entrepreneurs in the study means those who are already running a registered business. They are defined in *The Concise Oxford Dictionary* as "persons who undertake an enterprise or a business with the chance of profit".

1.6.5 Research timetable

The research timetable was determined by the Group for the Advancement of Multimedia Exploration (GAME) schedule and was adhered to.

1.6.6 Literature Review

The literature review seeks to identify research that has been done in each of the research objectives of this study.

1.7 Product

The research results are presented as a thesis that is accompanied by a CD-ROM database product. It is anticipated that this product will be usable in the information centres that provide information to small business entrepreneurs and that it will be available on the web for those with WWW access.

CHAPTER 2

RESEARCH METHODOLOGY

This chapter outlines the main data collection and analysis instruments used. The research used a combination of qualitative and quantitative techniques to gather data. Moahi (2000) notes that research in information science often demands a combination of both qualitative and quantitative methods because information transcends the qualitative and quantitative dichotomy. Moahi (2000: 51) proceeds to cite other studies in information science that combined qualitative and quantitative techniques. These studies were those of "Kuhlthau (1988) who combined observation with interviews; Grand (1997) who used a survey questionnaire and a focus group; and Hopkins (1988) who used a questionnaire and observation". In this research the qualitative method (observation, interview) was combined with quantitative techniques (survey, statistical analysis, etc) in order to elicit the maximum amount of data and so that generalizations could be made on the basis of this data.

Two research methods were used in this research. They are content analysis and the case study method. The content analysis method was used to analyse over 300 messages from the following three discussion lists dedicated to the Internet and development: the Global Knowledge List (GK-List), the Department of International Development List (DFID-List), and the Africa Technology Information and Development (AFTIDEV-List). The purpose of the analysis was to establish trends in issues relating to Internet use in developing countries. The case study method was used

to test the usability of the WWW as an information delivery tool in a developing country. The population of study was a group of textile entrepreneurs in Botswana. The two methods were used in a sequential manner with data from content analysis informing the process the case study.

2.1 Content analysis

The content analysis method has been defined as a detailed examination of documents or transcriptions of written documents (Berg 1995: 24). Jackson (1995) defines content analysis as "any technique for making references by objectively and systematically identifying specified characteristics of messages". In this work *content analysis* is understood in the context of both Berg (1995) and Jackson (1995), in whose work it refers to the analysis of the contents of documents or communication. In this study this method was used to examine issues and trends in e-mail discussion messages from three electronic discussion lists devoted to the Internet and development.

Content analysis may be both a qualitative and a quantitative method (Jackson 1995). As a *qualitative technique* it falls into the category of unobtrusive observation (Jackson 1995). Collecting data does not influence the responses of persons under study because data is collected long after the respondents have left the scene of the study. The observations process therefore does not alter or interfere with the responses of the

subjects under observation (Berg 1995). Babbie (1998) adds that content analysis may be used as a qualitative measure to study behaviour. Thus, for instance, if one's hypothesis is that educated councillors vote for measures that benefit poor people, a researcher using content analysis might examine the votes cast by each of the councillors who voted to test or disapprove the hypothesis.

As a *quantitative technique* content analysis enables the researcher to analyse patterns and meanings of data. Data can be analysed statistically in order to establish repetitions and proportions (Baker, 1988). Just as with qualitative techniques, content analysis can be used in quantitative research to test hypotheses.

Content analysis is appropriate for the study of communication documents such as reports, magazines, newspapers, speeches if one wishes to establish trends (Babbie 1998). He adds that "content analysis facilitates collection of data but does not address the 'why and with what effect'" (Babbie 1998:310). While can only infer from trends and responses, one cannot establish causes.

The first step in the process of content analysis is to identify the unit of analysis. In this study, the unit of analysis was identified as three e-mail discussion lists. The second step in content analysis is to identify the items that one wishes to observe. The process involves:

(1) establishing what one is looking for

(2) reading, observation and noting

(3) classifying

(4) recording

The third and final step is coding. One may code manifest content, which is the visible surface content, or one may code latent content of communication, which is the underlying meaning. Baker (1998) suggests that it is best to use both because latent content influences the manifest content.

In this study all of the above steps were used. The unit of analysis was identified as the e-mail discussion lists. The second item to be identified was issues that were raised as inhibiting or promoting Internet use in development while reading, noting, classifying and recording the findings. Data and the messages discussing each issue were noted. It was important for researcher to identify all the issues that were raised on each list. Overlaps from the lists were then established so that issues that occurred on all three lists could be classified.

Babbie (1998) and Jackson (1995) concur that it is necessary to have an appropriate sampling technique if selected samples are to be random and representative. Babbie (1998) however notes the most useful sampling techniques for content analysis are cluster sampling and stratified sampling. In this study no sampling techniques were applied. All messages that were sent to DFID-list and AFTI_DEV-list were included. The exception was the GK-list where only messages sent in 2000 were studied because

the list is still current. DFID-list closed in June 2000. AFTI-DEV-list closed in December 2000, while GK-list still remains open.

2.1.1 The advantages of content analysis

Content analysis has the following advantages:

(1) It is not expensive. It uses a minimum of human and financial resources.

(2) It is safe to repeat if one discovers an error.

(3) It enables one to conduct research over a long period of time.

(4) It has the advantage of being unobtrusive – it seldom has an effect on the subject being studied.

2.1.2 The disadvantages of content analysis

i) It is limited to examination of recorded communication. It thus excludes oral graphic communication.

ii) There are sometimes difficulties with validity since coding may vary from researcher to researcher.

The researcher chose content analysis for this study because, firstly, it was the only method that could be used to study the large volumes of data yielded by discussion lists. Secondly, it also offered the advantage of efficiency because it did not depend on human beings responding to questionnaires. Thirdly, it enabled the researcher to study

views of a geographically dispersed population economically (the researcher was not required to post questionnaires and travel to various places for interviews).

2.2 The case study method

The case study method was selected for the second objective of this research, which is to the test the usability of the WWW in a developing country. A population was identified and a web site was developed and tested on this population. Evaluating a web site created to meet the information needs of textile sector entrepreneurs was used to test the usability of the WWW, and that marked the final stage of the case study process.

The case study was not independent of the content analysis since it built on the findings of the content analysis. Multiplicities of techniques were used to gather data. These included a literature review, observation, interviews, and a questionnaire.

Baker (1988: 229) says *case study* refers to a method of group observation in a field study. Baker (1998) distinguishes the case study from field research where more than one group is observed. Babbie (1998) distinguishes between a "one-off case study" and the long-term field study type of case study. A one-off case study utilises neither pre-tests nor post-tests. An experiment is applied to a group. The outcomes are then not tested again but become the bases of generalisations. In a field case study, on the other

hand, the researcher has the opportunity to observe the phenomenon under varied conditions. "The chief purpose of a case study is observation over a period followed by description of the phenomenon" (Babbie 1998: 282).

In this study the researcher observed and interacted with the group under observation for a period of over one year. The study is therefore not a one-off case study but rather a field case study. The researcher adopted an instructional design technique to study an information science phenomenon. During the exercise, the researcher designed and installed a web site to test the usability of the WWW in a developing country. The process of constructing the site included a needs analysis, prototype development, formative evaluations, summative evaluations and implementation. In the case study methodology these processes before and after the creation of the web site served as a form of pre-testing and post-testing.

As has already been mentioned, the researcher also used a variety of data-gathering instruments such as questionnaires, interviews and observations. The case study was conducted between January and December 2000

2.2.1 Target population analysis

The primary target population was a defined group of textile sector entrepreneurs. The researcher identified their information needs and then developed a web site for their use. She then intensively monitored, tested and analysed it according to the protocols

described above, and she hopes that this site may continue to be updated for this population. The researcher also identified a secondary population as information providers. This identification arose once the researcher realised how little access to Information Communication Technologies (ICTs) the target population had. The secondary group comprises information providers with access to ICTs. They were identified as essential conduits of digital information. Institutions with Internet access and a mandate to provide information to SMMEs generally or to the textile sector specifically would then be a useful link in the information access chain.

2.2.1.1 Characteristics of the population

In 1997 the textile entrepreneurs formed themselves into an association, which became known as the Botswana Textile and Small Business Association (BOTSBOA). The Gaborone chapter constitutes the target population for this study. It consists of three men and twenty-one women. The tables below illustrate education and computer-ownership within the Gaborone chapter of BOTSBOA.

Table 2 Ownership of computers

Access to computer communication	**Number**
Owns a computer	1
Has access to a computer	2
Does not own a computer	24
Has access to the internet	0

Table 3 Level of education

Education levels	Number in population
Cambridge(fours of secondary school education)	4
Primary certificate	12
Junior Certificate(two of secondary education)	8
Total	24

It is evident from Table 2 above that very few members of the Gaborone chapter of BOTSBOA own personal computers. None of them have access to the Internet either in the workplace, in any other organizations or at home. This low level of computer ownership and access to the Internet makes digital information difficult to access for this population. However, members the chapter may can use computers located in selected libraries, the Fredrick Ebert Foundation (a supporter and funder of the textile sector) and BOCCIM as aconduits for digital information.

There are 858 registered manufacturing companies in Botswana. Dressmaking, weaving and linen making concerns fall into the category of manufacturing companies. Of that 858, 106 are textile companies. While the textile sector comprises 12% of the manufacturing sector (Ministry of Commerce, 1999), a separate database published in July 2000 by the Fredrick Ebert Foundation lists 295 small-scale textile concerns in the country. Although the percentage of textile sector seems small in comparison to the total number of registered manufacturing companies, the Ebert Foundation statistics

suggest that they are a sufficiently significant group on which to pilot a study on digital information delivery.

2.2.2 Goal analysis

The goal of this section was to establish the information needs of the target population and find ways of meeting them. A literature survey was conducted to find out how information is currently being provided. The research identified that the current information needs relate to information about markets, sources of fabrics, government schemes, information on how to write proposals, and on short courses. Although some institutions (such as libraries, extension offices and development agencies providing such information) were identified, their information holdings (comprising books, pamphlets, etc) were deemed inadequate in terms of currency, accessibility and responsiveness to the needs of the information society (Alexander, Gay, and Mbere 1983; Mchombu 1995). Most were printed sources were housed in buildings and locations that were not easily accessible.

A web site was designed and installed to meet the information needs of the entrepreneurs. This site can easily be updated and can make connections with a large number of electronic sources of information. These sites would have been accessible to an even larger user group if translation into Setswana could have been provided. However, time and resources rendered this desirable facility beyond the scope of this research.

2.2.3 Analysis of site content

The finished web site can be viewed at http://www.intoweb.co.za/botswana Suggestions from the entrepreneurs, as well as suggestions found in the literature, were incorporated into this site. Mchombu (1995) listed areas in which small scale entrepreneurs needed information. At a meeting of the Botswana Small Scale textile Business Association (BOTSBOA) entrepreneurs were asked by the researcher to enumerate their information needs. The table below juxtaposes their inputs on their information needs *vis-à-vis* those that are highlighted by Mchombu (1995). The needs expressed by the entrepreneurs matched those stated by Mchombu (1995). The content of the web site was based on these two complementary lists.

Table 4 Information needs

Stated needs	**Mchombu list**	**Items on site**
Markets	Marketing information	Markets
Sources of fabrics	Sources of raw materials	Sources of fabrics
Information on government schemes	Financial information	Information on government schemes
Information on writing proposals	Legal information	Information on proposal writing
Information on short courses.	Technical skills	Training information
	Business management	Banking
	Nursery school activities	

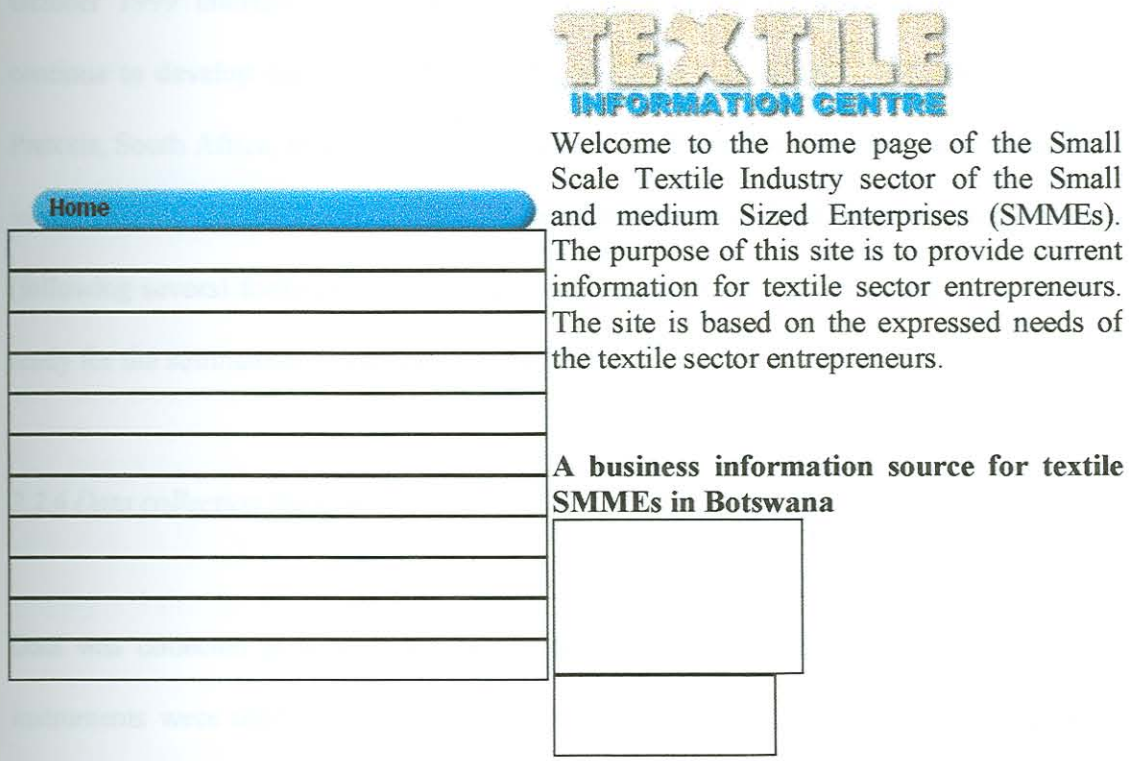
All the suggestions made by the entrepreneurs as well as those listed by Mchombu (1995) informed the content of the web site (except the one on nursery schools). It was felt that it would be inappropriate to include information on nursery schools.

2.2.4 Design

The design of this site was influenced by the consideration that the users are neither highly word literate nor computer literate. The design therefore had to be simple. In spite of the fact that it can easily be updated and made widely available to users, the WWW is not a tool that is accessible to most people in Botswana (Mbambo 1999). The researcher therefore constructed her final product as a CD-ROM that could be modified for touch-screen use and audio technology for use in areas without web access. The researcher also investigated the possibility of translating the whole site into audio format, but neither time nor resources permitted this further elaboration.

The front page, sometimes called *the index page* and sometimes *the home page*, gives an overview of the site in a paragraph. It lists the content of the subsequent pages. It has a photograph some of the entrepreneurs at work. On the right corner the logo of the developers of the site is depicted. Blow is a photograph of the front page of the web site.

Figure 2 Front page of the textile site



A draped red curtain decorative theme is evident on all pages as well as in the index.

The presence of the index on all the pages makes navigation between pages easy.

The background of the whole page is constituted from a batik cloth motif. This suggests the look and feel of a fabric.

2.2.5 Development

The actual development of the site was out-sourced in January 2000. A family crisis in October 1999 interfered with my concentration and ability, as the researcher, to continue to develop the site. In January I contracted a developer, INTOWEB, from Pretoria, South Africa, to write the site on Microsoft Front Page. The site was ready for initial running in February 2000. Between March and June various corrections (following several formative evaluations) were made to the site and it was eventually ready for the summative evaluation in July 2000.

2.2.6 Data collection instruments

Data was collected at several stages during the case study. Several data collection instruments were used in this research. These included a questionnaire, observation, and a literature review. Content analysis also provided the researcher with some useful data prototypes for testing the prototype – in addition to influencing the process of the case study. The researcher also used instructional design techniques which are relevant to needs analysis, as well as protocols for determining the sequence of identifying a population of study and establishing its user needs. She also studied the ICT environment of the target population and developed a web site based on their identified needs.

2.2.6.1 Data collection processes

2.2.6.1.1 Interviews

The researcher used interviews to gather data about the information needs of the group. An interview guide was used to establish their information needs and familiarity with IT (see Appendix A). The data gathered through interviews was used to develop a prototype.

2.2.6.1.2 Questionnaire

A questionnaire was used to elicit responses that were used in the summative evaluation. The responses to the questionnaire served as a means for evaluating the web site. Responses to this questionnaire provided the bulk of the data used in the case study findings and analysis chapter.

2.2.6.1.3 Observation

The following section is recorded from my own point of view. I began to observe research population in the early days of this research. While reading about the textile sector, I came across information about the Botswana Small Business Textile Association (BOTSBOA). I then attended a few meetings of the organisation and was invited to a meeting of the Executive Committee, where I explained my research interests to the group. The group then asked me what they stood to gain from my

research. It was this question that made me realise that I could not effectively conduct my research without giving something of value back to those who worked in this sector – the very people whom I wanted to enlist as the research population. It was then that I decided to use action research as my methodological approach.

I joined the association and began to participate in their monthly meetings and exhibitions and in the launch of the Business Linkages Database. The database was ajoint project of the Fredrick Ebert Foundation and the Ministry of Commerce. It was created to market the entrepreneurs and products to government and private organisations that could be interested in their products. Action research has been described as "applied research" (Whyte, Greenwood and Lazes 1991). The researcher does not define the problem alone. He or she defines the problem in consultation with the participants who say what their problems are. In this instance, participants were asked to describe the problems that they experienced in their businesses and in trying to gain access to pertinent information. It was on the basis of their responses that I decided on the content of the web site.

My attendance at meetings and participation in the Botswana International Trade Fair and Exhibition of 2000 made me realize that a web site that simply gives information would not be adequate for our purposes. What I realised with great clarity was that *entrepreneurs desperately needed places to sell their wares*. The web site therefore would have to include information about any trade fairs in the region to which entrepreneurs could take their products. Similarly, because entrepreneurs stood to gain

a lot if they could market their good over the Internet, they needed detailed but clear and user-friendly information about how to conduct electronic commerce on the site. Although I was unfamiliar was e-commerce, I immediately set about learning as much as I could about it. Unfortunate, however, that part of the project (facilitating a medium for e-commerce) could not be implemented because it was beyond the scope of this research. The logistical arrangements alone were beyond the scope of this research.

The observation process informed the needs analysis, the design of the web site, several formative evaluations of the prototype and the final testing or evaluation. The final evaluation of the product involved observing the entrepreneurs as they used the product and recording their comments and observations.

I confined my study to a select group a of textile sector entrepreneurs who were present at the BOTSBOA monthly meeting. The methodology section of this research includes a summative evaluation of the site and presents the results of the last evaluation exercise of the web site. The purpose of this evaluation was to examine the extent to which the developed web site met the needs of the target audience.

The textile entrepreneurs who constituted the research population used three personal computers (PCs) and watched in fascination as the site loaded. The limited number of PCs available to these people represents a typical computer access situation for this group of users. The three PCs were made available by courtesy of the Fredrick Ebert

Foundation. None of the respondents had ever used the Internet before – and only one of them had ever used a computer at all. All of them were never-the-less skilled in the use of English.

The case study method enabled the researcher to use a variety of techniques to gather data that enriched the research.

2.3 Conclusion

The two research methods, content analysis and case study, complemented one another in this study. While the content analysis provided environmental and contextual data, the case study provided information about possible local applications. The case study in a sense tested the assertions of the findings of the content analysis process.

CHAPTER 3

LITERATURE REVIEW

3.1 Introduction

The literature reviewed was guided to the meet the two objectives of the work, which are:

- to ascertain what existing technical and socio-economic environments affect the usability of the Internet as an information resource in developing countries
- to establish the degree of usability of the WWW as an information conduit in Botswana and other developing countries

The literature review is not limited to Botswana but broadly examines the context of usage of the Internet in developing countries and issues related to business information for small-scale businesses. Furthermore, the literature review provides background information and sets a context for the case study on usability of the Internet in Botswana, by examining specifically electronic business information, internet connectivity, and design issues related to Botswana.

The assumption underlying this work is that information is a tool for development while the Internet has become *the* information transmission medium of the century. In the literature the UNDP (2001), the World Bank (1998) and Kirkman and Sachs (2001), among others, have hailed the Internet as the technology that will bring developing economies into the information society. Not all agree with this opinion. Simpson (1994) and Heeks (1999) warn us that the Internet has become a status symbol for developing countries rather than a development tool. In this chapter, the researcher reviews literature on the relevance and usability of the Internet in developing countries while paying particular attention to the use of the WWW by small businesses in Africa.

In order to ensure that literature review remains relevant to meeting the objectives this work, it is arranged under the research questions. In this way literature pertaining to each question is reviewed under each research question.

3.2 What are the prevailing environmental conditions that encourage or discourage Internet connectivity?

A limited exposition of the literature on the state of the Internet in developing countries was given in chapter one. This section expands on that and gives a broad outline of the state of the Internet in developing countries.

The Internet in developing countries is hindered by the fact that equipment is expensive, telephone lines are poor, electricity is unreliable, illiteracy is widespread and definitive guiding government policies are absent (Mbambo 1996; Kole 1999; UNDP 2001; Haddad and Macleod 1999). The situation is not uniform in all developing countries (World Bank 1998). *The World Development Report* (1998) states that countries such as Singapore, India, Thailand, Brazil and South Africa that need to produce all their own electronic equipment have advanced in further in Internet usage than those countries that import all computer components. Those countries that import fewer components are increasingly using the Internet to conduct business (Kirkman and Sachs 2001). On the other hand, African countries that are emerging from wars or that are still engaged in wars, such as Somalia, Mozambique and the Democratic Republic of Congo, demonstrate the lowest levels of the Internet usage and expansion (Jensen 2001). For these countries, being linked to the Internet is not a development priority.

Onyango (2000:198) says that developing countries have gone through many development paradigms, which he characterises as

- The green revolution
- Import substitution
- Export orientated industrialization
- Export processing zones
- Industrial parks

- Economic structural adjustment
- Economic liberalization
- Informatics revolution (the most recent paradigm)

Onyango contends that African leaders embraced each of these paradigms with no subsequent critical evaluation of their impact. He asserts that all these programmes have created no real sustainable development in Africa. He cautions that although the global informatics era offers African countries an opportunity to "leapfrog" their deficiencies in their development process, the history of failed and abortive development projects may repeat itself if the informatics era is blindly embraced in an uncritical and planned way.

Chisenga (2000:179) also believes in the possibility of "leapfrogging" over past failures and deficiencies. He says that participation in the global information society will help to create partners for manufacturing and business, expand virtual campuses and bring the interactive learning environment to the classrooms for the benefit of African children. All these factors would contribute to the development of Africa. Ochieng (2000), however, disagrees with the both Chisenga (2000) and Onyango(2000). He argues that the possibility that the necessary infrastructure, equipment, education and attitudes will arise suddenly in the African context is somewhat unrealistic in the light of the crippling deficiencies and problems that beset most African countries (largely as a result of centuries of colonialism and post-colonial non-development). In support of his argument, Ochieng notes that the majority of the

African populations still live in rural areas, are illiterate, and have no access to fresh water, electrical grids or sewerage systems – let alone telephone lines. They therefore could not (in their present condition) benefit from all the advantages of the information society – even if these were offered to them on a plate.

Kirkman and Sachs (2001:61) contend that the IT "revolution offers powerful weapons to foster economic growth. It is time developing countries benefited from them". They note that e-mail has proved effective in transmitting vital information about diseases in Africa. They further note that electronic commerce is fast extending to developing countries. In spite of this optimism, they also cite the following difficulties that hinder the expansion of the Internet in developing countries:

a) lack of national strategies (i.e. neither governments nor private sectors are taking the lead in devising policies for the use of the Internet).
b) Telephone services are still largely analogue and not digital.
c) There are too few skilled IT workers in African countries. School curricula generally exclude computer education. Available resources in schools and universities are inadequate for IT education.

Kirkman and Sachs (2001:64) cite the following examples where the Internet has been used in creative way in developing countries:

- In Brazil, 11 million people paid their taxes on-line in the year 2000. This saved the government $10million.
- Chile anticipates that putting bids on a web site will save government $200 million in administrative expenses.

The view is corroborated by Thyfault (2001: 65), who identifies the sale of handicrafts on the Internet as a booming business. Thyfault notes that e-commerce can make it possible to work from home (this enables users to save money because they do not have to pay office rental and other expenses), and that e-commerce can bring in more income and so build confidence. Thyfault (2001) identifies the following web sites as leaders in e-commerce for developing countries:

- Novica.com
- E-Ziba.com

Although these examples give one cause for hope, there are not many such encouraging anecdotes from the developing world. In India, for example, only two million have access to the Internet out of a population of one billion people (Thyfault 2001).

Some experiments with intervention mechanisms have also been undertaken in developing countries. According to the Association for Progressive Communication (APC), telecentres have been used widely in Central America and South Africa to provide communities with sites where people can use telephones and the Internet (APC

2001). Wireless technology is also being increasingly used as substitute for poor telephone lines (Thyfault 2001). Universities and businesses are fast using the Internet to link themselves to other institutions around the world (Mbambo 1999).

According to the literature cited in the previous paragraph, the situation is not entirely hopeless. Despite the difficulties mentioned above, the literature shows that organizations at the micro level are making the Internet a vehicle for development by harnessing it for the benefit of communities. It should however be noted that the people who benefit from the Internet in this way are very much in the minority(Jensen 2001; Kirkman and sachs2001; Ochieng 2000).

3.3 What measurable benefits accrue to communities when they use the Internet?

Research on such benefits is scarce. Duncombe and Heeks (1999) assert that current research on the value of the Internet, conducted via list servs, is not sufficiently objective because it provides views of users of the e-mail instead of the communities they serve. They add that ICTs (Information Communication Technologies) are neither a necessary nor a sufficient condition for communication in developing countries. To a limited degree a study by Kole (2000a) corroborates this view. In the study of African women and communication in English-speaking Africa, Kole (2000a) identifies five methods of communicating information between organizations and their clients in Africa: face to face, phone/fax/telex/, postal mail, radio, e-mail and the Internet. The

table below shows how the study ranked the effectiveness of these communication mechanisms.

Table 5 Success rate of media in reaching grassroots organisations (Source: Kole (2000a) *African women speak into the Internet: research report of an electronic survey of African women* http://www.x54all.nl/~html Table+17)

Success rate	Mode of operation	Preference points	Average score
1st most successful	Face to face	127	7.94
2nd most successful	Phone/fax/telex	124	7.75
3rd most successful	Postal	112	6.59
4th most successful	Radio	83	6.92
5th most successful	e-mail	81	5.40
6th most successful	Internet	27	3.38

The study distinguishes between e-mail and the Internet because although some of the organizations had e-mail, they did not have full Internet access. According to Kole's study, the most effective way of communicating between small-scale grassroots organizations and their clients is face-to-face interaction. The second most effective way is telephone and fax, while the e-mail and Internet were ranked fifth and sixth respectively. Panos (1998:2) concurs that in Africa while the radio reaches approximately 75% of population, TV reaches 40% and the Internet reaches only 0.1%. Panos says about radio and television: "In access and coverage terms they beat ICT hands-down now and in the future" (Panos 1998:2).

A qualitative study by Association of Progressive Communication and FEMNET (2000) surveyed the effect of the Internet on 40 organizations. All forty respondents

indicated that the effect was positive in varying degrees. Researchers noted the following points:

- The Internet improved communication.
- The Internet allowed work to be done in a more flexible manner.
- The Internet opened new doors for work with partners in remote parts of the world.

The Association for Progressive Communication,(2001) an organization that has made the Internet more accessible to disadvantaged communities, has listed ten examples of organizations that have used that have used the Internet to benefit the communities served. Three examples of the kind of examples they use are listed below.

(1) Sexual harassment legislation in India. Women with limited access to the Internet who has been sexually harassed used the Internet to lobby support and to download legislation and reports of law cases to support their arguments in court. The positive outcome of this was a Supreme Court judgment in their favour.

(2) Wartime communication in Yugoslavia. At the height of the war in Kosovo, an organization called Zamir provided a letter service to refugees. As the telephone system was inoperative, volunteers would type letters and send and receive mail on behalf of refugees.

(3) EcoNews Africa. EcoNews published news on its web site about the plight of the Masai who were being evicted from their native land so that mining could take place. This generated attention all over the world and caused the decision to carry on with mining was eventually reversed

These stories illustrate how strategic use of the Internet can help to solve community problems. The examples mentioned above are drawn from all over the world and include cases from Eastern Europe, Asia, America, Africa and England (APC 2001).

Heeks (1999) disputes the value of such findings. He is of the opinion that the poor in any community are not among the *recipients* of information technology. He cautions that on- line studies cannot accurately assess the impact of ICT because they tend to express the preconceived hypotheses of practitioners (Heeks 1999). He furthermore asserts that developments in ICT lend themselves to invalid generalisations. The more generally accepted view is that the "poor population must gain eventually from adopting technology, because technology is development" (Heeks 1999:12).

In both his publications, Heeks (1999; 2000) argues that it is advertising that has led people to have inflated ideas about the effectiveness of ICT. To counter such views on the usefulness of the Internet, the International Centre for Development Research (IDRC) sponsored several studies that undertook to measure the relationship between the impact of ICT and increased development (Hafkin & Menou 1998). In 1995 the IDRC sponsored the Capacity Building for Electronic Communication in Africa

Project (CABECA). This project trained organizations in Africa in the use of ICTs. Researchers subsequently assessed the extent to which the trainees made use of the Internet and further support was provided where needed. CABECA has also developed a tool for measuring the impact of ICTs in development. The IDRC has sponsored the application of the La Franco method of measuring the impact of ICTs on development. This method of measurement is also used in Latin America (Association of Progressive Communication 2001).

While Kole (2000b), Hafkin (1998) and FLAMME (2000) all detect an increase in the speed of communication among users of their technology, Heeks (1999) and Panos (1998) contend that these studies are skewed because they have been conducted among Internet *enthusiasts*. They contend that this bias does not realistically reflect typical practice in communities that are served. Hafkin (1998) recommends that there is a need for a set of indicators that would measure impact and be easily usable.

3.4 What policy considerations are in place?

Marcelle (1999:8) defines policies as integrated sets of decisions, guidelines, laws, regulations and other mechanisms that are geared to directing or shaping activity. Marcelle notes that policies are not static but that they require regular updating and analysis. If the Internet is to be more widely used in developing countries, the private sector and government will have to cooperate with regard to policies (Bamako 2000).

Kole (1999) contends that the lack of a policy to guide Internet expansion in developing countries is a major hindrance to the expansion of the Internet.

In his report on occurrences in a developed country, Oppenheim (1998:46) says information policy encompasses any policy that impacts on the flow of information, whether printed or electronic. Oppenheim further states that there are different approaches to national information policies. We can distinguish various levels of information policy in a country. Thus we may distinguish between the information policies of the national government and local government. He asserts further that electronic information transfer transcends national boundaries and will have to be implemented in terms of national agreements and protocols.

Oppenheim(1998) adds that the United Kingdom government has pursued deregulation of telecommunications as a way of encouraging of the Internet even though a national information policy does not exist (Oppenheim 1998:50). The UK government's support for Joint Academic Network (JANET), and its subsequent support for SuperJANET, which was meant to be an improvement of the former JANET further demonstrates their commitment in this regard. In spite of this, recent legislation that allows the UK government to police the Internet calls the UK's government's commitment to supporting freedom of expression on the Internet into question (APC 2000).

In the 1980s UNESCO encouraged developing countries to formulate information policies. Many did not complete this exercise because it was driven externally by the needs of UNESCO and not by the internal needs of the countries concerned.

Kgengwenyane (2000) is of the opinion that lack of a national information policy has retarded the growth of Internet use in Botswana. This view corroborates that of Oppenheim (1998:56), who notes that the government of Singapore has welcomed the Internet and encouraged participants to use it by putting its own information on the web and encouraging the private sector to do the same. Oppenheim notes that countries such as China and Vietnam have discouraged citizens from using the Internet, and set up policies that retard Internet usage and therefore there is no widespread usage of the Internet.

Although there is no information policy in the United States, President Clinton instituted the National Information Infrastructure (NII) in 1996. This activity was coordinated from the office of the vice-president, Al Gore, (Carbo 1998) so that could be accorded maximum prestige. The philosophy behind this initiative was to expand and extend the capacity of many existing mechanisms and so create a national information infrastructure that could service more and more schools, homes, and institutions in the private sector. The president and his associates hoped to encourage the community to use the information super highway more and more and so create an "open information society". In the opinion of Carbo (1998), the NII has succeeded in doing what it set out to achieve.

Dugan and Cheverie (1997), however, have emphasised the extent of disagreements about information policies in the US. The first problem they note is that although there has been no central and coordinated information policy over the years, the unprecedented expansion of global electronic networks demand that new problems be solved even before existing problems have been resolved. A second point of disagreement arises out of the conflict between the government's express desire to reduce federal involvement in people's everyday life while at the same time pressing for legislation to ensure privacy and safety. What has therefore emerged in the USA is the realization that information policy is not static but rather that it is evolving and dynamic (Dugan & Cheverie 1997).

In South Africa the need for an appropriate policy to provide guidelines for the information industry was articulated in 1995 by the then deputy president, Thabo Mbeki, who told a G7 meeting that development of information policy was a multi-sectoral activity that required careful planning (Wilde & Mncube 1996). It is envisaged that the ultimate form of South African information policy will include the following principles: freedom of access, adoption of ICT, and the collecting and dissemination of information. Wilde and Mncube (1996) add that it is crucial for such a policy to be "people-centred". They have identified government, the telecommunications industry, libraries and civil society as interested parties in drawing up such a policy.

It emerges from the literature that while government policy creates a framework for expansion, it may also deter the growth of the Internet. It would appear that it is not the existence of a *policy*, but rather a supportive government policy, that encourages expansion.

3.5 Internet and small business information

In the following section, the researcher reviews previous research on how available information technologies were used to meet the information needs of small-scale business entrepreneurs in developing countries generally, and Botswana in particular. The review furthermore explores how effective the Internet is in obtaining and presenting information to SMMEs. The research also examines at length the issues inherent in the design and development of web sites, and finally reviews policy issues that affect web access and use in Botswana.

"Internal SME information management and the use of external information services designed for SMEs is dependent for its success upon sufficient resources and work tools in the hands of the user...There is definitely a need to increase the use by SMEs of the information sources available to them "(Kalseth 1995:39).

Kalseth emphasises how critical is the need for access to business information in the quotation above. A cursory examination of business information reveals that available business information is nearly wholly concerned with the big business sector and that

only a limited amount is available on small business enterprises. Johnson (1996) and Introna (1997) and many others have written on the role of information in large and formal businesses. Literature on small business enterprises generally is scarce, while such information on Africa is even more limited. Available literature on small business in Africa focuses on the problems of small-scale business and seldom discusses the role of information as such in small business enterprises. However, Briscoe (1994), Sunny and Babikanyisa (1996), and Mchombu (1996) mention lack of information on business procedures as one of the obstacles that minimises the possibility of small business enterprises being successful in Botswana. Alexander, Gay, Mbere,and Setimela, (1983) and Silitshena (1992) specifically cite lack of relevant information as a definite barrier to the success of SMMEs. Heeks (1999:8), however, cautions that "information is not the be-all and end-all of enterprise development" and that it must rather be related to "other factors in the environment that enterprises need to prosper like access to skills, access to markets, access to finance".

3.6 What type of information is sought by SMMEs?

The type of information sought by SMMEs depends on the type of SMMEs. Heeks (1999) states that the type of information sought by entrepreneurs is dependent on the needs of an enterprise at any given time. This need varies from day to day and depends on circumstances. It is also dependent on the extent to which entrepreneurs are able to recognise and articulate their need for information (Mchombu 1996). The identification of an information need is the first requirement in the information seeking process.

Johnson (1996) confirms the above assertion by Mchombu when he cautions that before one can determine exactly what kind of information is needed by SMME entrepreneurs, it is essential to understand *the psychological determinants* of information needs and information seeking. The information seeking process is determined by several stimuli, which are both internal and external (Johnson 1996).

3.6.1 External influence

Johnson (1996:3) states that information seeking is often the first step towards social change – both for individuals and a society. He further asserts that information seeking provides individuals with "critical assistance that enables them to also deal with an effective level of organizational life" (Johnson 1996:3). External stimuli for seeking information include:

- a need for change in the environment
- a pending reward (emotional or material) for obtaining such information
- the minimisation of uncertainty

3.6.2 Internal influences

Kriekelas (1983:6) defines seeking as an "activity that is undertaken to identify a message that satisfied a perceived need" while Kaniki (1991) is of the opinion that people seek information when they have to make a decision or solve a problem. Information seeking, therefore, appears to be externally stimulated by a need for change. It is processed internally and influenced by one's knowledge. Johnson (1996:3)

concludes that because of the *psychological* determination of information seeking, it is possible that information seeking may not take place – even when individuals urgently need information.

3.6.3 Information needs

Information needs in business refers "to factors which business owners consider to be most critical for the survival and/or growth of the enterprise". Heeks (1999), Koskiala and Antila-Olkku (1995:64) state that SMMEs entrepreneurs neither articulate their information needs nor do they recognize them. Koskiala and Antila-Olkku (1995) and Mchombu (1996) state that it is possible that the current scarcity of information about the needs of SMME entrepreneurs arises out of their inability to articulate their information needs. Mchombu (1996:18) asserts that although business requires high information input, most business people in small business enterprises in Africa do not possess any high degree of technical information awareness. In industrialized nations, on the other hand, entrepreneurs articulate information needs and seek the information they need (Clausen (995:44).

Literature on the type of information sought by SMMEs in Africa generally is (as has already been noted) extremely scarce. Mchombu (1996) and Heeks (1999) undertook two studies that established the information seeking trends of micro-enterprise entrepreneurs in Botswana. Although Mchombu (1996) focused on women, the study provides useful information from which one might infer trends about information

seeking in Botswana. It is particularly relevant to this study because the majority of entrepreneurs in the group studied are women.

Clausen (1995:45) states that in Denmark and Finland, SMME entrepreneurs look for information on markets, prices, and partners from public libraries and business information centres. In Botswana, data on the type of information that small business SMMEs seek from information centres is extremely scarce. Banks do not catalogue their inquiries by type of user and the National Development Bank reports simply supply information about the loans they have granted loans – but not the type of user making the inquiry. The table below records how Mchombu (1996), Briscoe (1994) and Duncombe and Heeks (1999) have identified the information needs of SMMEs.

Table 6 A comparison of information needs from various literature sources

Mchombu(1996)	Briscoe(1994)	Heeks (1999)
1. Business management 2. Technical skills 3. Financial Information 4. Legal information 5. Marketing information 6. Sources of raw materials 7. Nursery schools	1. Sources of finance 2. Training 3. Market 4. Education	1. External Financing 2. Trained personnel 3. Management training 4. Source of skilled personnel 5. Information that would lead to increased sales 6. Existing customers 7. Land or premises 8. Laws and regulations

Although Mchombu's study was limited to women, the stated information needs do not vary greatly from those identified by Briscoe (1994), who states that SMMEs need

skills in business management, marketing, financial information, and so on. Some of the differences appear to be differences in expression. Thus Briscoe (1994) identified skills required by entrepreneurs while Mchombu (1996) identified information needs. Duncombe and Heeks (1999) also identified information needs. The specifications of what entrepreneurs need remain similar. Table 3.2 above juxtaposes the similarities in information needs established by these three studies over a period of five years. It is instructive to note that the information needs did not change between 1994 and 1999.

3.7 What types of sources are currently used to access information?

Kalseth (1991:45) states that those who run Danish SMMES use the reference sections in public libraries to read directories and encyclopaedias and obtain statistical information. They also widely consult *Fortune* and other current periodicals for information on markets and products. Hansen (1995:55) states that SMMEs satisfy their need for knowledge by using formal and informal networks. In Botswana, Mchombu (1996) identifies the following pattern in the satisfaction of the information needs of women entrepreneurs:

Table 7 Information needs of women entrepreneurs (Source, Mchombu:1996)

Type of adviser	Percentage of satisfaction
BEDU advisers	55%
Field service advisers	37.5%
Radio	25%
Local newspapers	7.5%

Table 7 indicates that extension workers meet most of the information needs of women entrepreneurs. The table above indicates that BEDU advisers best meet the information needs of most women – followed by the Ministry of Commerce's field service advisers, the radio and finally the local newspaper. *One should note that there is a strong dependence on oral information as opposed to text information.* It was evident that oral advice was preferred to the information obtained from newspapers. Duncombe and Heeks (1999) also confirmed that people tend to depend on informal one-on-one information provision.

A significant finding of Mchombu (1996:54) is that *40% of the sample had nobody to ask for information when they had a problem* – while 27.5% depend on relatives and family to solve their problem and others obtain their advice from banks and from extension workers. Duncombe and Heeks (1999:21) also found that SMMEs in Botswana depend on their "internally generated knowledge and experience" as an informal source of knowledge. This reveals that *a large proportion of people depend on oral information from close associates* and do not consult formal and established information centres. Mchombu (1996) and Duncombe and Heeks (1999) confirm the findings of Dhua (1990), who states that SMMEs in China often also use *informal* channels to gather information.

The literature seems to indicate great reliance on printed material is characteristic of studies conducted in Norway, Denmark and Finland. In developing nations entrepreneurs came to rely on oral sources of information. Mulindwa, (1987), Kaniki

(1991), Mchombu (1995) and Duncombe & Heeks (1999) all concur that while SMMEs ignore printed information available in libraries and other information centres, they do tend to rely largely on oral and informal information.

3.7.1 Are the available sources adequate?

Mulindwa (1987:21) states that small business entrepreneurs in Botswana do not consciously search for information in formal existing sites such as libraries and reading rooms that contain large quantities of printed information. The predominance of text information in those institutions renders them unusable by people who are unable to articulate their information needs and possess only limited reading skills. They prefer to seek advice from oral sources in the form of advisers (Mchombu 1996:45). The literature indicates the use of available information centres (in the form of libraries, BOCCIM and the University of Botswana Business Clinic), where extension services and the information provided are limited. The utilisation of the services offered by these organisations is hindered by the preference that people have for oral information rather than printed information (Mchombu 1996; Mulindwa, 1987).

The call by Silitshena (1991), Alexander, Gay, Mbere, and Setimela, (1983) and Mchombu (1995) for information for SMMEs is a clear indication that existing services are inadequate.

The literature shows that the success of small businesses in Botswana depends on the availability of information on various aspects of business such as markets and cheap sources of raw materials (Alexander 1983; Mchombu 1995; Sunny & Babikanyisa 1996). Some of this information is available in print format in scattered government offices. While some information providers currently produce or compile some information for entrepreneurs in SMMEs, Mchombu (1995) and Silitshena (1992) have noted that existing formats of information are inappropriate for small business enterprises. It is evident from the literature that the existing mechanisms of information provision are print-based, not easily updateable, and are generally not examples of proactive information provision in the information age.

3.8 Access

Access refers to the ability to physically reach, process and use information. Access may be conceptual in addition to being physical.

3.8.1 Socio-cultural barriers to accessing information

Socio-cultural barriers that hinder the flow of information are not physical barriers. They are social factors that discourage information use.

3.8.1.1 Is gender a barrier to accessing information?

Hopwood (1989) indicates that woman's work and family relationships are so intertwined that they leave little time to concentrate on business issues that might be separate from the family. Because of this women have developed informal networks for sharing information. Although this study was conducted in Zambia, the results concur with other studies by Mbambo (1995) and Mchombu (1996) indicate that information provision for women should not be isolated from women's multiple roles but that they should be related to them in a meaningful way. The studies suggest that separate information services for women in developing countries should be replaced by easily accessible places or sites where women can efficiently and swiftly obtain the information they require (Mbambo 1995; Mchombu 1996).

Mchombu (1996) indicates that 40% of women studied did not know where to go for information. Alexander et al (1983) indicated that the majority of extension service providers were men. This made it difficult for women freely to consult each other because they were intimidated by the presence of "powerful" male advisers. Sunny and Babikanyisa (1996) indicate that women in the small-scale sector need skills. The proliferation of information advice centres will not provide information for women entrepreneurs (Raseroka 1992). A mechanism that is less male-dominated and therefore not threatening to women should be developed and located in places frequented by women.

When we consider how extensively information communication technology (ICT) is used to access information, we find that fewer women than men have access to ICTs (FLAMME 2000). Marcelle (1998) notes that ICT in Africa is a male-dominated domain, that women are excluded in all levels of employment in the field of ICT, and that women also tend to possess ICT equipment far less frequently than men. Marcelle calls on African countries to re-examine their ICT policies and to make them gender-inclusive. Kole (1999) concurs with Marcelle when she says that a limited access to ICT leads to a limited access to the Internet and its resources. The literature seems to demonstrate that women are disadvantaged in terms access to the Internet and that there are largely functionally illiterate.

3.8.1.3 Is illiteracy a barrier to information access?

Graff (1981:2) states that the value of literacy for "achieving fulfilling, productive, expanding and participating lives of freedom in modern societies is undoubted and unquestioned". Robert (1973:4) notes that although the value of literacy is recognised in these terms and that its critical role in development is well documented, it remains debatable as to whether it should be regarded as the key to development. Literacy, loosely understood to refer to the ability to read, is regarded as a crucial factor because it is indispensable to those who wish to acquire information that is presented other than in oral form. However, "in a push button society a minimum of literacy is needed to know which buttons to push" Galtung (1981:277). In spite of this, the availability of information for development in print form continues to exclude those who cannot read

or write from obtaining and utilising such information (Mbambo 1995). "By giving the illiterate the impression that books are the only possible vector of culture... the illiterate communities are soon reduced to silence" (Verne 1981:302).

Braun (1999) states that illiteracy is the main obstacle to the spread of information in developing countries. "Computers and their audio-visual features present great advantages, ...a mouse click on a visual and a user can listen to information" (Braun 1999:79). Braun also cites anecdotal evidence from Guatemala that assert that women market their products on the WWW. Thus, although they are illiterate, they have an opportunity to hear and be heard on the net. The literature demonstrates that the practice of making print or books the only means of access to information deprives those who are illiterate from gaining access to information. This practice is very widespread in Botswana – where most information is only available in printed form. Braun (1999) cautions that the Internet and the WWW might possess exactly the same disadvantages as print media unless they are used as in a multi-modal way that includes hearing and seeing.

3.8.1.4 Language

While most of the literature is available in English, the majority of the population in this category are Setswana-speaking. This creates a barrier because whatever information is available is not usable to this population (Mchombu 1995). Thirty percent of the population of Botswana is illiterate (UNESCO 1997). The same

percentage have not received any formal education and so do not speak English. Most of the development information is available in English (Raseroka 1995). Thus language emerges as a limiting factor in accessing information. Language is also a barrier on the Internet (*Futurist* 2000). A *Futurist* editorial states that most African languages are not found on the Internet. Everard (1999) adds that the language of the Internet is English and cautions that even simple translations may distort a message. This can limit the extent to which Africans, who are not native speakers of English, can benefit from the Internet.

3.8.1.5.Education

Schram (1964) states the education creates a desire for information. Ngwainmbi (2000) concurs with this view when he states that in Africa, education levels increase in direct proportion to access to computers, the Internet and current information. The justification for extending education was to enable people to read – especially for information rather than for pleasure (Ngwainmbi (2000)). Those who do not read cannot read print information. They may be described as being (in a certain sense) "voiceless" people in the information age.

3.8.2 Physical barriers to accessing information

Physical barriers to accessing information are the features of particular geographical locations and the presence or absence of infrastructure.

3.8.2.1 Are there distinct differences in the way that urban and rural access information?

The Botswana National Library Service Act of 1962 provides for a library in each of the major towns and villages in the country. Reading rooms are provided for more remote areas and book boxes are provided for even more remote areas. However, there is no legal obligation for information providers other than the National Library Service to disseminate their services to remote areas. Information provision in rural areas is therefore the domain of the Botswana National Library Service (Mulindwa 1987).

All other information centres are in Gaborone and Francistown, the two major cities. Concentration of these services in urban centres and the absence of these services in rural areas create a disparity in information service provision (Boadi 1992). However, literature that describes the extent of the disparity is not available.

3.8.2.2 Is distance from the capital city a hindrance to accessing information?

Mulindwa (1987) states that there is a concentration of information services in the capital city. The University of Botswana's Small Business Clinic and other small business information providers are concentrated in Gaborone. The physical location of resources in Gaborone necessarily prevents those in rural areas from accessing the same resources (Mchombu 1995). Distance from the capital is therefore a hindrance to access to information. Furthermore, Heeks (1999) indicates that there is a higher

telephone density in urban areas than in rural ones – the factor that creates a potential disparity in the provision of ICT in rural areas.

3.8.2.3 Access to computers and infrastructure

It has already been stated elsewhere that the cost of computers and Internet connectivity far surpasses the monthly wage of the average person in Africa (US Internet Council 2000). The average African neither owns a computer nor has access to a computer connected to the Internet.

Ticoll (2000), Mbambo (1996), and Ngwainmbi (2000) agree that there are serious infrastructural hindrances in Africa. Because telephone communications are poor and the electricity supply is erratic, this makes the Internet unreliable.

3.9 What ICT solutions have been applied?

If one wishes to construct an appropriate ICT policy, one needs to understand the information environment. Duncombe & Heeks (1999) state that an information environment has been established in Botswana. Access to information has also been espoused in *Vision 2016*. The same document also calls for applications of appropriate Information Technology in order to develop "an informed society".

3.9.1 Internet connection

The editorial of *Futurist* which the researcher mentioned above (*Futurist* 2000) indicates that satellites that are positioned in stationary orbit may offer an alternative to the poor telephone line services that make Internet development difficult in Africa. In Botswana there are currently six ISPs (Internet Service Providers) for a population of 1.5 million. Botswana's telecommunication infrastructure is said to be the best in Southern Africa. However, use of the Internet in business is limited to a few organisations (Heeks 1999).

3.9.2 Computerized databases

Kalseth (1995) includes use of information technology as one of the requirements for setting up of business information services for SMMEs in Denmark. Clausen (1995) and Hansen (1995) call for the more innovative use of emerging and available information technology in the provision of information for SMMEs. Clausen (1995:42) further states that such a service should be available within close proximity to small businesses. Although these examples are drawn from Europe, they may be applied elsewhere in the world. Taiwan has developed appropriate applications for developing countries. Jy-Sheng Ke (1995:46) states that by providing information to small business entrepreneurs, the country enabled them to compete with big businesses in Taiwan. Extensive use of the Internet and specialized local databases empowered the small business sector to become an engine for economic growth. In Singapore national business libraries make extensive use of IT to provide information to small businesses

that cannot afford their own equipment for Internet access. Although none of these applications is from Africa, they show how appropriate technology can be used to provide information to SMMEs.

Kole (1999:1) states that as new ICTs proliferate, the use of ICTs in Africa increases proportionately. In Botswana the Fredrick Ebert Foundation (in cooperation with the Ministry of Commerce) has established the Business Linkages Database. The database lists mainly small-scale textile industries. The purpose of the database is to market organizations in the textile sector industries in Botswana and to encourage the purchase of their products (Business Linkages Database 1999). When it is complete, the database will be available on the Web and on CD-ROM

3.9.3 Use of multimedia in business

The databases advocated by Kalseth (1995), Clausen (1995) and Jy-Sheng Ke (1995) tend to be letter-based databases that require basic literacy and recognition of symbols on the keyboard to manipulate them. Multimedia on the other hand present information in a way that is more accessible to semi-literate people (Keen 1997:7). This distinguishes it from all previous IT applications in information provision. Mulit-media provides simulation and three-dimensional presentation. This facilitates effective decision-making, enables remote interaction with customers, and enables users to develop their knowledge and understanding of the product they need. Keen (1997), however, cautions that although the production of a CD-ROM itself is about one dollar, the cost of creating a multimedia environment with scanners, colour printers, storage capacity, editing software, video

cameras, etc, is between $20 000 and $80 000. This price is beyond the means of small business people. However, companies with many users realise savings in use per user. The larger the user population the greater the saving.

3.9.4 The benefits of multimedia in business

We may list the following benefits:

1. Multimedia cuts down on training time as many trainees can be trained simultaneously at different location without duplicating the human resources. (Keen 1997).

2. Multimedia facilitates interaction with customers (Keen 1997). CarMax, for example, sells used cars via electronic kiosks. Customers set their car requirements and finance needs. The system then produces colour photographs of cars in that price range.

3. Three dimensional computing facilitates three-dimensional perceptions. Architects use this to create virtual buildings and facilitate a " virtual walk" through the building.

4. Animation. Animation mediates ideas across quickly and simply and is used widely in the United States courts to recreate events (this enables jurors to "see" the events as they occurred at a scene of the crime).

5.Multimedia is used on the Internet. WWW technology widely uses multimedia to create video, audio, graphics and three-dimensional virtual realities.

6. The management of knowledge is another application of multimedia. Introna (1997) says that knowledge is "information put to use". Multimedia makes information natural by appealing to our senses of sight, hearing, and touch. "Traditionally computers have made information that which intellects respond to" (Keen, 1997:12). By making information available naturally, and by diversifying the way in which information is captured, stored, and communicated, multimedia radicalises knowledge management. Current knowledge is crucial in business. The possession of information provides a critical advantage (Introna, 1997). Multimedia reduces interpretation time by using, audio and visual through the use of hypertext and hypermedia, which facilitates browsing. The growth and expansion of the WWW shows how eager people are for information they can assimilate and use (Keen 1997).

3.10 Design and implementation of a good web site

This section outlines what the specifications of a well designed product are. It outlines the process of user analysis, design, development, prototypes and evaluation.

Any discussion on the use of the web is not complete without a discussion of design. There are many different methods of web site design. The Women's Net methodology brings together stakeholders to produce a web site using HTML (Womensnet 2001). In

the commercial sector it is the designer who creates a site and who matches the product with the specifications of a customer. Such a task includes target population analysis, goal analysis, prototypes and evaluation. Evaluation is crucial. This establishes the usability of a programme.

3.10.1 What are the specifications of a good web site?

Mouty (1999) lists the following principles for designing a web site:

(1) Determine why users will visit your web site.

(2) Establish the proficiency level of users of product. What are their web skills?

(3) Identify the search engines used by most of your users so that they can access your site.

(4) Enable users to be aware of where they are.

(5) Make good use of landmarks so as to avoid revisits.

(6) Make good use of cues so that readers can easily navigate the site.

(7) Make good use of people's natural problem-solving skills.

Hodgkinson and Cronje (1995:8) state that when one designs for adult learners (users), the following should be borne in mind. The majority of them tend to:

(1) be active learners

(2) be experience-based

(3) be experts in their own areas

(4) be practical "hands-on" people

(5) be task-oriented

(6) be problem-centred

(7) seek solutions

(8) know the reward for doing certain tasks

(9) seek skills to empower themselves

(10) be self-directing

(11) be externally motivated (i.e. by their environment)

(12) be internally motivated (i.e. by psychological recognition, self esteem, etc.)

There is some overlap between what Mouty (1999) says and what Hodgkinson and Cronje (1995) have also stated. Careful selection of appropriate principles from each of these authors should be considered in the planning stages of design.

3.10.1.1 Development

The process of developing an appropriate multimedia product must be informed by the context of creation as well as the use by the end user. Mouty (1999), Boyle (1997) and Desmarais (1994) exhort developers to remember that multimedia is a tool, and not an end in itself. This point is critical when one designs for people in developing countries who are not familiar with technology. Desmarais further adds that when the developer develops a multimedia programme, he or she should concentrate on the application of the final product. Monty asserts that the development stage must be informed by the analysis stage.

Philips and Jenkins (1997) state that the development cycle starts when the idea of the project is brainstormed and an initial design is then produced and refined into a storyboard. During the process, prototypes are developed and evaluated until the developers agree on what should go in. Once the design is complete, the production process begins. Desmarais (1994), Phillips and Jenkins (1997) and Boyle (1997) all agree that at the final stage the programme is tested, de-bugged and tested on end users.

Desmarais (1994) suggests the following steps in the process of development: identifying the problem, design, and authoring:

1. Identifying the problem (needs assessment)

Identifying a problem may also help with the definition of an appropriate solution. This process also determines the content of the presentation, target audience and the environment. He adds that it is also important to define the objectives of the project.

2. Design

At this stage, all graphics, colours, animations and texts that will go into the program are determined.

3. Authoring

This stage combines the elements of needs analysis, design and creative development. The author will also need to know the type of hardware in use and whether it will support the application (e.g. Will the configuration support audio, or motion type display?) Performance of the computer will also need to be considered: size of processor, RAM, band with, and operating system. The author will also consider the type of authoring package and whether it will support what the author wants.

3.10.2 How should these specifications be adapted to meet the needs of my target population?

3.10.2.1 Design

Desmarais (1994) says that a design strategy sets out developmental guidelines. This stage links specification with needs analyses. In the process the focus should be on the user. Other central issues that must be considered include the following:

a) Scope of the project. In this process one asks why multimedia are used and not other products. The limitations and appropriateness of the product for the ultimate user group should be considered.

b) Interactive programme. Desmarais (1994) suggests that at this stage the developer decides on an appropriate user interface. Available choices are menu-driven, exercise-driven and simulation. Exercise driven interfaces are used in training hypermedia databases. They are flat in structure and similar to menu-driven, but users determine where they want to go. Simulation shows the consequences of an action and provides feedback. This is very useful in training.

c) User requirements. Specifying user requirements is crucial in this process, as well the mechanisms by which users will provide feedback.

d) Media selection. Here the type of media the participants will use is listed.
At this stage one asks how the user will use the system. This could include questions like: Will the users type in words? Will they be standing or seated?

e) Acknowledgments. A mechanism for indicating that the system has received input from the user is also important. Sometimes acknowledgement is sufficient without feedback. Mouty (1999) adds that designers should be aware of current multimedia on web technology schemes, response times and users' platforms.

3.10.2.2 Creative development

This stage involves the creative development of the product using graphics, audio and video. Collaboration at this stage tends to produce more effective work. The components of this stage are:

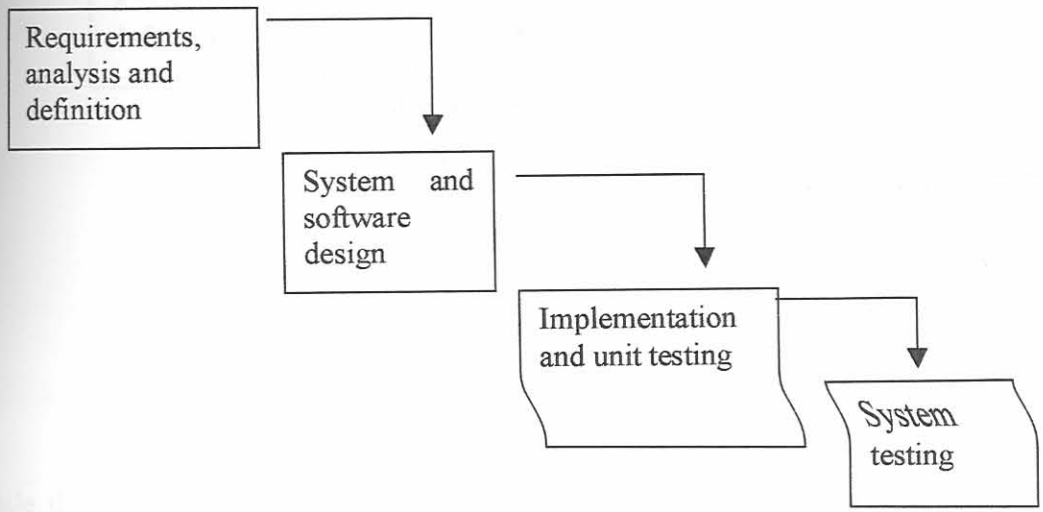
a) Script writing. This involves the writing of specifications; deciding whether narrative, simulation, or lecture-type presentation will be used; organizing the sequence of presentation; highlighting important points; reducing content on screen to minimize confusion; and writing a draft script.

b) Storyboards. This refers to the selection of graphics to accompany the text. The storyboard writer and the scriptwriter need to agree on content. Desmarais (1994:71) says the rule of thumb is "to include any information that might alter the screen".
Some of the detail that Desmarais (1994) says should be included in the process of designing is omitted by more recent designers like Phillips and Jenkins (1997), and Boyle (1997). Specialist teams now perform the various tasks while authoring packages make alteration of prototypes easier (Philips and Jenkins 1997).

Phillips and Jenkins cite several models of designing. The models outline the steps in the process of multimedia development. Although the sequences seem to change, the stages remain similar: analysis/development, design, evaluation and implementation. The various models are illustrated in the following three diagrams.

Figure 3 The water fall model

(Source: Philips and Jenkins 1997:37)

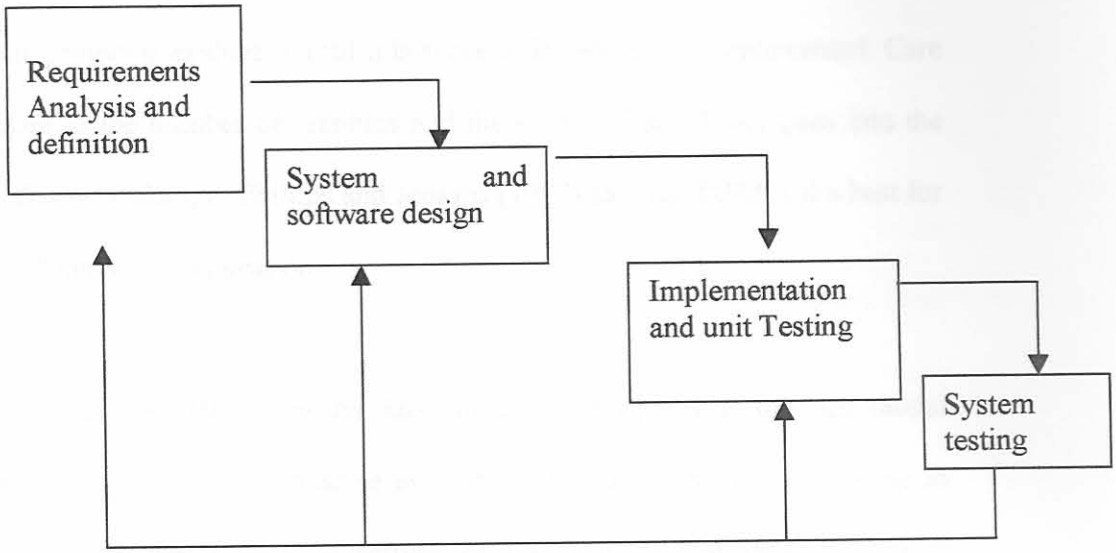


Research questions that establish the degree of usability of the WWW as an information conduit in Botswana and other developing countries

This model assumes that the design is completed before the work starts. If any changes in the environment which leads to significant changes in the project, the work start will have to be re-start from the beginning again. This model has been deemed inflexible and is therefore not frequently adopted (Phillips and Jenkins 1997).

Figure 4 The incremental prototyping model

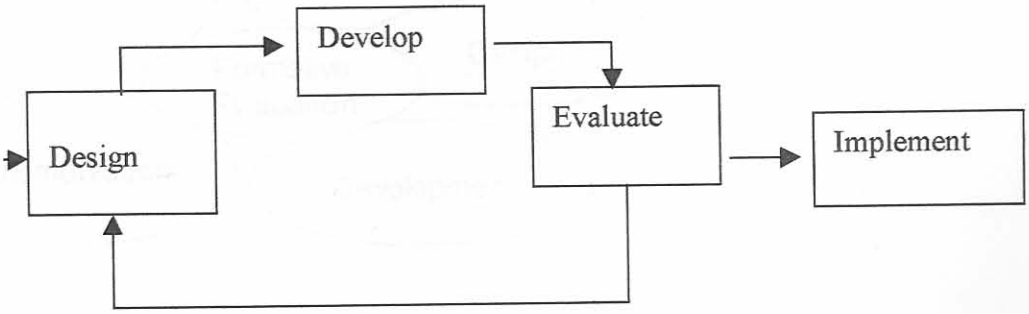
(Source: Philips and Jenkins 1997: 38)



While this model is similar to the waterfall model, the steps are repeated wherever necessary. When using this model, prototypes are created and tested many times. If one fails, a new one is created until an acceptable prototype is achieved.

Figure 5 The interactive multimedia (IMM) model

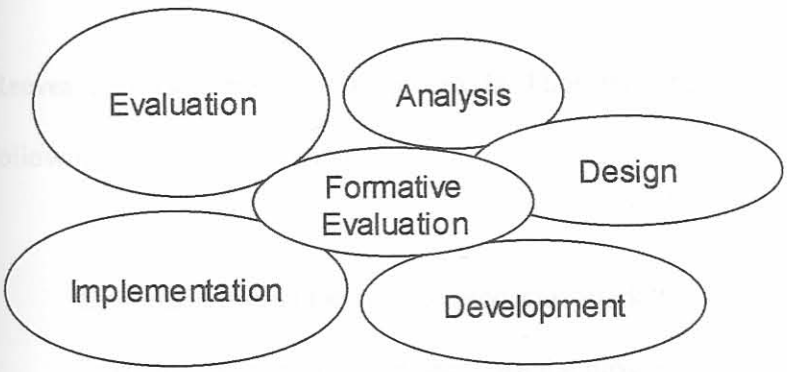
(Source: Philips and Jenkins 1997:38)



The process begins with design, moves to developing, then moves to evaluating, and then goes back to design if changes are necessary. Implementation is the final stage. In this model, the project is evaluated until it is acceptable before it is implemented. Care should be taken in the number of graphics and the extent of detail that goes into the prototype as this may change. Phillips and Jenkins (1997) say that IMM is the best for developing multimedia for education.

Hodgkinson and Cronje (1995) say the daisy model of designing is the best model because at every stage there is formative evaluation. The designers are compelled to return constantly to the primary objectives of the project. The daisy model is represented diagrammatically below.

Figure 6 The Daisy model



3.10.3 Does my database meet these specifications?

After a prototype has been developed, it is tested. This section discusses what the literature says about different types of evaluation.

3.10.3.1 Evaluation

Thornton and Phillips (1997:128) state that evaluation is the process of assigning value to an item. They add that in multimedia development the term refers to answering questions that arise during the development and implementation of the multimedia product. They recommend that the most effective way of evaluating multimedia is to list questions that could be used to interrogate the model – questions such as:

- Is it stimulating the learner?
- What is the long-term impact?
- How can the design be improved?

Reeves and Hedberg (1997), quoted in Thornton and Phillips (1997), suggest the following types of evaluation:

- Document evaluation (do the processes work?)
- Formative evaluation (can users use the program?)
- Summative evaluation (was learning effective in the short term?)
- Impact evaluation (was there any long-term retention of knowledge?)

Hodgkinson and Cronje (1995) add that dynamic evaluation tests whether users can use the program.

Boyle (1997) says evaluation is an essential part of the development process. There are two types of evaluation: formative and summative. Formative evaluation occurs throughout the development process and informs the development process, while summative evaluation happens at the end of the project. It examines whether the system has succeeded overall. Boyle (1997) further states that evaluation produces qualitative data that is useful in reshaping the design of the product. While quantitative evaluation yields figures that may be more objective than qualitative measures, they are not so useful for shaping the design of a programme.

Boyle (1997) cites three categories of people who may be interested in evaluation:

- Designers
- Managers and funding agencies
- Users

All these categories will require different forms of evaluation. Designers are interested in feedback that will influence the development of a product. To them the distinction between formative and summative evaluation is artificial. Managers may be interested in a cost-benefit type of evaluation that indicates whether the product justified the resources that were spent on it. End users may only be interested in whether the end

product helps them to achieve stated goals. "The evaluation method adopted should meet the needs of the interested parties in a cost effective way" Boyle (1997:201). Hodgkinson and Cronje (1995) conclude that whatever the form of evaluation adopted, the criteria for evaluation should be established first.

3.10.3.2 Types of Evaluation

Boyle (1997) cites three methods of evaluation:

Observation. The designers who want to see that users are satisfied with the system observe users at work on prototypes. Observation can be structured or unstructured. A set of criteria is drawn up beforehand and observers check how users perform against these. Preece (1993), quoted in Boyle (1997), says this method is rather expensive

Interviews. Structured and unstructured interviews to gather both qualitative and quantitative data are conducted. Users respond to the interviewers as they use the product.

Questionnaires. Users work independently of the developer, and then complete questionnaires as they get to a section.

3.10.4 To what extent does my database fulfil the needs of my target population?

In order to establish whether the product meets user needs, Hodgkinson and Cronje (1995) and Mouty (1999) suggest that a summative evaluation should be conducted before the product is finally distributed. Hodgkinson and Cronje (1999) provide the following checklist to be used in summative evaluation.

1. Content
- Correctness
- Connection with syllabus
2. Presentation
- Appropriate
- Clear
3. Feedback
- Motivational
- Remedial
4. Language use
- Appropriate
- Correct
5 Documentation
- Clarity
- Completeness

6. Educational approach

- Development thinking
- Construction and ownership of ideas
- Understanding and negotiation of meaning

7 Use of thinking skills

- Lower level
- Higher level

8. Technical quality

- Free from execution errors
- Ease of use

Boyle (1997), Desmarais (1994) and Mouty (1999) all concur that whatever method is used to gather data is always context-specific and may not necessarily be used on another model. However, information gathered must be used to make recommended changes in the web site. Although the studies cited give the basics of product design and are relevant to this research, Mouty (1999) is the most relevant as the study relates to the development and design of web sites. She says that the cornerstone of web evaluation is *usability*. It tests whether the site does what it was designed to do. If it is an informative site, does it inform? If it is commercial, can a whole transaction be completed?

Usability studies can be:

- Context -specific
- Data-driven
- Descriptive (as opposed to prescriptive)
- Flexible

Some other general questions that Mouty (1999) asks are:

a) How is the site used?

b) Is the site to be used by a large audience?

c) What are the reactions to the site?

d) How responsive is the site?

e) What is the access rate of information seekers?

f) How long does it take to find desired content?

g) How is the site affecting users' attitude and beliefs?

h) How is the site affecting users' behaviour on performance?

i) How is the site affecting the organizational culture on performance?

j) What are the short-term benefits of the site?

k) How is the site affecting long-term outcome?

3.11 The relevance of the web as an information delivery tool

Daly (2000) suggests that measuring the impact of the Internet in a society is not easy. However, a grid that outlines desired ends maybe useful. Each of the components in the

framework can be considered by itself. Kole (1999), and Heeks (1999) argue that the World Wide Web offers unique opportunities that assist small businesses to survive and transfer their business. Glynn and Koenig (1995) point out how traditional information centres have neither provided small business enterprises with access to pertinent information nor have they guided them in the efficient use of information. Their study suggests that the Internet could provide small business with cheaper access to information because bigger companies advertise their business there. Ticoll (2000) on the other hand indicates that the Internet is not a panacea for the problems of SMMEs. It should not be viewed as an end in itself but rather as a means to an end. "It is not about dumping the equipment" (Ticoll 2000).

The World Bank advocates the potential of the WWW and ICTs generally to contribute to the growth of small business enterprises, and through them to stimulate development on a national scale:

> "This new technology facilitates the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, improve policy formation and execution and widen the range of opportunities for business and the poor (World Bank 1998:9)."

Heeks (1999) states that ICT has a role to facilitate both receipt and transmission of information. He however cautions that ICTs by themselves do not alleviate poverty and bring development; the specific application of ICT to SMMEs should be considered.

Hoffman (2000) cites the relevance of the Internet to electronic commerce activities. The wide availability of credit cards in developing countries would make use of the Internet for e-commerce a reality. Mullen (2000) indicates that Motorola is sending one satellite into a low orbit that will facilitate e-commerce in developing countries. He says that e-commerce will not expand while there is a reliance on poor telephone infrastructures. *The Economist* (Issue 8189, 2000) says that e-commerce will not be fair for developing countries because smaller companies will be unable to compete for customers with larger companies. The article also provides examples of how the government of Thailand promoted e-commerce by passing a law that stipulates that all invitations to tender must be done on the web in order to enable small business to identify and link with related organisations.

3.12 What policy considerations are in place?

Vision 2016 (1997:119) demonstrates the Botswana government's commitment to the adoption of ICTs.

> The next millennium will usher [in] an information driven society throughout the world. To ensure participation of Botswana in these developments, an information age working group will be created with a mandate to formulate a national information vision, policy and information technology strategy.

A deliberate effort by the government has led to computerisation of most government operations, a networking of government office with e-mail and the WWW (Heeks 1999). Government policy often translates to practice in other sectors. The deregulation of the Botswana Telecommunications Authority has facilitated the free flow of information (Heeks (999). Botswana as a tele-density of 17.95 per 100 inhabitants and the Internet users' ratio is 33.42 (World Telecommunications Indicators 1998). The literature suggests that Botswana has a telecommunications policy that facilitates access.

The Economist (2000) suggests that IT policies need to be matched with other policy changes before benefits can be realised. It states that policy on trade, investment and related matters may have to be changed so that fair competition can be encouraged. Marcelle (1998) suggests that government policies on the Internet should take into account gender disparities in access to computers, education and other development resources.

3.13 To what extent can the WWW be a tool for information delivery in Botswana?

There are currently six ISPs in Botswana. According to Heeks (1999), 50% of 61 respondents to his research had Internet access, 40% used the Internet very often, 33% used it often, and 24% did not use it very often. In response to the question of how important the Internet was to their work, 30% said it was very important, 37% said that it is quite important, 20% stated that it was not very important, and 13% that it was not important.

Heeks (1999:87) concludes that at present in Botswana the Internet is being used as a method of accessing information rather than as a tool of business. According to this study, a good number of SMMEs in the tourist sector have developed web sites. Braun (1999) indicates that in West Africa, and South Africa too, the tourism sector has embraced the WWW and set up web sites that detail their activities. Heeks (1999:95) notes a similar potential in Botswana when he says "the business owner has no effective contact outside Botswana. Is it possible that a wider European market information could be accessed through the Internet and a web site presence could be used as a marketing tool?"

3.14 Conclusion

The literature reviewed reveals the usage of the Internet in devloping countries is at an embryonic stage. In relation to Botswana specifically, the literature review shows that business information for SMMEs in Africa generally, and in Botswana in particular, is scarce. It further indicates that the current information available in print format, and in English, does not meet the requirement of SMMEs. Literature from the industrialised nations and from East Asia shows that extensive use of information technology applications helps to speed up the process of accessing information. It has also been well demonstrated in the literature that the most appropriate selection of ICT is critical for information exchange. The selected media must be relevant and usuable by the target population. Research by Heeks (1999) shows that in Botswana an infrastructure and a potential for using the Internet exist – but that they need nurturing.

CHAPTER 4

PRESENTATION OF RESULTS: CONTENT ANALYSIS

In the chapter on literature review, the researcher discussed liteature about the Internet and development that she was able to locate in written sources. This chapter analyses primary data gathered from contributions to selected electronic discussions lists on the Internet and development. The researcher used the following three discussion lists as sources: the Global Knowledge (GK) List, the Department for International Development (DFID) List, and the Africa Technology Information and Development List (AFTI-DEV). All three discussion lists focus on the role of the Internet in the development process. Subscribers on each list contribute their views on the state of the Internet in developing countries and offer opinions and develop discussions about the wrong of the Internet in the development process.

The purpose of this chapter is to describe and analyse the themes and issues raised by subscribers to the three lists. In this chapter, the researcher first isolates issues raised in the discussions on each list, then groups them thematically and finally compares the findings extracted from the three lists. She also reports the ways in which contributors believe that the Internet could be best utilised in development. In chapter 6, the researcher discusses the policy implications of both the issues raised and suggested solutions.

The researcher also used some of these findings from this analysis to develop her case study on Internet use in Botswana.

4.1 Global Knowledge List

The Global Knowledge e-mail discussion list (GK List) still functions and focuses on ICT and development. The archive of previous messages sent to the list is located at http://www.globalknowledge.org. The list was launched in 1999 in preparation for the Global Knowledge Conference 1 in Toronto, Canada. The table below provides demographic information about the GK List.

Table 8 GK List

List particulars	List specifications
Sponsor of the list:	Global Knowledge Partners: (UNDP, World Bank, UNESCO and civil society organizations)
List manager/moderator:	Education Development Forum
Total number of messages posted:	496 during the period under review (January to July 2000)
Number of subscribers:	The List is still active and open to subscription. It posts an average 80 messages a month.
Archive URL:	http://www.globalknowledge.org
Life span of list:	It was launched in March 1999 and is still active.
Objectives of the list:	(a) To harness information as a tool for development (b) To focus on access to ICT, the empowerment of civil society and the promotion of good governance

The researcher's analysis of the list was limited to messages that were posted between January and July 2000. The discussion and contributions during this period centred on obstacles and barriers that prevented potential users from gaining access to the Internet. Subscribers from both developed and developing countries described factors that prevented access to the Internet and frequently cited examples from their own locations. The researcher grouped the issues that were raised under the following theme headings: infrastructure, unequal access, human resources, policy issues, content, education. Each of these themes is discussed below.

1. Infrastructure issues

Three infrastructure factors were identified as barriers to Internet access, and these are listed in Table 4.2. They are: limited bandwidth, which reduces the capacity to handle audio and graphic data; poor telecommunications infrastructures (most of which are still analogue and can only transmit voice); and unreliable electricity supply. Contributors suggested successful solutions that were devised in some developing countries to solve these problems. Such solutions included using radio and the Internet to complement each other in India and Gambia, the use of battery-powered receivers to alleviate dependence on an erratic electricity supply in Mauritius, and the use of satellite telephone communication technology to circumvent dependence on land-line telephones in Zambia and Malaysia. The implications of these suggestions and their impact on policy are discussed in chapter 6.

Table 9 Infrastructures

Current Situation	Suggested solution
Limited bandwidth to handle data	The complementary convergence of radio and Internet technologies (India and Gambia)
Poor telecommunications	The use of satellite and wireless communication (Zambia and Malaysia)
Unreliable electricity	The use of battery-operated receivers to increase access (Mauritius)

2. Unequal access

Some contributions to this List described the prevalence of various socio-economic factors that create a situation in which there is unequal access (a inequality of opportunity commonly called the "digital divide"). Factors that contribute to the digital divide are related to the deficits in education and literacy and the difficulties created by geographical remoteness.

Table 10 Unequal access

Current situation	Suggested solution
More men than women have access.	Educate and empower more women to use the Internet.
More access is available in urban than in rural areas.	Increase all kinds of telecommunication links to rural areas.
Educated people have more access than uneducated people.	Introduce universal education so as to eradicate illiteracy.
Current high levels of illiteracy among the population prevents widespread use of Internet technologies.	Ensure that relevant websites are not mediated solely through the medium of print.

Implementation of these suggestions would require policy agreement among all interested parties and sectors in the population. Policy implications are discussed in chapter 6.

3. Human resources

Human resources were identified by contributors as some of the factors that may contribute to poor Internet access. Under-remuneration of knowledge professionals was identified as one. The isolation of virtual practitioners was another. Most developing countries did not have their own virtual communities; national e-mail lists were absent in most developing countries and people only met on international or regional discussion lists. Because these factors created a sense of isolation in practitioners, they tended to limit their participation in and contributions to Internet modalities in their countries.

Table 11 Human resources

Current situation	Suggested solution
Knowledge management professionals are poorly remunerated in some countries.	Pay knowledge professionals better salaries and offer them better contracts and conditions.
Many virtual practitioners are isolated and geographically remote from other users and participants.	Create and maintained vibrant and supportive on-line communities and virtual spaces and communication forums.

The solutions that were proffered on the List did not make any suggestions as to which particular institutions, organisations and government sectors should be responsible for the implementation of such solutions. Who, for example, might take on the responsibility of creating user-friendly and vital forums for exchange of ideas and information, and to what extent would that encourage the use of the Internet?

4. Policy issues

Some subscribers identified solutions that would require policy changes if they were to be implemented. The policy issues that were identified can only be effected by international cooperation between governments. Some policy issues are regional and some are international in scope. The issues that were raised by subscribers were: free trade, the monopoly which national governments exercise over national telecommunications, the absence of government participation in the telecentre movement, and import duties on IT equipment. A call for the deregulation of the airwaves and the reduction of import duties came from many developing countries. A contribution from India noted that the absence of government controls had led to a tremendous increase in IT business and use of the Internet in India.

Table 12 Policy implications

Current situation	Suggested solution
Globalisation encouraging free competition	The breaking down of global barriers through the Internet
Government monopoly on national telecommunication	The deregulation of telecommunications so that many mor role players can participate
The private ownership of telecentres. The absence of government assistance	Telecentres (Gambia)
Import duty on equipment and restricted access to telephones	An absence of government controls encourages the growth ICT (India)

Deregulation of telecommunications would enable more and more people to participate in data transfer. An example from India suggested that reduced tariffs encourage growth in the telecommunication industry.

5. Content

Discussions on content emphasized how inappropriate Internet content often is for developing countries. One contributor noted that current content is designed for "North-North trade" but does not encourage "South-South trade".

Contributors were critical of the Internet, and particularly of the WWW, because they perceived it as a new form of imperialism that excludes many countries by using English and other colonial languages like Spanish and French. African contributors lamented the fact that African languages are not used on the Internet, and that the advertising content is designed and intended for consumers who are either resident in developed countries of the West – or for educated Africans with high incomes and internationally valid credit cards. Table 13 below candidates these concerns and suggested solutions.

Table 13 Content of the Internet

Current situation	**Suggested solution**
Inappropriate content for developing nations	Increase "Southern" content
African languages not used on the Internet	Review language practices on the Internet and create imaginative solutions and hyperlinks to other languages

6. Education

Although some items listed under unequal access (such as *literacy* and *access for the uneducated*) could just as well have been slotted under education, they were raised as

factors that prevent access to the Internet and have been presented together with other socio-economic factors that hinder access to the Internet. The only item listed here under *education* is distance education. Contributors cited Zimbabwe and South Africa as two countries in sub-Saharan Africa that use the Internet extensively for higher education. They called on more universities in Africa to do the same so as to increase African scholarship on the Internet.

Table 14 Education

Current situation	Possible solution
Limited use of the Internet in distance education	Developing countries are under-utilizing the Internet as a to for distance education

4.2 Department for International Development (DFID) List

The DFID List focused its discussion on the role of the Internet in development, with particular reference to how the Internet can combine with other media to transmit development information. The table below supplies information about the list.

Table 15 Demographic information about DFID List

List particulars	List specifications
Sponsor of the list:	The British government
List managers/moderators:	Peter Ballantyne and Darren Saywell
Total number of messages posted:	(Information not available)
Number of subscribers:	254
Archive URL:	http://www.oneworld.net/consulation/dfid.index
Life span of the list:	Six weeks
Objectives of the list:	To develop guidelines on how the Internet can be used in conjunction with other technologies for development

The DFID List was open for six weeks between May and July 2000 and was designed to address four questions and elicit as much informed commentary as possible about these lists:

1. Is there any evidence that ICTs actually reduce poverty?
2. How can the Internet and increased globalisation enhance the value of traditional media for development?
3. How can the international community help to harness the power of knowledge to meet its development targets?
4. What can the UK do to help bridge the digital divide for developing countries?

A total of 254 messages were received in response to the above questions over a period of six weeks. The researcher extracted relevant responses from postings to the list and grouped them thematically. The researcher used the same thematic headings that she had used for the GK List to group issues (these headings were infrastructure, unequal access, content, education, human resources and policy issues). Another issue identified on this list was financial constraints. The researcher found that her own thematic analysis of responses provided more useful insights than an analysis in terms of the questions asked at the beginning of the DFID List.

1. Financial constraints

Contributors cited the prohibitively high cost of computer equipment as one of the deterrents to the wide use of computers, as indicated in Table 4.9. A combination of these costs and the high fees charged by telephones companies both contributed to discouraging Internet connectivity in developing countries.

Table 16 Financial constraints

Current situation	Suggested solution
Expensive computer hardware and software	Trade policies to facilitate access to cheaper equipment Encouraging the expansion of local electronics industry
The high cost of maintaining Internet connection	Finding ways of reducing the cost of the technology or of sharing the costs

The suggestion that electronics industries be established in developing countries complements the suggestion that trade policies be devised that allowed access to cheaper equipment. India and Taiwan were cited as examples of countries where the expansion of the electronics manufacturing sectors not only created more jobs but also led to the export of computer equipment from those countries. Local production also eliminates import duties and taxes.

2. Education

A lack of appropriate IT education was perceived to be a reason why the value of computers and their potential as a unique means of communication was not appreciated. It was noted that the school curriculum in many developing countries does

not include computer education. Table 17 raises these concerns and offers possible solutions.

Table 17 Education

Current situation	Suggested solution
Early access to ICT in education	Adopting education policies that permit ICT education

3. Content

Content here refers to content on the WWW and the discussion on lists. Table 18 lists several issues that were raised in relation to content. These include limited local capacity to put local content on the Internet, the need to create local knowledge databases, and the digitization of local content. Another point that was raised concerned the need to present information from the Internet in a format that would make it accessible to those who live in remote areas so that they too might also obtain indirect access to the content of the Internet.

Table 18 Content of the Internet

Current situation	Suggested solution
Electronic publishing of local content	Develop appropriate training, copyright and education policies which increase capacity to put local content on the Internet
Repackaging	Repackage Internet-based information into formats usable by remote populations
Creation of a local knowledge base	Develop pages with local content

Issues of content seem to be the easiest to solve because Internet enthusiasts can solve them. They need not depend on changes to government policy.

4. Unequal access

Contributors to the GK List noted that rural populations had less access than urban populations. Contributors also noted varied access between educated and uneducated populations.

Table 19 Unequal access

Current situation	Suggested solution
Stratified access: educated and literate people have more access	Reduction of illiteracy through universal education
Unequal distribution between rural and urban	Enhance the capacity of rural areas to access information

Because the Internet is presented in a text-based format, it is inevitable that those who are illiterate will be excluded. Illiteracy has taken many developing countries years to eradicate. Should Internet access be dependent on the eradication of illiteracy or should the Internet be changed to serve the illiterate through adopting an audio format?

5. Policy issues

Table 20 notes that elimination of the control and regulation of telecommunication systems is necessary before a free flow of information and an expanded use of the Internet is possible. Government control not only reduces the transmission of data but also diminishes extent to which community radio services may complement the

Internet. One needs to look further than the restrictions which governance placed on telecommunication and ask *why they practise this kind of restriction*. This question may be answered in terms of state security, good governance, transparency and democracy, and how these rank in the priorities of governments.

Table 20 Policy issues

Current situation	Suggested solution
State control of telecommunications determines what may be done on the Internet	Deregulate telecommunications

While contributors to this list raised similar issues to the ones raised by the GK List, they also raised the additional points about financial constraints related to telecommunication and computers in developing countries. However, the details in terms of which issues were expressed under each category varied between the two lists.

4.3 Africa Technology Information and Development (AFTI-DEV) List

AFTI-DEV was the newest of the discussions lists and dedicated its discussion to Africa and ICTs, with emphasis on the Internet. Although the list was dedicated to Africa, not all participants were from Africa. It included participants from the USA, Switzerland, Canada, the UK and Belgium. In addition to these, twenty-two African countries were represented. While this list was concerned with Africa, the scope of the DFID List and the GK List included issues and problems in all developing countries.

The moderators were Ellen Kole in the Netherlands, and Ken LeHento in Benin. The list was active between September and December 2000. Although it continued to be active after the field research had been completed, it is important to note that the issues that it raised are very similar to those that were raised on the DFID List and the GK List.

The table below describes the AFTI-DEV List.

Table 21 AFTI-DEV List

List particulars	List specifications
Sponsor of the list:	MEDIActeurs (France)
List managers/moderators:	Ellen Kole and Ken LeHento
Total number of messages posted:	119
Number of subscribers:	110
Archive URL:	http://www.aftidev.net
Life span of list:	Four months (September-December 2000)
Objectives of the list:	(a) To debate the notion that ICTs will bring development to Africa (b) To examine the extent to which the Internet was contributing to development in Africa

Contributions were grouped according to the themes of education, content, policy implications, unequal access, and financial constraints.

1. Education

Education of citizens for Internet literacy was described as being both uncoordinated and expensive. Internet training was also characterised as uncoordinated and expensive. There was a perception among contributors that local populations needed to increase

their own content on the WWW – and that this would happen as a result of training. Training was perceived as being absolutely necessary before Africans could place African content on the web.

Table 22 Education

Current situation	Suggested solution
Lack of coordination of institutions that provide and finance Internet education	Education that facilitates Internet literacy to be coordinated and made affordable
Need for African developers	Developing a local capacity to develop and disseminate local content

2. Unequal access

Table 23 lists the poor as being excluded from the Internet because they cannot afford the costs of connectivity. The rural poor tend to be the least educated because they live in areas where schools are in adequate and often rudimentary. One contributor thought that the rural poor were always the last to be granted resources, and that this situation was being replicated with regard to Internet connectivity. Contributors called for more government involvement in Internet provision so that it would be cheaper and more accessible to a wider spectrum of users.

One wonders if the Internet is really a priority in the lives of the poor. If it were, what aspects of the Internet would benefit them? Where (in Maslow's hierarchy of needs) would the Internet fit?

Table 23 Unequal access

Current situation	Suggested solution
Poor without access to the Internet	Governments should provide cables as well as computers

3. Financial implications

Contributors noted that current Internet provision in Africa was driven by the private sector. It was therefore run on a commercial basis and was not affordable to the general populations. There were several calls for government participation in Internet service provision and the reduction of import duties. The reduction of costs would make equipment more affordable and encourage connection to the Internet itself. Table 24 below indicates the contributions.

Table 24 Financial implications

Current situation	Suggested solution
Internet access privately funded; no sustainable funding	Government involvement in funding and the subsidisation of ISPs
Expensive equipment	Reduction of import duties
Internet connection expensive	Need for government subsidies so that costs are reduced

4. Policy implications

More contributors raised questions about policy than questions in any other category. These contributions included the regulation of telecommunications, South-South trade, techno-driven use, and the lack of commitment on the part of African leaders. Changes in policy were perceived as being critical to creating an environment for the broad use of the Internet in many sectors. Table 25 lists the issues raised.

Table 25 Policy implications

Current situation	Suggested solution
Lack of linkages between Internet, radio, satellite, and cell phone technology	Deregulation of telecommunications industries
African leaders do not demonstrate commitment to the Internet	Establishing appropriate protocols that facilitate Internet access
Lack of coordinated South-South Internet use and initiatives	Appropriate information exchanges between developing societies
Current use is largely techno-driven – as opposed to being development need driven	Identify specific areas where the Internet could be used
Africans are not participating in large numbers on Internet regulation bodies such as ICANN	A deliberate effort to participate in the deliberations of Internet driving bodies such as ICANN

5. Content

Content issues related to languages used on the Internet and the absence of information on small business in Africa. Affordable hosting was seen as a possible solution to the absence of web sites with African content. A language policy for the Internet was also discussed.

Table 26 Content of the Internet

Current situation	Suggested solution
Limited use of African languages on the Internet and sites on African culture	Appropriate language policies
Limited local content; small business players need to put more content on the web	Developing capacity as well as pricing policies that facilitate affordable hosting, development and publishing

The AFTIDEV list was also developed to discuss issues that affect Internet use in Africa and to establish best practices that could facilitate wider participation in and the use of the Internet.

4.4 Comparison of content of lists

Despite the fact that the same theme headings were used for all three discussion lists, there was little overlap on the specific issues raised. While the contributions to the three lists concur on the seven broad categories of financial constraints, education,

infrastructure, content, policy implications, unequal access, and human resource, the details about issues raised under each of these categories are different. In the table reflects a comparison of the issues raised on each list when they are no grouped under broad category headings.

1.Financial constraints

Table 27 Financial constraints

Issues raised by lists	NAME OF LISTS		
	DFID List	AFTIDEV List	GK List
Internet access privately funded; no sustainable funding available		X	
Expensive computer equipment	X		
Expensive Internet connection	X		

Table 27 above indicates that two lists raised concerns about how financial constraints inhibit the growth of the Internet in developing countries. The DFID list reflects concerns about how expensive computer equipment and Internet connection are. Contributors to the AFTI-Dev raised concerns about the fact that Internet provision is controlled by the private sector. It was noted in the ensuing discussion that if government and NGOs were role players, the costs of Internet service provision could be reduced. They would nevertheless still have no control over telephone line charges, which would still have to be paid over and above monthly ISP subscriptions. They were no contributions on the GK List about this matter in the period under review.

2. Education

Table 28 Education

Issues raised by lists	NAME OF LISTS		
	DFID List	AFTIDEV List	GK List
Lack of coordination of institutions that provide and finance Internet education		X	
Need for role players to develop African content		X	
Early access to ICT in education	X		
Limited use of Internet in distance education			X

All three lists raised issues about different aspects of education. Contributors to the AFTI-DEV List noted that computer education in Africa was not properly coordinated and that various organizations were duplicating one another's efforts. Other contributors on the AFTI-DEV List pointed out that if more Africans were trained in how to produce HTML (which is not an exceptionally difficult procedure), they could create African language and content web sites and so contribute to African content on the web.

Contributors from the DFID List indicated that there was a need for early computer education so that people could become computer literate in school. It stands to reason that computer literate populations have greater potential to appreciate new developments on the Internet.

Contributors to the GK List indicated that the Internet was being under-utilised in distance education. They said that although all African countries had full Internet access, only Zimbabwe and South Africa were using the Internet for distance education. The use of Internet for education radically reduces the cost of education (because Internet users can access education from local or overseas sources). This flexibility and convenience enables people to study while are employed or while they remain in their own homes.

However different some of these issues may be, they are all pertinent to the theme of the Internet and development. While contributors to the DFID and AFTI-Dev Lists highlighted training and building African capacity so that users could effectively utilise all the resources offered by computer technology, contributors to the GK List focused on using the Internet to solve distance education problems. These three issues relate to different aspect of development. This give some indication of the complex nature of educational issues in development generally and their relation to the Internet in particular. Contributors were concerned not only about problems arising from not having the Internet, but about efficiently those who possess the Internet actually utilise its full potential.

3. Infrastructure

Table 29 below compares the contributions made to each list on the subject of infrastructure. The DFID List was most concerned about how infrastructure

deficiencies affect Internet connectivity, while many contributors on the GK List were also concerned about these problems. Contributors on the two lists shared concerns about the limited capacity of telephone lines, poor telecommunications, unreliable electricity, and the need for convergence of technologies in order to maximize access. Contributors to the DFID List were also interested in how wireless technology could be used to bypass unreliable and erratic telephone lines, and how battery-operated receivers could eliminate dependency on unreliable electricity supply. Contributors to the AFTI-DEV List only mentioned how poor telecommunications infrastructure affects Internet connectivity.

Table 29 Infrastructure

Issues raised by lists	NAME OF LISTS		
	DFID List	AFTIDEV List	GK List
Limited bandwidth to handle data	X		X
Poor telecommunications infrastructure	X	X	X
Unreliable electricity supply	X		X
Convergence of radio and Internet resources (India and Gambia)	X		X
Use satellite and wireless communication	X		
Use battery-operated receivers to increase access (Mauritius)	X		

4. Content

There was a shared concern among contributors to all three lists about how limited content from developing countries is on the WWW, as shown in Table 30 . Contributors also expressed concern that the languages used on the WWW exclude

large populations from developing countries. Contributors to AFTI-Dev complain about the absence of African languages on the Internet. The languages used on the web are nearly always European languages.

Table 30 Content of the Internet

Issues raised by lists	NAME OF LISTS		
	DFID List	AFTIDEV List	GK List
Limited local content on small business players		X	
Limited use of African languages on the Internet and a limited number of sites reflecting African culture		X	
Lack of electronic publishing of local content	X		
Repackaging (re-formatting)	X		
Inappropriate content for developing nations	X		X
African languages not on the Internet			X

A contributor on the DFID List suggested that because information from the Internet is either in an inappropriate language or form, it should be repackaged (re-formatted) and presented to populations from developing countries in a form that they understand (such as, for example, an audio form). The implication here is that the populations from developing countries only want to *consume* the Internet – and never upload their own information or content.

6. Policy implications

Table 31 Policy implications

Issues raised by lists	NAME OF LISTS		
	DFID List	AFTIDEV List	GK List
African leaders not demonstrating commitment to Internet problems that inhibit progress		X	
Lack of coordinated South-South Internet use and initiatives		X	
The current use is techno-driven – as opposed to development-need-driven		X	
Africans not participating in large numbers on such Internet regulation bodies as ICANN		X	
Lack of linkages between Internet, radio, satellite, and cell phone technology		X	
State-controlled telecommunications determine what may be done on the Internet	X		X
Globalisation that encourages free competition			X
No government assistance for telecentres			X
Import duty on equipment, restricted ownership			X

Contributors to the AFTI-DEV List raised five policy issues; contributors to the GK List raised four, and contributors to the DFID List raised one issue. Contributors to the DFID and GK Lists shared a concern about the government's control of telecommunications under way in which this control hinders the use of the Internet. Contributors to the GK List went on to express their concern about how globalisation and free trade were disadvantaging developing countries – which have to compete with developed countries in matters of trade, access to knowledge, and so on. Contributors

also cited the absence of government participation in the telecentres movement as being detrimental to the development of Internet use among the underprivileged. Other contributors indicated the need to reduce import duty on computer equipment.

Contributors to the AFTI-DEV List noted that current Internet activity in African countries is driven by the needs of technology and the marketplace – rather than by carefully planned and rational policies. Some contributors were of the opinion that African governments were not showing sufficient commitment to Internet use, while yet others hoped for an increase in South-South cooperation in Internet use – as opposed to the current situation which we find are largely passive Southern consumption of an Internet with mainly Northern content.

7. Unequal access

Table 32 Unequal access

Issues raised by lists	NAME OF LISTS		
	DFID List	AFTIDEV List	GK List
Poor without access to the Internet		X	
Stratified access (educated and literate people have far more access than the uneducated and the poor)	X		X
Unequal distribution between rural and urban	X		X
More men than women with access			X
Illiteracy preventing the participation of large populations			X

The GK List reflected more items about unequal access than did the other lists. Contributors to the GK List noted that there is stratified access to the internet, with urban populations having more access than rural, men having more access than women, educated populations having more access than the uneducated, and the literate having more access than the illiterate. Contributors to the DFID List concurred that an unequal access was dependent on whether people lived in rural or urban areas and whether they were educated or uneducated. The AFTI-DEV contributors added that the poor are excluded from the Internet. Such unequal access causes the "digital divide", i.e. access to the Internet reflects class and economic inequities. It is the upper and middle classes that have most access to the Internet.

8. Human resources

Table 33 Human resources

Issues raised by lists	NAME OF LISTS		
	DFID List	AFTIDEV List	GK List
Poor remuneration for knowledge management professionals			X
Scattered and isolated virtual practitioners			X

Only some GK List contributors cited human resources issues as a specific hindrance to Internet access. They indicated that poor remuneration of knowledge professionals leads to a "brain drain" from developing countries. They also indicated that scattered

virtual practitioners hinder progress within countries. Isolation hinders the exchange of ideas about how to develop local strategies for using the Internet for development.

While subscribers to these lists are generally Internet enthusiasts, they generally see a role for the Internet in development if all the hindrances and obstacles could be removed. By the time she had completed this content analysis, the researcher remain unconvinced that one has to solve all these problems before one can participate in the Internet. Is it not perhaps possible to solve development problems without using the Internet if one has to clear all these hindrances to be able to use the Internet in the development process?

While the three discussion lists all concur that the seven broad categories identified by the researcher reflect the issues, they obviously differ in the formulation of their responses in each category. This suggests that many problems remain to be solved before the Internet can be developed and made widely available for business, education and leisure in developing countries. It is not enough to develop and put up a web site. Other vital factors such as illiteracy, training, equipment, rural-urban differences and government controls all need to be taken into account. The issue of local content also needs further examination. The case study on which the researcher reports in the next chapter examines these overlapping issues in the context of the practical application of web use in developing countries.

CHAPTER 5

PRESENTATION OF RESULTS: CASE STUDY

5.1 Introduction

This chapter describes the results of a case study of WWW information provision to a group of textile entrepreneurs in Botswana. The case study revolved around the practical application of Internet use in a developing country. The group that constituted the research population belonged the Gaborone chapter of the Botswana Textile and Small Business Association (BOTSBOA). This chapter follows logically from the observations contained in the previous chapter, and was informed by some of the constraining factors that the researcher described there.

This chapter describes the summative evaluation of a prototype web site created to meet the information needs of the predominantly female, first-time WWW users who were also textile entrepreneurs. The research utilised an interdisciplinary approach to meeting the users' needs – needs which were determined in on the basis of information science theory and fulfilled by means of the educational design processes that the researcher employed.

The researcher presented her results in the following two ways:

(1) In the first instance, an analysis of responses to questions users were asked in the questionnaire that was used as part of the means to evaluate the web site.

(2) In the second instance, the researcher used some of those information science criteria for information evaluation that Bontjies and Cronje (2000) recommend, namely acurrency, authority, and relevance.

In the next chapter, researcher will try to establish how well respondents answered the research questions and how this affected the evaluation.

5.2 Evaluation of the site by using a questionnaire

5.2.1 Knowledge of computers

Respondent entrepreneurs were asked to select those statements that best described their knowledge of computing. The table below indicates their responses.

Table 343 Knowledge of computers

Use of computers	True	False
I have never used a computer	60% (6)	40% (4)
I have basic knowledge of computers	40% (4)	60% (6)
I use computers often in my work		100% (10)
I have never used an ATM machine	40% (4)	80% (6)

I use it for e-mail		100% (10)
I use it for WWW		100% (10)
I use it for word processing	20% (2)	60% (4)
This is the first time I am using WWW	100% (10)	

It should be noted that this was the first time that respondents used the WWW. Sixty per cent had never used a computer, although 80% had used an ATM machine. Their ability to use their particular programme would be hindered by this lack of skill and experience in manipulating software and certain computer hardware features.

The results show that their computer skills were elementary. Sixty per cent of the sample had never used a computer before. One hundred percent of the respondents do not use a computer in their work. None had ever used e-mail. A limited number, 40%, had used a computer for word processing, while 60% had never used one at all.

5.2.3 Using electronic business information sources

Before the respondents could answer whether they had ever used a computer programme to access information on business, one of them asked what electronic business information was. They could only all respond after they had received the explanation that this referred to information from computers that would enable them to carry on their business more efficiently and effectively.

In response, **100% of the respondents** indicated that they had **never used a computer programme to access business information before.** This tallies with the response to

5.2.1 where those who had used a computer indicated that they had only used it for word processing. The closest some of the respondents had come to using a computer for business transaction was using an automated teller machine (ATM) to draw money from their bank accounts.

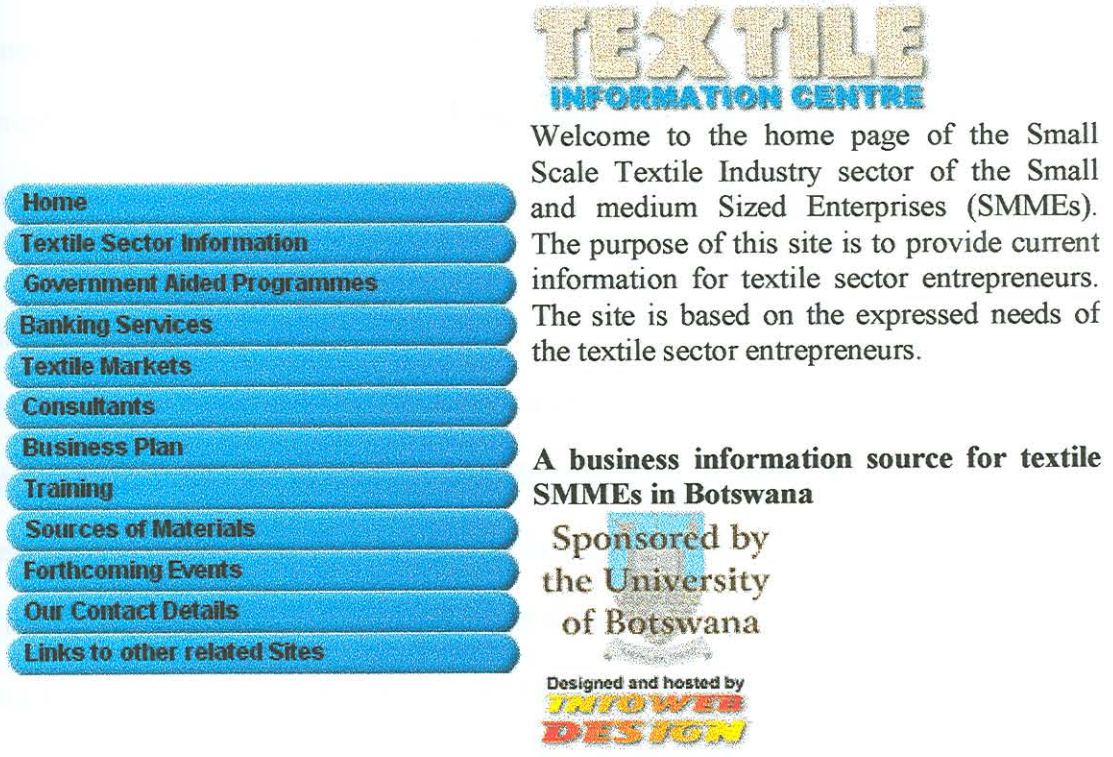
5.2.4First impressions

When they were asked what their first impressions of the web site were, all of the respondents (**100%**) felt that it **took too long to load**. The time of day at which the exercise was done (14:00) may have influenced this response as the Internet usually operates more slowly around this time.

All of the respondents (100%) felt the site was attractive and that it caught their attention.

The first page of the site that they would have seen is presented in Figure 7 below.

Figure 7 Opening page of the web site



5.2.5Index page

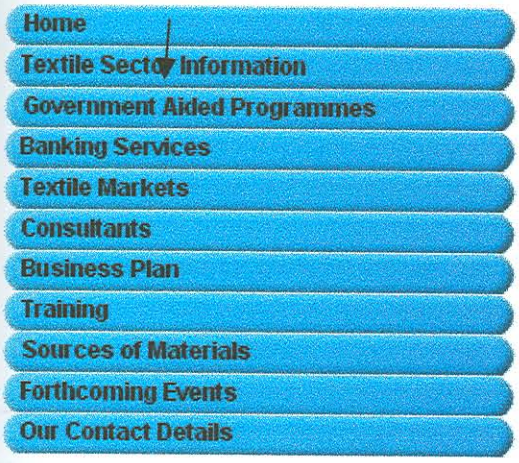
When questioned about how they responded to the index page (which also gives users directions as to where they might go), **100%** of the respondents felt that **the index page gave sufficient information**.

The researcher noted that the respondents also intently watched the site as it loaded. They became excited as they saw photographs of their colleagues appear on screen. They liked the bright coloured drapery that decorated the site and the pictures of their colleagues at a trade fair. Respondents pointed at the photographs in amusement as they recognised their colleagues. This connection helped them to feel at ease in the context of an otherwise new experience. It is important to note that none of the entrepreneurs felt frightened or scared of the technology. Their attitude could better be described as curious and expectant.

5.2.6 Ease of use

When they were questioned about how easy it was to use the site, **100%** of respondents indicated that it **was easy to move around the site**. Such an answer was more or less predictable since the researcher had built in an ongoing "tutorial" that explained each of the items in the index page and why it was there. In addition to this, every page a drop down menu with buttons representing each page.

Figure 8 Index page



5.2.8Content of site

All **(100%)** of the respondents felt that the **content was adequate**. They also felt that it met their specific needs. The researcher therefore concluded that no more content needed to be added to the site.

5.2.9 Additional items on screen

None of respondents had any suggestions about how the information on the screen could have been more useful to them. Their responses therefore seem to confirm with their responses to the question in 5.2.6. The researcher therefore concluded that the site expressed what they had requested.

5.2.10 Additional information

On the question of what information they would have liked to see added to the site to make it more adequate for their needs respondents, they made the following remarks:

- It is adequate.
- We need more information on how to buy fabrics.
- We need more information on how to sell.

5.2.11 Improvements to the site

When questioned about what other information could be added to the site in order to improve its quality, respondents indicated that the current contents were adequate both in terms of quality and quantity. The respondents all answered together by saying *"e siame"*, a Setswana expression meaning, "It is fine."

5.2.12 Occasions on which they would return to the site

The last question concerned the circumstances under which they would return to use this site. The following responses were received:

- Whenever I need information on markets (60%)
- When I want to advertise my goods (20%)
- When I need to know more about BOTSBOA activities (20%)

5.3 Observation

5.3.1 Control of the media

As they responded to the questions and examined the site, the respondents talked amongst themselves and asked one another questions about the site and what they were finding. It was gratifying to see the excitement as they clicked on the blue buttons that opened other pages and provided them with more information. Although they were all first-time users, the media did not intimidate them. They seemed to be in control of it.

5.3.1 Language

The fact that the site was presented in English did not seem to inconvenience the entrepreneurs to any noticeable extent. The entrepreneurs informally translated the English into Setswana for each other and proceeded to explore the site and the WWW through the links provided. The language factor (the use of English) was not a major deterrent but only another minor hurdle to be conquered towards trade and profit.

5.3.2 Learning abilities

The users proved to be quick learners. They were motivated to see how the Internet could solve their problems of access to information and how such information might improve their businesses processes and prospects.

5.3.4 Sharing resources

The *sharing* of computers in a group obviously helped these users to obtain maximum benefit from the technology. They became one another's lab technicians and instructors. The sharing did not deter them but enhanced the comradeship that made the exploration easier and more fruitful. (Communal sharing is, in any case, a highly regarded community value among African people)

5.3.5 .E–commerce

Excitement about the prospects of actually being able to buy fabrics from China and France was short lived as users found that they could not do that without themselves having credit cards. Their excitement turned into disappointment and their hopes were dashed as they realised that none of them owned a credit cards.

5.4 An evaluation of site using information science criteria

This evaluation is presented in the format that is generally used in information science to evaluate information sources for accuracy, ease of use, currency, and authority. Bontjies and Cronje (2000) recently added new criteria that may be used to evaluate web sites to the ones that they had previously listed (the traditional criteria): the

- **Authority** Who is the author of this site and is he or she adequately qualified in this subject?

- **Purpose** Does the site fulfil the purpose for which it was created?
- **Accuracy** How accurate is the information contained in the site?
- **Currency** How often is the site updated?
- **Workability** How "user friendly" is the site?
- **Ease of use** How easy is it to use the site?
- **Connectivity** How easily does the site load?

5.4.1 Authority

By "authority" we mean the intellectual authority of the person who has developed the content of the site. The researcher who is an experienced business librarian, and well grounded in information provision developed this site. It is the job of a business librarian to assess user needs and provide information to entrepreneurs and business students. The users of the site recognized the authority of the author. The users were furthermore comfortable with the author because they had become accustomed to her presence and her participation in their monthly meetings. It is customary however to state the credentials of the author on the site.

5.4.2 Purpose of site

The purpose of the site is well stated in the first paragraph on the home page. Entrepreneurs understood that the site had been created to provide them with business information that would enhance their business activities, prospects, profitability and efficiency. It achieved all these goals. Users found the site more than adequate for their stated information needs and so the site fulfilled its purpose.

5.4.3Accuracy

The information provided on the site was accurate. It led users to places to which they could go to for more information – should they needed. The links to other sites worked effectively.

5.4.4 Currency

The users were excited to find the dates of forthcoming regional trade fairs listed on the site because this gave them time to plan their business strategies and arrangements. The site did not however indicate the date of last update. That should be included.

5.4.5Workability

The site was not immediately useful for *all* the needs of the entrepreneurs. It provides information on where to trade but it does not facilitate the actual trading process (this factor was mentioned in an earlier chapter). Its utility for workers was thus diminished by this shortcoming. The utility of the site as a trading zone was further compounded by the fact that users needed credit cards to trade and they did not own any (although there was no barrier or obstacle in principle that prevented any of them from ultimately obtaining them).

5.4.6 Ease of use

The first-time users of the site found it easy to use. The presence of the index on all pages made navigation easy. Working in groups also made working with the site an easy and enjoyable experience.

5.4.7 Connectivity

None of the respondents had their own access to the Internet. In order to access the site, they would have to use the services of an information provider. This lack of connectivity may curtail use among this group of entrepreneurs.

5.5 Summary

The practical experience of using the Internet showed that entrepreneurs were willing to use it in order to solve their business-related problems. Users were not deterred by the language used (English) or a new and essentially unfamiliar technology. Working in groups created a friendly environment in which users could ask their peers for help and discuss their findings with one another. The content of the site was accurate in so far as it covered the areas specified by the users. However, the immediacy that is created by Internet led to a disappointment when the users found that they could not trade over the Internet without possessing valid credit cards.

CHAPTER 6

ANALYSIS OF THE RESULTS

The role of the Internet as a source for information in development has already been discussed in chapters 1 and 3. Chapters 4 and 5 provided primary information on the state and usage of the Internet in developing countries. This chapter synthesises the findings that researcher obtained from analysing list contributions, the case study and the literature review so as to provide comprehensive answers to each research question.

The chapter is divided into three sections. Section A deals analyses the findings that fulfil objective one – which is to determine whether or not existing technical, educational and socio-economic resources and infrastructure will enable the Internet to be used as an information resource in developing countries. The findings that the researcher analyses in this section were derived mainly from a content analysisis of what she found on the three selected atelectronic discussion lists.

Section B deals with objective two, which is "to establish the degree of usability of the WWW as an information resource in Botswana and other developing countries". In this section researcher analyses responses obtained from the case study.

In Section C, the researcher integrates the findings she obtained from both Sections A and B with what she found in the literature review – and she then draws relevant conclusions.

6.1 Section A. Objective 1: To determine whether the existing technical, educational and socio-economic resources and infrastructure will enable the Internet to be used as an information resource in developing countries

6.1.1 What are the prevailing environmental conditions that encourage or discourage Internet connectivity?

Contributions from the three e-mail discussion lists, AFTI-DEV, DFID, and GK, consistently described the Internet environment in developing countries as chaotic, haphazard, poorly maintained, inconsistent and unreliable. They identified the following hindrances or barriers to Internet access: poor infrastructure, limited finances, social inequalities, a shortage of human resources, and the absence of authoritative guiding policies. Although contributors to the three lists raised varied sub-issues within each of the broad categories, there was general agreement among contributors about the broader areas of concern as they have been listed here.

Contributors to the lists also universally confirm that the Internet had an enormous potential for use in education – particularly in on-line education. The contributors noted that this potential was being generally neglected (for various reasons) in

developing countries. There seem to be a general consensus of opinion that if quality on-line computer education were embraced as an option, developing countries might save an enormous amount of money on education in the national budget.

It was noted that the almost limitless potential of the Internet for social, educational, economic and personal improvement and enrichment is not being realised in developing countries for all kinds of reasons. These reasons have already been variously analysed earlier in this text. It would appear that – except for countries in the Far East and South America – governments have largely paid lip service to their commitment to participating in the information society but that they not taken action to eliminate non-access to the Internet and computer-related technologies with as much vigour as they might. Most countries (and countries in Africa in particular) still need to deregulate the telecommunications industry. They also urgently need to formulate information policies that will provide a framework for efficient, widespread and cost-effective use of the Internet. The conditions in most developing countries are sadly not conducive to the widespread, cheap and effective use of the Internet by the majority of citizens.

One wonders why development agencies are calling for widespread usage of the Internet (UNDP, (1999))– as though it would be a panacea for all development issues. Certainly, widespread access by ordinary people to the Internet could eliminate many of the disadvantages and deficits experienced by people in the erstwhile colonised Third World. But how can development agencies recommend widespread usage of

Internet when they must be as aware as anyone else that the necessary infrastructure for such widespread usage *simply does not yet exist.* Before computer technologies, and the Internet in particular, can be used to assist Third World countries to overcome their problems and deficiencies, the necessary infrastructure and deregulation need to be firmly in place.

One wonders about the sincerity when apparently well-meaning people and organisations, throughout the world call for access to the Internet as a development catalyst (UNDP, (1999) Onyango (2000) Kgengwenyane (2000)), as though such access does not go hand-in-hand with the social, educational and political development and the development and maintenance of that infrastructure on which computer technology depends. There seems to be a general belief among many apparently well-intentioned developers that the potential inherent in the Internet will help developing countries to "leap frog" their historical deficiencies so that they will be enabled to reach the same levels of development that have been achieved by developed countries. This literature review has clearly shown(Ngwainambi, (2000), Ochieng 2000, Heeks(1999)) that the environmental contexts and conditions in most developing nations are not yet conducive to widespread usage of the internet , – and that nearly all developing countries still suffer from disabling deficiencies, scarcities and shortfalls in numerous areas of development. The socio-economic, educational and political needs of developing countries are as diverse and complex (and often as intractable) as are their information needs. When certain necessary conditions for development and stability do not prevail in a developing country, would mere access to the Internet by

large number of citizens suddenly remedy all their deficiencies and solve their problems?

It is the researcher's opinion that widespread usage of the Internet in developing countries (where necessary provisions for development and stability do not obtain) would benefit the manufacturers of computer technology more it would benefit the citizens of those countries themselves.

6.1.2 Are there measurable benefits communities to using the Internet?

The contributors to the AFTI-DEV List debated this particular point at length and highlighted that fact that the poor are not well served by the Internet. Contributors to the GK and DFID Lists also affirm this when some of them stated that there is are very decided unequal access to computers and computer technology that is predicated on whether one is rich and poor or whether one lives in a rural or urban situation.

There was a call from GK List to use the Internet for distance education. This contributor cited that countries such as Zimbabwe and South Africa are already using this technology very effectively and are thus reducing the cost of education. This kind of utilisation of Internet provides us with an example of how disadvantaged communities may benefit from Internet access. In the period under review no other communities reported success stories that are sustainable and productive.

The discussions on the lists tended to emphasise providing the Internet to the majority of the people in each developing country. But it is simply a well-known fact that the majority of people in most developing countries are either illiterate or do not speak the language used on the Internet. The most important issue for researcher is not about providing the Internet unconditionally but rather about *using the Internet to solve development-related problems*. Once the Internet is used to solve a community's *specific* problem or problems, then solutions to other problems (such as the problem of which language is being used and levels of literacy among users) can be found and implemented with a little ingenuity and imagination.

It is the researcher's contention that the issue of Internet provision in developing countries, particularly in Africa, is not linked to considerations of good governance or providing specific and general services that will benefit the population at large. Instead governments in Third World countries promise whatever will secure votes when it comes to election time.

The governments of Third World countries understand only too well at the majority of their populations are illiterate and so (they wrongly believe) can have no conceivable use for the Internet. For these self-serving governments, the provision of Internet service is not politically profitable because it will not secure the votes of illiterate urban voters. The same governments therefore drag their feet when it comes focusing on the provision of the kind of infrastructure and universal education that will enable the

majority of citizens to gain advantages from electronic and computer technologies and the Internet in particular.

6.1.3 What policies are promoting Internet usage?

Contributors to all three lists concurred that there is a dearth of policies that provide an authoritative framework for Internet usage. National governments were particular condemned for being unsupportive of widespread Internet usage. The contributors cited import very high duties on IT equipment, oppressive state control of telecommunications, and lack of commitment to Internet issues as some of the areas in which governments needed to change their attitudes.

Table 6.1 below summarizes the areas in which authoritative guiding policies are required to facilitate Internet usage in developing countries.

Table 35 Summary of policy considerations

CURRENT SITUATION	POLICY IMPLICATIONS
Stratified access by educated, gender, literacy and geographical location	Internet provision policies are needed that will enable usage by every sector of the population (but especially by the disadvantaged, the uneducated and the underprivileged).
Lack of provision of computers in schools	Devising ICT policies that will empower computer education in all schools
Lack of appropriate local content	Train and indicate people so that they themselves will be able to place relevant local content on the Internet.is
Mechanisms for combining, radio, digital and print modes	Develop appropriate information policies that encourage the convergence and complementarity of technologies.
The private funding of Internet access	Governments should be involved in funding access and in encouraging open competition.

CURRENT SITUATION	POLICY IMPLICATIONS
Lack of coordinated South-South Internet usage initiatives	The development of appropriate information exchanges between developing societies
African leaders do not demonstrate commitment to Internet issues.	Encourage and establish appropriate government protocols that facilitate Internet access and commitment to appropriate universal Internet access and usage.
There are only small numbers of individuals who place content on the WWW.	Develop capacity in this area and pricing policies that facilitate affordable hosting, developing and publishing.
Lack of coordination of institutions that provide and finance Internet education	Education policies that coordinate and facilitate acomputer literacy
A need for more role players to develop African content	The development of local capacity to develop and disseminate local content
Africans not participating in large numbers on such Internet bodies as ICANN.	Government should make specific efforts to lobby for African participation on Internet driving bodies such as ICANN.
Current usage of the Internet is largely driven by the needs of technology and the market place rather than by development needs.	Identifying specific developmental areas in which the use of the Internet can benefit and enormous number of people with a minimal outlay of expense.
Limited band-with capacity to handle audio transmission	The removal of government polices that prevent private broadcasting
Poor telecommunication infrastructure	Policies designed to create and upgrade telecommunication capacity and thus provide adequate telecommunication infrastructure in the shortest possible time
Telecentres that are privately owned and not in any way subsidised by the government	Government subsidies and sponsorship of telecentres as a matter of urgent policy
Excessively high import duties on equipment and restrictions on the use of telephones	Trade policies that encourage importation of the necessary kinds of technology and the abolition of import duties on equipment of this kind
African languages are not used on the Internet	The education and empowerment of Africans so that they can use their own languages on the Internet
Scattered and isolated virtual practitioners	The creation of virtual communities that enable isolated people to communicate with others in a virtual environment
The limited use of the Internet in distance education	The increased use of the Internet in distance education

6.2 Section B. Objective 2: To establish the extent to which the WWW can be used as an information conduit in Botswana and other developing countries

In chapter 1 and in the literature review chapter, the researcher indicated that the theoretical framework of this work is predicated on *information as a resource in the development process*. In chapter one, it was also noted that SMMES have been identified as a primary growth point and engine for economic development in Botswana.

In this section, the researcher analyses the findings of a ofcase study that permitted a defined group of operators in SMMEs to usage of the WWW for business information and support purposes in a developing country. This section excludes questiones that were answered as part of the needs analysis and those that were sufficiently answered by the literature review. The questions specifically excluded in this section are:

(1) What are the information needs of SMMEs?

(2) What type of sources are currently used to provide information?

(3) Are the available sources adequate?

(4) What computerised data bases exist to provide current business information?

6.2.1 To what extent do potential users have access to a computer with Internet connectivity?

Only 10 percent of the respondents had a computer. None of the respondents had a computer with Internet access. Without computers, one cannot have Internet access. The lack of computers at the individual as well as at the organisational level therefore becomes an obstacle to accessing the Internet. However, individuals who do not own computers do not necessarily have to be excluded from accessing the Internet. Information providing organisations such as the Fredrick Ebert Foundation, the University of Botswana and the National Library Service that have Internet access could provide Internet access for organisations like BOTSBOA. For this to happen, a well-planned and cooperative partnership would need to be developed between such small-scale organisations as those involved in this case study and information centres – with the latter playing the intermediary role in permitting participants to gain access to the Internet.

6.2.2 What levels of IT knowledge and perceptions exist?

The study clearly shows that these entrepreneurs had a limited knowledge of computing and computer-related technologies prior to this exercise. Most of them (60%) had no prior knowledge of computing at all. None of them had used the Internet before this meeting. This indicates that there is an urgent need to train people in

Botswana to use computers if we hope to enable them to use the Internet successfully, even at an elementary level (as was the case in this study).

It became apparent to the researcher that the problem-solving approach used by the entrepreneurs during the study indicated that their training would need to be informed by adult education theory principles – and that they needed more than mere skills provision. The researcher believes that the best approach would be a specially designed multi-phased approach to training that takes into account what these people already know and that helps them to solve problems on the basis of their prior knowledge.

6.2.3 What are the specifications of a good site?

Monty (1999) sets the following specifications for a good site:

(1) They enable users to know where they are.

(2) They make good use of landmarks so that revisits are avoided.

(3) They make good use of cues that enable the user easily to navigate the site.

Desmarais (1994) includes qualitative criteria for measuring feedback from users. If at design stage one has included Mouty's (1999) specifications, the qualitative evaluations of the site by users may be deemed to be accurate.

What follows below is an analysis of how users responded to the site.

6.2.3.1 First impressions

Users liked and enjoyed the colours and arrangement of the site. They were particularly amused to see photographs of some of their colleagues on the site. Seeing those pictures created a feeling of familiarity and a sense of ownership of the site (this probably helped to eliminate any kind of awkwardness or anxiety that might have accompanied interaction with an unfamiliar technology). One might deduce from this that when one plans sites for similar groups of people, the inclusion of familiar features on the first page helps to connect people to what is going on and evoke a sense of belonging.

Users, however, complained that the site took too long to load – even though they obviously enjoyed and liked it when it was finally downloaded and they saw photographs of themselves on the opening page. Several factors may have caused the slowness of the downloading process:

(1) The Internet is slow in Botswana in the afternoons. The evaluation exercise was done in the afternoon. The general speed of the Internet may have caused the length of time it took to download the website.

(2) The site contains five photographs on various pages. Downloading pictures requires more bandwidth than is required for characters. That may have been another factor that contributed to the slow downloading.

(3) The Internet access was a-dial up link. The speed of the modem may also have contributed to the slowness of the downloading process.

Each of these factors will be discussed under other headings. Suffice it to say all the users found the site attractive and interesting once it had been downloaded.

6.2.3.2 Indexing

The literature recommends that a site contain a good index (Mouty 1999; Desmarias 1994; Boyle 1997). This site has a drop down index on every page. A good index facilitates the location of information.

Users found the index to the site useful for navigation. The index consisted of buttons that led them to their stated information needs. Once they discovered what lay behind each button, the entrepreneurs were more eager to find the answers that were catalogued under each heading than to analyse whether the index comprehensively covered all they wanted to know. Thus, for instance, most were keen to "press the button" that opened pages about "Markets" and "Sources of material". They were mesmerised by the fact that the mere press of a button could link them to markets and outlets abroad.

Clicking icons on the index and finding important information about possible markets made him realise that the website really worked *for them*. When the respondents said "It works!" they meant "This Internet works!" They then systematically went through

each of the pages that were called up by clicking on the blue buttons. The users defined what they wanted to see on this site as they went along and interrogated the index to identify each topic and the information that it contained.

The Index therefore served to make navigation easy for the users.

6.2.3.3 The ease with which the entrepreneurs could use the site

All users said that they found the site easy to use. The ongoing "tutorial" on various buttons also contributed to making the site easy to use. One might have thought that a lack of *any* prior knowledge or experience of Internet usage may have intimidated some of the participants and inhibited their individual exploration. However, once users realised how easy it was to explore the site by using the various icons, there was no stopping them. They were thus soon sufficiently motivated and confident to explore the citing detail, and they were eager to open the icons that led to information that interested them (such as possible sources of materials and markets for their products).

The simplicity in layout and navigation made it easy for participants to use the site. Because the index appeared on every screen, it helped users to jump to whatever page they wanted to explore regardless of where they were on the site.

6.2.4 Does the site meet user needs?

The site met the expressed information needs of users. It provided information that users had said they would like to have. However, by exposing users to the Internet it also created new information needs: *in particular it created a need for information about hard to trade on the Internet.*

6.2.4.1 Content of the a site

The site provided access to potential trade partners and to sources of materials in France, Korea, South Africa and Zambia. They were, however, disappointed to find that they could not immediately trade with places in Korea, France, South Africa, and Zambia because they did not have credit cards. These perceptions and views will be discussed again under implications for e-commerce in section 6.2.3.1.1

All users said the site covered what they wanted to see – although they added that they would have liked to have details about more markets in Botswana and the SADC region because these would be closer to where they lived and attending them would be a viable option. They were disappointed to find that while all the markets listed on the site were external to Botswana, they could not immediately do business with them. The Internet creates a sense of immediacy and anticipation. If e-commerce is to become fully operational and convenient for small-scale businesses in Botswana and elsewhere, appropriate enabling Internet access and policies that facilitate free trade will need to be implemented and exchange controls will need to be relaxed or abolished altogether.

Respondents expressed a desire to have new pictures of their most recent products added to the site (just as photographs of their earlier exhibits had already been included). The subsequent discussion inspired us to discuss all the implications of e-commerce and what they could be achieved by means of it.

6.2.4.2 E-commerce

These people are aware that they stand to gain an enormous amount of business if they can use e-commerce. But e-commerce can only work for them if there is a rationalisation and convergence of trade and information policies, training, infrastructural adjustments and political will. All those factors are beyond the scope of this research. However, this research has established that this group of entrepreneurs has potential to trade on the WWW by means of e-commerce. That will take more than providing an electronic catalogue. It will have to enable banking practices, credit cards and other logistics. Design will of course also play a crucial role in achieving success.

The timing of the entry into e-commerce is crucial. There is a real danger that exercises like this may create widespread pessimism and dissatisfaction among entrepreneurs. Websites like this create anticipation in users. Entrepreneurs want to engage in business that makes profits. If we want the Internet to be seen to be workable tool, then we have to demonstrate that it can deliver the goods (i.e. that it can be used to trade successfully and maximise profits). This case study has shown that entrepreneurs will return to a service if it sells their goods or if it provides them with material and

information that they need. Thus, while respondents have shown their eagerness to engage in e-commerce, they neither have access to the Internet nor credit cards with which to conduct on-line business. The government needs to facilitate all these amenities for entrepreneurs. They need to create credit guarantee schemes, undertake training and provide services which will allow products to be digitised for uploading to a WWW.

6.2.5 How should the site be improved?

None of the users had any more information to add to this site. This was the first time these respondents had used the Internet. Because of their lack of experience, these respondents may not have realised that they had any need to add any more information to the site beyond their desire to see their products added to the site. In other words, while they were not too keen on adding more data to the site, they wanted a site of real commercial value that would enable them to start *trading*. This has implications for information provision and what type of information is provided on the WWW. **It is not sufficient to provide information that informs potential buyers about where material is located. When buyers receive such information, they should be able to act on it immediately.** Providing such service on a site would add limitlessly to its value.

An approach to information that enables the user to not only make a decision but also to act on it, is a standard practice for successful electronic trading. A certain amount of

convergence needs to occur among sectors before consumers are hindrances that prevent them from utilising the information that they find. For instance, by the time that information on the market becomes available on the WWW, related information on credit cards, import duties, etc, must also be readily available so that users can proceed to trade electronically without any hindrances or obstacles.

6.2.6 Subsequent visits to the site

Three responses were selected. They indicated that users want to revisit the site when:

(1) they want to find more information about BOTSBOA

(2) they want to find new or existing markets for their products

(3) they want to find out how to source fabrics

Despite the very short exposure of these users to the WWW, they were able to locate precisely what they wanted from the Internet. They were not just interested in manipulating or enjoying the site for its own sake: they wanted the site to deliver commercially. Furthermore, because they had been involved in the initial consultation of the site, and had indicated what they would like it to have on the site, they had a degree of familiarity with the content of the site.

This tells that us that if we want a site to be relevant, it must be based on the specified need of its users. A good target population analysis, goal analysis and content analysis are always essential when building an effective site.

6.2.3 Other considerations

6.2.6.1 Design

The complaint that site took too long to load is a valid one, and one that cannot be ignored in design. It is important to be appraised of the various specifications of the equipment that participants will be using. If a group of users are using a dial-up connection with a first level modem, it may not be wise to include too many graphics. Even before one designs a site, one needs to know the about the equipment that the participants will be using. If the specifications and capacity of the equipment is known, one could use the file type that would use less space. Bandwidth can be saved by (for instance) storing graphics as "gif files".

6.2.6.2 Language

At the formative evaluation stage, it was drawn to the researcher's attention that the language used on the site, namely English, could be a problem for the target population. However, one of the dictates of globalisation and international trade practice is that people must communicate with each other in one of the leading colonial European languages, i.e. English, French, Portuguese or Spanish. These have all become the languages of the market place. If Botswana's textile entrepreneurs are to

compete on the global platform *beyond* the boarders of Botswana, then they have sell and market in English because it is a worldwide marketing language. How this affects the needs of building local content is a topic that will be dealt with under another heading.

6.2.7 What is the degree of connectivity?

None of the respondents had Internet access in their organisations or at home. This makes it questionable as to whether developing countries should be aggressively pursuing Internet connectivity for the majority of its populations. Are there no other ways of meeting the information of needs of its citizens without wholesale Internet connectivity? Could not hybrid and complementary practices that combine the Internet and other media be rather constructed?

6.2.8 To what extents can the WWW be a tool for information delivery in Botswana?

It has already been established that Botswana is a relatively rich developing country. Its telecommunication infrastructure is one of the best in Southern Africa. However, this case study has shown that there are pockets of people who are not aware of the potential value of the telecom structure, or what the world is using it for. The

population under study was just one such group. They were not aware that the Internet had any relevance or value for their business.

The study has shown that Internet can be a useful information resource for groups of entrepreneurs. However, the study has also shown that it is not enough to provide access to information that entrepreneurs need. It is equally important to design a commercially usable site that would facilitate e-commerce. The site needs to go beyond being an information centre to one that enables commercial activity such as local and international trading and marketing.

While the Internet can give entrepreneurs ready access to markets and sources of useful raw materials, the population needs to be prepared, through training, access to digitisation equipment and other forms of e-trade readiness, for profitable trading and marketing activities. Policy level cooperation between the Ministry of Trade and Commerce, the private sector and Botswana Telecommunications, and the Bank of Botswana, could pave the path for successful electronic commerce, which more than anything else, is what these entrepreneurs and others need.

This case study has shown that it is not enough to use the web as an information source. It needs to be a commercial platform. It has demonstrated that entrepreneurs are willing to learn to use the WWW in order conduct business and make profits.

A summary of the case study findings

Table 6.2 below summaries the findings of the case study. The table summaries the processes that went into gathering data for the case study. In this exercise linkages were created between instructional design and information provision.

Table 36 A summary of the case study findings

Research questions	Findings in the case study
1.What type of information do SMMEs entrepreneurs need? 2. What types of sources are currently used to provide information? 3. Are the available information sources adequate?	Entrepreneurs depended on informal and oral information from colleagues. They felt that current sources were inadequate because they did not give them all the information they required.
1. Are gender, education and literacy levels limiting factors in accessing information? 2. What were the other socio-cultural hindrances to information access?	The majority of the memberswere women. None of them had never used the Internet before. Most had a limited knowledge of English. Although none of the participants had graduated beyond Junior Certificate education, this level of schooling was not a barrier to accessing information since they depended on one another for information.
1. Do potential users have access to a computer with Internet connectivity?	None of them had access to the Internet.
1.What computerised databases exist to provide current information? 2. What levels of IT knowledge and perceptions exist?	Business Linkages database of BOTSBOA Respondents had little to no knowledge of computing.

1. What are the specifications for a good multimedia database?	One that meets the anticipated needs of target population.
2. How should these specifications be adapted to meet the needs of a target population?	One should address specified information needs.
3. Does my database meet these specifications?	It does not, it should be improved because users want it to be of commercial value.
4. To what extent does my database fulfil the needs of my target population?	Although it supplied useful and requested information, the users wanted more.
5. How should it be improved?	It must be expanded to be responsive to the commercial needs of respondents.
1. What is the degree of web connectivity?	While an infrastructure exists, Internet connection is controlled by the private sector. This will limit access to those who can afford it.
2. What are the policy issues around Internet connectivity and web availability?	Botswana needs a multi-sector Internet policy that facilitates and enables e-commerce.
3. To what extent can the WWW be a tool for information delivery in Botswana?	Because of current poor connectivity, the country may have to settle for convergence and complementarity between more than one more accessible kinds of technologies (such and radio and the WWW).

6.3 Section C: Synthesis of the findings

This section consolidates the responses to each question as they were reflected in the literature review, the lists and the case studies. It brings together all the findings and provides a consolidated discussion and conclusion to the research report.

(1) What are the prevailing environmental conditions that encourage or discourage Internet connectivity? What is the degree of web connectivity in Botswana?

The literature says that developing countries are hindered in their attempts to embrace Internet by expensive equipment, unreliable telephone lines, language barriers and inappropriate content (Jensen 2001; Kole 2000; Ticoll 2000). In Botswana Internet service provision is provided by the private sector and is run on a commercial basis.

The discussion lists concur with literature in the opinion that inadequate infrastructure is hindering the usage of Internet. Other items cited by the three list were absence of qualified personnel; unequal access between men and women, rural and urban, educated and uneducated as well between the rich and the poor; expensive equipment, and the absence of national information policy. The AFTI-DEV List added a lack of commitment on the part of governments to create enabling environments.

The case study indicates that there is poor connectivity among small, medium and micro scale entrepreneurs in Botswana. Before the study, the group had had no prior exposure to the Internet. This finding corroborates the one from the list that there are poor rates of connectivity among the lower classes.

All the three sources of data, literature review, lists and case study concur about unsatisfactory levels of connectivity to the Internet – specifically by the poorer members of society. The discussion lists added lack of training and appropriate policy as yet other barriers.

These findings seem to suggest that the policy of various UN agencies to bring Internet to developing countries as a tool for development may be premature or defective. While there is a call and urge for developing countries to embrace the Internet, the prevailing structural conditions are clearly not yet ready or adequate for such mass adoption and usage. It is the view of the researcher that the call for universal connectivity at this stage is inappropriate and premature. The call may be yet another futile development indicator that measures development (or the lack of it) – and reinforcing the perpetual stereotype of yet another "undeveloped" nation. Developing countries are not likely to upgrade their telephone communications in the foreseeable future because of their very limited resources. In the light of the situation, an insistence on the universal adoption of the Internet as the new tool for development will not facilitate the hoped-for "leap frog" effect that will enable underdeveloped countries to wipe out their deficits and catch up with developed countries.

Internet usage in developing countries should be used only in sectors that need it. Donor communities should not impose it. It should be based on a careful needs analysis and applied *in a sustainable manner* by all stakeholders, government, civil society and funding communities.

(2) What measurable benefits accrue to communities using the Internet?

The literature review turned up a dearth of information in the literature that measures the impact of the Internet on communities served. While there are on-line studies that

have shown that the Internet has improved communication and the status of its users (Kole 2000; Jensen 2000; FLAMME 2000), Heeks (1998) argues that these studies only targeted users of the Internet and **not** communities that are served by those connected to the Internet. However, the literature indicated that in Singapore, Malaysia and Brazil, governments have taken a leading role in using the Internet and are encouraging other sectors to do the same.

Contributions from the lists indicated that the only communities that have benefited from the Internet are urban communities, educated communities, middle class communities and native speakers of dominant European languages such as English, French, Portuguese and Spanish. In other words the Internet benefits the elite. The poorer, uneducated, female and largely illiterate communities do not have access and therefore do not benefit from the Internet.

The case study has shown that the group studied could benefit from the Internet even though they had no access to it. There is potential wide spread benefit that they may gain from using it. The case study showed that they were keenly interested in on-line trading and that e-commerce could benefit groups such as these users beyond anything they could now dream of – if only they could be empowered and enabled with all the facilities and amenities they need to conduct on-line trading.

The lists and the case study concur that not all sectors benefited from using the Internet. The lists identified sectors that are excluded by the Internet, while the case

study highlighted that this particular group of users did not even have access to the Internet.

This leads researcher to conclude that without supportive governmental policies and agency support for the small entrepreneur, the Internet is out of reach as a tool for the small business person and remains available only to the country's elite. As a development tool, its present form does not benefit the poor, the illiterate, and rural and female populations. There is therefore need for objective research on the benefit of the Internet to users, the call for immediate widespread usage seems premature and ill-considered. There is an urgent to identify what forms of communication would be most beneficial to communities, and whether the Internet could complement other forms of communication. Furthermore, there is need to identify those groups and sectors that do need the Internet so that the Internet does not become another form of exclusion but a tool for development.

(3) What policies are already in place in Botswana? What are the policy issues around Internet connectivity and web availability in Botswana?

The literature identified the absence of a guiding policy as an obstacle in the way of expansion of the Internet. In Botswana there is no Internet policy.

The lists identified the need for appropriate policies that will encourage growth and development on the Internet. They also suggest that the government urgently needed to

deregulate telecommunications, abolish import duty, and itself become an active subsidiser of Internet use and infrastructure in the country.

The case study contained no specific question that referred to policy. It was evident that there is no government policy either in relation to providing access to this particular group, or on the future of e-commerce in Botswana.

The literature, the lists and the case study concur that there are no Internet supporting polices in most developing countries. Policies provide supportive frameworks for developments. Absence of policy makes for implementation difficult if not impossible. This observation leads the researcher to conclude that all policies that relate to information usage and the Internet urgently need to be reviewed and harmonised with each other so that they can provide guidance for rational future actions for expanding Internet usage and providing the necessary context and infrastructure in which this can take place.

(4) What are the information needs of SMME entrepreneurs?

The literature identified the information that entrepreneurs needed as being information about financing, government schemes, management training, sources of raw materials, exports, customers, laws and regulations, sources of skilled labour, and premises

The list analysis identified no specific information need but noted that the Internet lacked African content from developing information.

The case study confirmed the information needs identified by the literature and added that information needs arose out of exposure to the Internet about how to trade on the Internet.

These findings show that information needs are static rather than dynamic. While the literature and the initial needs analysis revealed lists of the information needs of this population group, new experiences resulted in additional information needs. Exposure to the Internet created a new need, a need for information about how to conduct trade over the Internet. This made the researcher realise that frequent evaluations and analysis are essential if one is to continue to meet the expanding information needs of a population. **New experiences create new information needs. These evolving new needs should be captured and addressed on a regular basis.**

(5) What types of sources are currently used to provide information?

The literature showed that the majority of the population depends on oral information from personal networks of family, friends and associates. When need they had for information they acquired from their personal contacts.

The list noted that the radio was a common medium for the transmission of information in most developing countries, and called for a convergence of ICT (and particularly

radio and the Internet) so as to fulfil the information requirements of populations in developing countries.

The case study confirmed these findings because the majority of the people stated that they consulted associates whenever they wanted to acquire business information. They source information from their immediate environments and networks.

This led the researcher to conclude that the oral tradition as an information source is still deeply entrenched in developing countries. It should not be eradicated but rather augmented by new technologies so that people receive up-to-date information and so that they can be inspired by new developments from other places in the world.

(6) Are available information sources adequate?

The literature showed that currently available sources of information are not adequate. Print information is not easily usable. Oral information is usually out of date. The existing information centres were not responding to the information needs of entrepreneurs.

The case study showed that existing information sources were not adequate. They did not provide new information on the most current developments in government. Government information is in print form and is not easily available to entrepreneurs. It

also showed that it did not provide information for markets or sources of raw material outside of Botswana.

The lists indicate that language is a limiting factor in the usage of available information sources, as they tend to be in the languages of former colonial powers, i.e. in English, French, Portuguese or Spanish.

The inadequacy of information sources manifests in a variety of ways: it extends from language to print to being out of date. The provision of adequate and relevant information cannot be universal. It should be based on a careful analysis of the target population and its ability to utilise those information sources. They need to ensure that information sources are easily comprehensible to target populations and that they are in a format and language that is understood. No matter what sources are used, they all need to respond to the principles of information provision, which include accuracy, currency, authority, and authenticity (this last principle has been added by the researcher).

(7) To what extent are socio-cultural issues of gender, education and literacy limiting factors in accessing information?

The literature identified lack of education, being female, and illiteracy as limiting factors to accessing information. Uneducated people and the illiterate tended to have limited access to information because information is either in an ex-colonial language (which

assumed some degree of education) or in print form (which also assumed some degree of education). Gender was also identified as a limiting factor in accessing information because women had a limited access to information because they were either less educated than men or they are socialised into subservient roles that limit their capacity and initiative to undertake inquiries.

The lists concurred that language, education and gender were limiting factors to accessing information on the Internet. The less educated and illiterate could not read nor understand the languages of the former colonial masters that are used to disseminate information on the Internet. The lists also added that gender was a limiting factor to accessing information on the Internet because women could not on the whole afford the equipment that would enable them to access the Internet.

The case study differed from the lists on the limitation of language to accessing information. It showed that although language maybe a limiting factor, there are forms of relationships among entrepreneurs that can bypass the limiting constraints of understanding a European language. The entrepreneurs interpreted the content of the site among themselves and continued to explore it together. Because they worked in groups with varied but generally limited English language skills, they were able to translate the content of the site for one another. It showed that entrepreneurs were determined to bypass the language limitation in order to trade.

The list and the literature concur that there are socio-cultural factors such as gender, literacy and language that limit both access to information and to the Internet. This reminds us that it is not enough to consider only physical barriers to accessing information. Social issues also impact negatively on access to information. However, putting local content in local languages does not take into account the predominant languages of the market. The sole use of local indigenous languages could limit access to markets. The content needs to use the language of the market. Languages understood beyond the borders of a population need to be used if one hopes to maximise the size of one's markets.

(8) What physical barriers exist that limit access to information?

The literature and the lists concur that physical barriers to access are distance from an urban centre and inability to afford equipment for accessing information on the Internet. In both print and Internet environments, urban populations had more access to information and to the Internet than did rural populations.

The case study showed that because small-scale entrepreneurs did not have the capacity to own computers, they therefore did not have access to the Internet. Other physical barriers to information include information centres that are inaccessible (Mulindwa 1988).

This led the researcher to conclude that physical barriers are the same in a print format as they are in an electronic environment. The same barriers to information exist in a print

environment. An approach that takes all factors into account should be applied when solving information problems that occur in both electronic and print environments.

(9) What computerised databases exist to provide current information?

The literature has shown that there are limited databases on business information in developing countries.

The lists concur with the view that there is a limited amount of local content in electronic format – whether it is on the WWW or in a fixed database. A need to digitise local content was strongly expressed on the AFTI-DEV List.

The case study reported that there a database containing demographic information on small business was maintained jointly by the Ministry of Commerce and the Fredric Ebert Foundation. The database lists small-scale companies that are involved mainly in the textile sector and in small-scale manufacturing.

It is a good start that there was database of small-scale industries in the Ministry of Commerce. However, it is questionable what the database was used for, and whether it benefited the entrepreneurs. It certainly does not provide current information on business practice in Botswana. None of the entrepreneurs had used before.

The lists and literature concur that there is a dearth of electronic information from developing countries. In the case of Botswana there exists a database of business information. It is however not presented in a manner that benefits the wider community. This leads the researcher to conclude that local information should not be presented electronically but that it should be usable in a manner that benefits the community of users as well.

(10) What are the specifications of a good web site?

Mouty (1999) states that a good site must:

- enable users to know where they are
- make good use of landmarks
- make good use of cues so that it is easy to navigate

Other specifications for a good site include meeting and responding to the needs of the target population and being up to date and attractive.

The lists indicate that a good web site is one that is locally and externally relevant and that provides good local content.

The case study showed that a good site is one that responds to the needs of users and adapts to the changing information needs that arise out of varied exposures.

A combination of good local content and responsiveness to needs of communities of users is essential. Developing nations need readily usable information that will enable them to function more efficiently and more profitably.

In a dynamic Internet environment such as those that exist in developing countries, it is not enough to use "international" standards for measuring the quality of a web site. It is not the animation and the glamour of the site is that is relevant but rather the content and the degree to which it is flexible enough to grow with the evolving needs of its users. To the standard information science criteria for evaluating a website, I would add **flexibility.** The site must be flexible enough to accommodate the evolving information needs of the user community.

(11) Does my database meet these specifications and the needs of my target population?

The literature says that a good web site should be usable with the equipment that is available to end users, and that it should meet the needs of those users.

The lists were silent about the specifications of a good site beyond that the content should be relevant to communities served.

The case study showed that the site used by this group of user was simple and usable on the available equipment. However, the site did not meet all the needs of entrepreneurs because their needs kept evolving.

Usage of the WWW in developing countries should not respond to the desires of the developer but should rather be guided by the evolving needs of users. As the users discover more about the Internet, they will demand more from it. It will then be the responsibility of developers to respond to that need and to develop appropriate sites that are informed by user needs and the equipment of end users.

(12) How should the site be improved?

The literature indicates that constant evaluation helps to keep a site relevant.

The case study showed that the site needed to be open-ended so that it grows with the growing needs of the population.

This leads the researcher to conclude that developing websites for dynamic entrepreneurs need to be designed by innovative developers that share a commitment to the growth of the user community. As the users learn more and ask for more, the developers should grow with them. The political commitment of developers should be similar to that of users so that developing is not seen as a separate art but as an integral part of community development.

(13) To what extent can the WWW be a tool for information delivery in Botswana?

The literature has indicated that the Internet is the new tool for development. In Botswana there has been a call by both the Vision 2016 and practitioners to start embracing the Internet as a new strategy for communication.

The lists indicate that the WWW has a potential to be a tool for information delivery but that infrastructure problems would first have to be remedied. The lists called for attention to issues of training, affordable equipment and sustainable growth in order for profitable usage of the WWW to be sustainable.

The case study has shown that Internet usage could be more effective if it was sector-based. Intervention should be by sector, particularly with commerce-based groups that need to find a way to expand their business. Such an approach would make the Internet more usable in Botswana and in developing countries. In general needs and requirements of developing countries should determine where and how the Internet should be used. The wholesale adoption of the Internet in Botswana would not be sustainable. It should rather be implemented in a sector-by-sector approach and its implementation should rather be based on the needs of a target population and backed up by the adequate training of users. The extent and usage of the WWW need not be

externally imposed. It should rather respond to the needs of growing organizations and sectors.

6.4 Conclusion

The application of the WWW case study affirmed the findings of the content analysis that there is indeed unequal access to the Internet as well as a lack of policy on the Internet provision. It is also uncoordinated and fraught with problems. The problems are both technical and socio-political, and require both the government and civil society to solve them. The relevance of these findings goes beyond design issues. They incorporate other issues that concern the Internet, whether these arise out of discussion groups, chat lists or any other forums. They raise the fundamental question about whether developing countries should be pursuing the Internet with such zeal when fundamental problems remain unresolved. Perhaps the Internet should be applied in certain sectors and not in all sectors of development? All these are questions that need well-considered answers.

The application of the WWW case study affirmed the findings of the content analysis that there is indeed unequal access to Internet as well as a lack of policy on Internet provision. The case study, however, did show that entrepreneurs are extremely keen to use the Internet for on-line trade or e-commerce. The small business sector, which is sustained by its profits, could benefit enormously from access to the Internet as an information source and as a medium for trade. The study showed that if the policy issues that inhibit access to Internet were removed, and if users were given access to

Internet, they could solve more personal questions (such as language usage) and use the Internet to expand their businesses and make them vastly more profitable.

CHAPTER 7

SUMMARY AND RECOMMENDATIONS

This chapter contains the conclusions of the research into the extent of the usability of the Internet in developing countries, as well as the recommendations that flow from the conclusions and data that emerged consideration of the research questions. The research questions are arranged under the two objectives of the study.

7.1 To identifying and describe how existing technical and socio-economic conditions determine the usability of the Internet as an information resource in developing countries

7.1.1 What are the prevailing environmental conditions that encourage or discourage Internet connectivity?

The study has shown that the Internet is not yet a universally accessible resource in developing countries. The lists indicate disparities in access between sectors and social groups. Most countries lack the necessary policies and infrastructure that would enable widespread usage of the Internet. In spite of the fact that the necessary conditions for supporting Internet usage are not in place in most developing countries, development agencies continue to call for these countries to adopt universal access to the Internet as a means of stimulating development.

Recommendation

It is recommended that the private sector, the government and civil society in each developing country should thoroughly investigate the role that the Internet plays in promoting development in their country. These three stakeholders should sponsor a needs analysis that will enable researchers to identify those sectors that could profitably use the Internet as a development tool. They should also devise and implement policies that would facilitate an environment that would support Internet use – provided they are convinced that the Internet can indeed be used as a means for achieving significant developmental gains (especially for previously disadvantage sectors of society). Since the privileged sectors of society in developing countries already have access to the Internet and computer technology, the question of who will gain by making the Internet universally accessible is not relevant to the most privileged classes of people in developing countries. Donor communities should not impose

sustainable Internet usage. It should be driven by the most urgent identified needs of each developing country's population.

7.1.2 What is the extent of web connectivity in Botswana?

Private sector commercial operators in Botswana provide Internet service. Because Internet service providers are private businesses intent on making a profit from their investments, only those who are relatively wealthy (i.e. middle-class professionals, business people and other relatively privileged sectors of society) can afford the costs of being connected to an Internet service provider.

Recommendation

The researcher recommends that civil society organizations collaborate with the government to offer Internet service provision at less than the prevailing market prices so that small enterprises will also be able to afford such services. Such a service would reduce costs – not only of basic connectivity for e-mail but also of web hosting. While hosting remains in private hands, the sizes of pages are inhibited by costs. Without such intervention, **the Internet will continue be a service for the elite and provide information for privileged while those who need information to improve their circumstances in life will not be able to obtain it (from the Internet at least).**

7.1.3 What measurable benefits accrue to communities that use the Internet?

This study has shown that there are very few objective studies that indicate that quantifiable benefits accrue to people using the Internet in most developing countries. The responses of the entrepreneurs in this study nevertheless have shown that the Internet has a potential to facilitate and increase the volume of trade of small-scale business enterprises if they can somehow be empowered to conduct e-commerce.

Recommendation

A thorough sector-by-sector need analysis needs to be conducted to establish what the needs of the various sectors are and whether the Internet can fulfil those needs. It is vitally important that the Internet does not become just another status symbol of the privilege classes. If the Internet is to be of any real benefit to developing countries, it must focus primarily on the needs and problems of the majority of populations (i.e. those who are traditionally deprived of education and opportunities for personal and community development).

This study has shown that small-scale entrepreneurs in the textile sector are potential users of the Internet. Such a group could therefore be selected as a target for intervention. These people would have to be comprehensively trained and educated before they could benefit from the advantages offered to them by the Internet.

7.1.4 What policies support Internet usage in developing countries?

This study has shown that most developing countries do not have Internet policies to guide the provision of Internet services. No progress is possible in the absence of clear policies and the determined implementation of such policies.

Recommendation

Government should devise Internet policies in consultation with civil society. Such policies would take a multitude of factors and conditions into account. Such factors would include the deregulation of telecommunications, a reduction or abolition of import duties on computer hardware and software, and the guarantee of freedom of expression and speech on the Internet.

Another important factor is that small-scale entrepreneurs need to possess internationally valid credit cards in order to be able to trade both locally and internationally. Special arrangements would have to be made to provide such small-scale operators with appropriate credit cards. In addition, they would have to be educated in the use of such cards and in the necessary banking and commercial procedures that the successful use of credit cards presuppose. Either the government, or government in collaboration with banks, would have to provide the necessary guarantees before such credit cards could be made widely available for the purpose of on-line trade (e-commerce). The expansion of wealth and profit in previously disadvantaged sectors of community that would flow from proper exploitation of the

possibilities inherent in e-commerce would make all the risks inherent in such a venture well worth taking. But, as with all enterprises of this kind, an essential pre-requisite for success would require a careful needs analysis, appropriate social and market research, pilot studies, and carefully devised policy frameworks.

7.1.5 What are the policy issues around Internet connectivity and web availability in Botswana?

There is neither a government policy on Internet provision in Botswana nor any comprehensive information policy. The absence of national information policies in developing countries means that the government is not involved in Internet provision.

Recommendation

If the Internet is to be a tool in the development process, the Botswana government needs to devise relevant policies that take all the circumstances and conditions into account. An appropriate government policy would provide guidelines for the provision of Internet connectivity in the same way that policies about water and energy provision enable the government to provide these services and commodities to the population at large. Any such policy would guarantee freedom of expression. It would also delineate the various roles that the government and civil society would play, and it would define the extent and parameters of the anticipated service.

7.2 To establish the degree of usability of the WWW as an information conduit in Botswana and other developing countries

7.2.1 What type of information do SMME entrepreneurs need?

This research has shown that information needs are not static but that they keep evolving with time. In the case study process, entrepreneurs developed new information needs even as the study progressed. Their most urgent needs turned out to be information about e-commerce and empowerment to trade on the Internet (by, for example, obtaining internationally valid credit cards which none of them possessed).

Recommendation

In order to keep up to date with the changing information needs of entrepreneurs, one needs regularly to examine and identify the information needs of the served population so that those needs can be captured and met. The information that is required to meet new information needs should be built into a website or information system that is used to meet the information needs of the target population.

7.2.2 What types of sources are currently being used to provide information?

The study showed that the majority of the respondents depend on oral information obtained from their colleagues. Dependence on oral information is not in itself a limitation. Entrepreneurs have functioned for years by using just such methods.

However, the oral information system needs to be constantly refreshed with reliable and up-to-date information if entrepreneurs hope to be informed of latest developments and trends in commerce.

Recommendation

Two interventions are recommended:

(1) The infusion of current information into the oral system by means of radio. Internet radios could be one solution to this problem. Or else information gathered from the Internet could be re-formatted for radio broadcast to those populations who do not have access to the Internet.

(2) The development of an electronic database that could be interrogated from touch screens that deliver audio responses. Such screens could be made available on the WWW or in "talk kiosks". Building websites that utilize audio responses would complement and enrich an oral culture, as would providing information over a "talk kiosk". Current and even complex information could be made available over the Internet in oral form. These "talk kiosks" could then be placed in or near places frequented by the target populations.

7.2.3 Are the available sources adequate?

Target population users indicated that the print and oral information that was provided for them through available information centres was not adequate and that it neither gave them a broad choice of markets for their products nor any useful information about sources of raw materials.

Recommendation

I recommended above that either a web-based or electronic and audio database be used to meet the information needs of a population that satisfies its information needs by means of oral transmission. In further recommend that such a website and/or database be regularly updated. This is particularly necessary to support the needs of small-scale business concerns that may need daily updates if now to maintain a competitive advantage in the markets. Other information science-related values that define good information should also be factored into these databases – together with accuracy, reliability of information, clarity and suitability for the level of the target population. In addition to this, frequent needs analyses have to be performed if the content is to be kept relevant and adequate.

7.2.4 To what extent are socio-cultural factors such as gender, language and education a limiting factor?

The research has shown that women are the least educated and poorer members of society. It follows therefore that their knowledge of useful innovations and their

purchasing power tend to be limited. Knowledge of innovations tends to be a male domain in developing countries – as is purchasing power. The population under study in this research tended to be no exception. The only person in the group who possessed a computer was the only man in the group.

Although the education level of entrepreneurs was low, the languages of trade in the global market are major European languages such as English, French, Spanish and Portuguese.

Recommendation

It is recommended that the socio-cultural barriers that inhibit access to innovations and resources be carefully identified in target populations before mechanisms are designed to meet information needs. Once they have been identified, such barriers should be eradicated or minimized so that access to information can be facilitated.

It is recommended that when information-providing mechanisms are designed for groups of entrepreneurs in developing countries, one of the most relevant local European trading languages be used so that utility of a mechanism is not limited to the locality in which he entrepreneurs live in work. Using a major European trading language enables entrepreneurs into third world to compete in the world market. Designing websites in local languages (although desirable) automatically excludes those who use them from world markets. It is further recommended that information

centres provide interpreting services for both information that is uploaded and information that is downloaded.

Innovative means of providing information for illiterate populations will have to be devised because nearly everyone who uses the Internet is literate. Reformatting of information on the web for such population is recommended. Relevant sites could be downloaded and printed and then read to illiterate people or groups.

7.2.5 What physical barriers limit access?

The study had shown that physical barriers that inhibit access include distance from urban centres where facilities are concentrated, a low rate of computer ownership, a low rate of telephone ownership, and expensive equipment.

Recommendation

In the light of low rate of ownership of equipment and the prohibitive expense of connection fees, it is recommended that users with the same developmental needs should be grouped and be granted access as a group. Such access could be obtained through Telecenters, information centres or any other such facility that would enable groups of users to obtain as much access to the Internet as their activities and businesses required. Such centres should also be equipped with digitising equipment so that pictures of the kind of products and services produced or offered by entrepreneurs

could be uploaded onto the website. Group access of this kind could benefit both rural and urban populations.

It is recommended those who design websites for groups of users should first determine what kind of equipment will be used by the group in the service provision centre. The designer would then have to establish the special needs and limitations of the group in order to ensure that the Internet service provider's equipment will be able to support the design site.

7.2.6. Are there are computerised databases that could provide current information?

The literature has indicated that there is a limited number of databases that contain business information in developing countries. The view is corroborated by the finding in the content analysis that the amount of electronically processed and formatted information about developing countries is very limited indeed. This case study revealed that one of the information providers was discovered to have made a database that contained the names and contact addresses of small business enterprises. The database was under construction and housed at the Ministry of Commerce of Botswana.

Recommendation

A thorough investigation would be needed to establish what other databases contain similar (or other useful) information in an appropriate electronic format. Researchers

would also need to ensure that information was not duplicated because duplication wastes scarce resources.

There is a need for databases that are not established and maintained only by commercial organisations. The need for the digitisation of local content was emphasised in the lists. Databases that provide relevant and current information should also be established in other sectors.

7.2.6 What are the specifications of a good website?

A good site is one that meets the needs of a target audience and one that is responsive to the needs of its target audience in terms of accessibility, convenience, relevance and profitability.

Recommendation

It is recommended that a good site should never be regarded as a "completed" or once-ff program. A good website should rather be constructed in such a way that it can be expanded, modified and adapted as the needs of the user community emerge, change, adapt and expand. This research showed that once one information need is met, another arises as individuals and the group as a whole rise to ever higher and more successful and satisfying modes of operation. If the website is to keep pace with the evolving needs of the group, it should be left conceptually (and literally) "open-ended" and constructed in such a way that it can accommodate add-ons, improvements and

refinements. It essential therefore constantly to update the website on the basis of the expressed needs of the user community. It would also therefore be important for the website designer to ensure that the website host will be able to accommodate expansion in terms of both volume and capacity as well as increasingly sophisticated kinds of operation. (Thus, for example, if the entrepreneurs who were subject of this study could be accommodated with internationally valid credit cards and if they could be trained to engage successfully in e-commerce and on-line trading, it would be necessary to adapt the site to facilitate an ever-increasing volume of this kind of trade.)

7.2.7 Did the researcher's website meet these needs?

This site was not designed to accommodate the evolving needs of entrepreneurs because when or how their needs would involve was a factor that is beyond the scope of this research. The website did however meet the expressed information needs of entrepreneurs. The exercise of researching and designing a website for entrepreneurs of the kind who selected for this research did however impress upon the researcher that an adequate website (in this context) is one that will always be able to respond to the evolving needs of its users.

Recommendation

A designer for populations in developing countries should be eager to identify the special needs, problems, difficulties and ambitions of his or her clients so that he or she can design the best possible website and services for his or her group. It is not the

designer's special expertise that should define the format, features and specifications of the site. All these factors should be determined by the needs of the target population. Sometimes the designer will have to educate the target group so that they become aware of how Internet technology can enrich, expand and refine their business operations. Many rural (and urban) people are unaware of how their quality of their lives and their incomes could be improved by skilful use of computer technologies such as the Internet and on-line trading.

It would therefore be responsibility of the designer to demystify the Internet and to make Internet use an enjoyable and profitable activity for small-scale entrepreneurs. ***It is important for people to use the Internet as a profitable and life-enhancing tool and not to regarded merely as another "modern garget" that is beyond their reach.*** The researcher recommends that designers go out of their way to include familiar features on the site. The site should never contain threatening or confusing graphics. It should be designed specifically to accommodate the needs and interests of the target population.

7.2.8 How should the site be improved?

This site would have to grow and expand if it were to meet the evolving needs of its users. It was stated in paragraph 7.2.8 that a good site is one that grows to meet the evolving information needs.

Recommendation

If the site is one that is frequently updated and expanded, the designer or maintainer will need to make frequent evaluations of the usefulness and accessibility of the site's features. He or she would also have to solicit the kind of information that could usefully be added to the site. The site should therefore be regularly updated. Constant needs analysis and user surveys will therefore have to be undertaken if the site is to remain relevant to the user community. The person who maintains the site will have to constantly monitor every aspect of the site and how the user community is using it. Thus the site would have to be adapted to accommodate e-commerce transactions if the entrepreneurs began to engage in local and international on-line trading. As the volume of on-line trading increased, the site would have to be once more adapted to accommodate an increased volume of sales (and the various banking transactions and services that would accompany such trading)

7.2.9 To what extent can the WWW be a tool for information delivery in Botswana?

The role of WWW in development has been established beyond doubt by the literature. The case study and content analysis both demonstrate that the Internet has enormous potential as a tool for development. The extent of usage is hampered by both socio-economic and technical issues including the unavailability and/or unreliability of infrastructure, the absence of government policy frameworks, the lack of banking facilities and amenities (such as credit cards and various kinds of accounts and

services), and ignorance on the part of possible users about the enormously beneficial potential of WWW services.

Recommendation

Those in authority in Botswana should have no doubts about how useful the WWW could be as an instrument for creating wealth, growth and expansion in the country. Instead of debating whether or not Internet connectivity should be promoted, the authority should make a serious effort to identify and eliminate those obstacles that stand in the way of allowing large numbers of (especially rural) people in Botswana to better themselves by gaining access to the benefits that Internet connectivity can confer. Botswana needs connection to the WWW – not simply because development agencies recommend it – but because it is one of the most important developmental tools in the modern world – especially for developing countries. It is now up to the government and the private sector to identify exactly how various groups of entrepreneurs and others in society could benefit from using the WWW before they make every possible effort to eliminate those obstacles that currently prevent people from making sustainable contact with the facilities that are made available through the WWW.

The researcher has demonstrated that the textile sector has a potential to trade extensively over the Internet. By advertising their products on the web, these entrepreneurs could expand their markets. In addition, they could also shop around for

cheaper sources of raw materials, and they could (in addition) use the Internet to download all kinds of helpful and relevant information. The researcher nevertheless made quite clear that groups such as these, need to be assisted in all kinds of ways if there are to become more profitable and so improve their standard of living and general well-being. Thus, for example, they need to have either free or subsidised access to the Internet and they need to be trained to use the Internet profitably. They also of course need the kind of facilities and amenities (credit cards, bank accounts and banking services) that will enable them to trade successfully and profitably on the Internet.

The researcher also recommends that research and other needs analyses be carried out to identify other sectors that could might profit from the WWW as an information management resource.

7.3 CONCLUSION

The study has shown that the Internet can be an extremely beneficial development tool in developing countries provided that certain problems are resolved and provided that the governments of developing countries demonstrate that they have the political will to remove the obstacles that currently stand in the way of widespread Internet connectivity. While it is all very well to call indiscriminately for adoption of Internet as a tool for development, the reality on the ground in developing countries is that there are a number of problems, hindrances and issues which have to be squarely faced and resolved before the Internet can be used successfully as a developmental tool in the

developing world. These problems, hindrances and issues have been described as some length by the researcher in the text above and relate mainly to the kind of infrastructure that is absolutely essential in any country before the Internet can function with maximum efficiency.

The study has also shown that Internet can be used by entrepreneurs in developing countries not only to access information but also to engage in e-commerce by buying and selling over the Internet. The researcher also showed that the Internet has a potential to provide current information to and facilitate communication among many sectors of the population other than the small-scale business sector. Any sustainable adoption and usage of the Internet would require a careful sector-by-sector needs analysis to determine the form and extent of each sector's needs for Internet connectivity. Finally, the researcher recommends **specific and situation-based Internet provision** rather than **indiscriminate wholesale national, large-scale provision**.

With this in mind, the researcher emphasises that needs analysis and market research needs to precede any kind of Internet provision. Providers, suppliers and designers should examine every aspect of each sector's needs – as well as each sector's readiness to use the Internet before facilitating access for that sector. If it is used in this way, the Internet will serve a specific function in a specific situation and therefore provide maximum benefit to particular group of people (rather than random benefits to diffuse and undefined population). The researcher's experience and conclusions in conducting

the study has led her to believe that situation-specific connectivity would be far more beneficial for developing countries than any kind of ill-prepared attempt to provide universal Internet connectivity in an economic and infrastructural context that could not support all sustain universal intimate connectivity. In other words, the researcher recommends that the Internet should be used as a precise and effective tool in any process that facilitates development – not merely as an end in itself.

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Appendix A :

Interview Guide

1. Cover Letter

Box 3077

Gaborone

Botswana

25th May 2000

To whom it may concern,

I am a DPhil candidate at the University of Pretoria. I am conducting a research on the usability of website for providing information to people in the Textile Sector of the Small and Medium Scale Enterprises in developing countries, Botswana in particular. In the process I have developed web site, the content of which is based on their expressed information needs. The site may later be converted into an audio and multimedia system for the benefit of those that may not be able to read.

I am requesting you to participate in evaluating this site. A questionnaire is provided to assist you in this process. Please complete the questionnaire and add any other comments that you may find useful.

Please visit site http://www.intoweb.co.za/botswana for the purposes of assessing this site.

Thank you for your assistance

Buhle Mbambo

Textile Sector Information Site: Questionnaire

Demographic information

1. Age Below 20

20---29

30---39

40---49

50---59

Above 60

2. Sex (Tick appropriate box below)

Male	Female

3. Nationality_____

Educational Background

4. Please indicate your highest level of formal school

Tick	Level of Education
	Primary School Certificate
	Junior Certificate
	O level
	Certificate/Diploma
	Bachelor's degree
	Masters degree
	Ph.D

5. Can you read English Yes/ No

6. Do you speak English Yes/ No

7. What language do you speak mainly?_____

Information needs of Entrepreneurs in textile sector

8. Please identify what you consider to be your information needs.

a) Marketing information.....☐

b) Information on materials.....☐

c) Information on government schemes.....☐

d) Information on training.....☐

e) Information on managing a business……..☐

f)Other

Please add others

_____

_____

_____

_____

9.Where do you normally get this information? *Please tick from the list below*

a) Nobody gives it to us……..☐

b) I do not know where to ask……..☐

c) From one of the following:

Information Centre	Tick
BOCCIM	
UB Clinic	
Radio	
Newspaper	
BOTSBOA	
Internet	
Friends	
Other_____ _____ _____	

10. Please indicate by ticking in appropriate box which of the above sources are the most adequate ?

Information Centre	**Most adequate**	**Adequate**	**Least adequate**	**Irrelevant**
BOCCIM				
UB Clinic				
Radio				
Newspaper				
BOTSBOA				
Internet				
Friends				
Other_____ _____ _____ _____				

11. Which of the following statements describes your knowledge of computing?

Use of computers	True	False	Frequently	
I have never used a computer				
I have basic				

knowledge of computers				
I use computers often in my work				
I have never used an ATM machine				
I use it for e-mail				
I use it for WWW				
I use it for word processing				
This is the first time I am using WWW				

12 . Have you ever used a computer programme to access information on business?
Yes or No

Using this particular programme

13.What was you first impression of the programme? Please tick most appropriate answers.

a) It looks it takes too long to load..... ☐

b) It looks attractive..... ☐

c) It is too bright..... ☐

d) It was just fine..... ☐

e) It looks terrible..... ☐

14. How do you find the index page? *Please select all the most appropriate answers*

a) It gives clear directions..... ☐

b) The introduction is sufficient..... ☐

c) The introduction was insufficient ..... ☐

d) It raises my curiosity to explore..... ☐

e) The index page does not give clear instruction... ☐

f) The index page gives clear instructions..... ☐

g) The index page put me off from using the site..... ☐

15. How easy was it to use the site?(*please tick the most appropriate answer)*

a) The links worked perfectly..... ☐

b) The links did not work. ..... ☐

c) It was easy to move from on screen to another ☐

d) It was not easy to move from one screen to another… ☐

e) It was easy to move around the site…….. ☐

f) It was not easy to move from screen to another…… ☐

16.Content of site

a) How could the information on the screen have been more useful to you?

_____

_____

_____

_____

b) What information would you have liked to see added to the site to make it more adequate for your needs?

_____

_____

_____

17) What other information could be added to the site in order to improve its quality?

18). Under what circumstances would you return to use this site again? *(Please elaborate you answer)*

Thank you for answering these questions. All you comments will used to make this site more useful for you.