

## 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.

method was used.

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 one 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 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**

<b>Education levels</b>	<b>Number in population</b>
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	

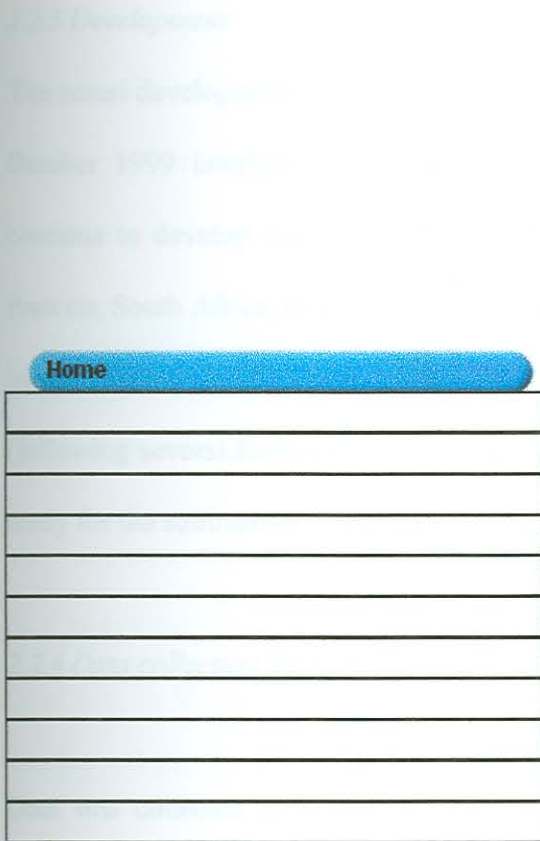
All the suggestions made by the entrepreneurs as well as those listed by Mchombu (1995) informed the content of the web site (except the one on nursery schools). It was felt that it would be inappropriate to include information on nursery schools.

#### 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



# TEXTILE INFORMATION CENTRE

Welcome to the home page of the Small Scale Textile Industry sector of the Small and medium Sized Enterprises (SMMEs). The purpose of this site is to provide current information for textile sector entrepreneurs. The site is based on the expressed needs of the textile sector entrepreneurs.

**A business information source for textile SMMEs in Botswana**

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 a joint 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 with e-commerce, I immediately set about learning as much as I could about it. Unfortunately, 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 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.