

CHAPTER 5 RESEARCH METHODOLOGY

5.1 Introduction

This chapter presents an overview of the research methodology (i.e. the set of research methods) that was used in this work. Recognised empirical methods were employed, amongst others an analysis of existing data, namely, an analysis of text data (literature survey), an analysis of numeric data (secondary data analysis) and primary data (a questionnaire) (Ryan *et al.* 1992; Mouton 2004). A comprehensive literature survey was undertaken, an analysis of 93 companies (balance sheets and income statements) listed on the JSE was conducted and a questionnaire was prepared and sent to a large number of listed companies, academics and analysts.

5.1.1 Goal of this chapter

The goal of this chapter is to discuss the research methods that were used in the research reported on in this thesis. In particular the three main methods used are described and discussed. These are a literature survey, an analysis of financial statements (balance sheets and income statements) and a questionnaire.

5.1.2 Layout of this chapter

The layout of the chapter is as follows: Following this introduction the literature survey which was conducted for this study is discussed in Section 5.2. Thereafter, the empirical research component is discussed in Section 5.3. This includes the analysis and the questionnaire that was used for this research. A summary and a brief indication of what is to follow in Chapter 6 conclude the chapter.

The above layout is represented in Figure 5.1

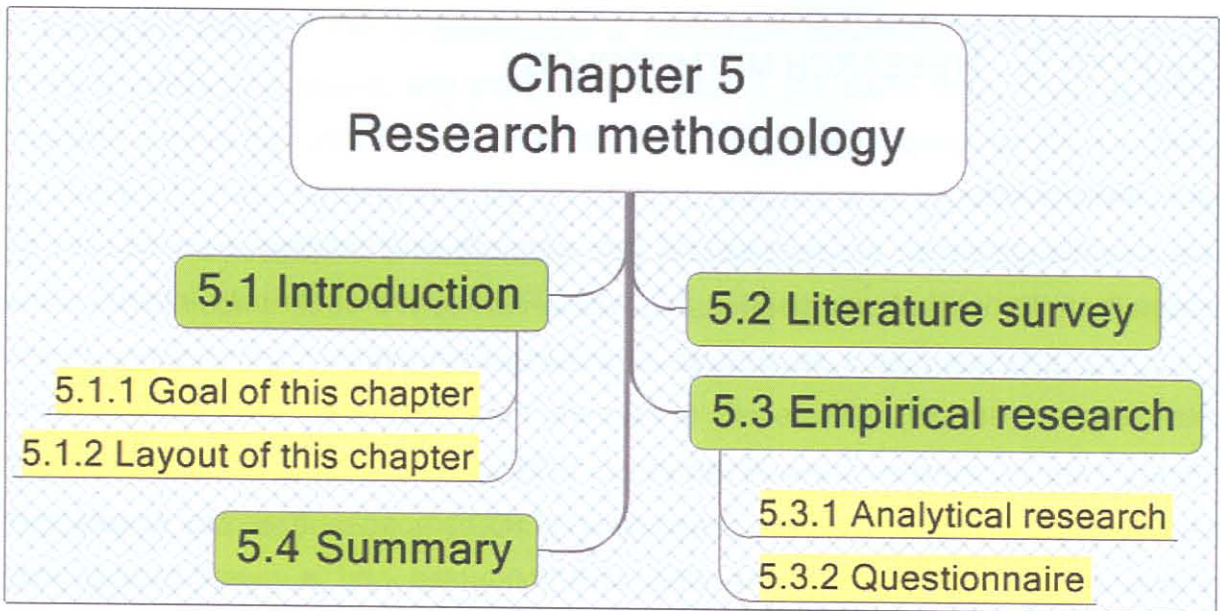


Figure 5.1 A visual representation of the layout of Chapter 5

5.2 Literature survey

To conduct a thorough literature review one needs access to books, conference proceedings, journal articles (national and international), theses and dissertations. Arguably one of the best modern ways to conduct a comprehensive literature survey is to make use of the Internet and the world-wide-web (www). To gain access to a large information base on various topics, access to the Internet is a necessity. The Internet consists of a number of access protocols which feature programs that allow the user to search for and retrieve material.

A major disadvantage of the Internet is that it is a self-publishing medium which means that anybody, even those with very little technical knowledge, can publish on the Internet. This often leads to less trustworthy information, i.e. non-refereed articles regularly find their way onto the Internet. A second disadvantage of the Internet is that the information may be outdated because it is not updated on a daily basis (Library 2006). The reason for this is that people publish material on the Internet and, since it is not readily *visible*, as is a book on a shelf, forget about it. Therefore, cyberspace and the Internet in particular are devoid of a very important general design principle, namely, that “things should be made visible” to allow for optimal use (Norman 1998; van der Poll and Kotzé 2005). One should therefore carefully evaluate any information gathered from the Internet.

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A number of challenges that are presented when searches are done on the Internet can be overcome by adhering to the following guidelines (Du Toit 2002):

1. *Be specific with search words* (e.g. spelling, synonyms, singular form, qualified entities, etc.). For example, if one searches for the word “classification”, about 272,000,000 references are picked up, but if one qualifies the search by looking for “accounting classification” about 101,000 references are found.
2. *Try several search engines*. Different search engines have access to different parts of the world-wide web (www), and to minimise the possibility of missing important references, the author agrees with the philosophy of using multiple search engines. Two popular search engines used in this work are mentioned below.
3. *Test the trustworthiness of web sites*. It is important to determine whether a web site normally publishes non-refereed content or whether accredited journals and conference contributions are listed there. To this end the author found the JSTOR (2006) site a useful and reliable source.
4. *Stay current and informed* about the subject-related area on the web. The FASB sends out regular updates of important activities and changes in accounting. For this reason, the author joined their newsletter and obtained useful material through this medium.

The Internet searches were mostly done through the electronic library (called Oasis) of the University of South Africa (UNISA). Two other useful search engines used are Google (www.google.com) and Yahoo (www.yahoo.com). Some journal articles are available electronically in PDF (Portable Document Format), which standardises the process of downloading and printing. In this instance the site developed by JSTOR proved to be very helpful. Articles stored on the JSTOR website are offered in PDF, PostScript and TIFF (Tagged Image File Format) formats. JSTOR is a non-profit organisation with the mission to act as a trusted electronic archive (JSTOR 2006). The use of this site was very useful in the retrieval of older articles from accredited journals.

The indexes of books were scrutinised for keywords (e.g. attribute(s), classification, relationships, uncertainty, reclassification, working capital, accountability, decision-making, users) relating to the study so that additional authoritative references could be found. The reference lists of the books and articles consulted usually formed a good source of additional books and articles.

To analyse the natural language arguments quoted in this work the author employed critical natural language reasoning (NLR), as proposed by Ryan *et al.* (1992:157-158). When reasoning about a claim one normally starts with one or more premises and then rationalises from the premises to a final conclusion. Along the way a number of assertions, justifications and explanations are formed, all aimed at justifying the conclusion (Ryan *et al.* 1992). A well-known problem with natural language is that it may at times be ambiguous, as indicated by Meyer (1985) and Ryan *et al.* (1992). Therefore, NLR is often translated into a formal notation such as propositional logic or predicate logic in order to remove problems of possible ambiguity. An example of a sentence in propositional logic is given in Example 2.1 in Chapter 2. However, such translations are beyond the scope of this thesis.

5.3 Empirical research

The empirical research was divided into an analysis of the financial statements (balance sheet and income statement) of 93 companies listed on the JSE and a questionnaire based on the criticisms from the literature survey and statements with regard to specific classification requirements.

5.3.1 Analytical research

The analytical research was based on the companies listed on the JSE. A worksheet was received from the JSE containing the names of 379 companies listed and divided into sectors. The population for the analysis was, therefore, made up of these 379 companies. A population in statistics denotes the sample which is drawn from the total group of objects to be researched (Wonnacott and Wonnacott 1990). Systematic Random Sampling was used to choose 50% of the companies. Below are the steps to be followed in order to achieve a systematic random sample (Trochim 2005):

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- Enumerate the members in the population from 1 to N .
- Decide on a value for the sample size. Call it n .
- Calculate $k = N/n$ which is the size of the interval. If k is not a whole number (i.e. an integer), then round up to the next integer.
- Randomly select an integer between 1 and N .
- Take every k^{th} unit to consider in the study.

The companies were numbered from 1 to 379. The value of n was decided on as 190, which is approximately 50% of 379, i.e. $190 \approx 379/2$. A random number between 1 and 379 was chosen by a computer. The computer generated the number 216 which referred to Anglo American PLC, following the original enumeration. Next $k = 379/190 \approx 2$ was calculated. Hence, Anglo American PLC was named company 1 and the following company, company 2. From there on companies were numbered either 1 or 2, alternatively. At the end of this exercise all the companies numbered as company 1 were chosen and the rest were discarded. Effectively, therefore, every second company of the original 379 was chosen to participate in the sample. New numbers from 1 to 190 were assigned to the companies on a spreadsheet.

The planned analytical research component entailed the analysis of the income statement and the balance sheet of the 190 listed companies selected (refer to Appendix C). This large number of companies proved to be too comprehensive, since the number of columns that had to be recorded for the purpose of the analysis created a major space problem, both for a spreadsheet as well as for ordinary sheets of paper. It was, therefore, decided to make a second random sample from the selection of 190 companies. The numbers from 1 to 190 were placed in a hat and a number was drawn in a random fashion. The number drawn was 58, which corresponded to the company Wooltru Limited. This company was chosen and every second company thereafter. When reaching the last company on the original list, the author looped (using modulo arithmetic) to the top of the list, and again every second company was chosen, totalling 95 companies (Refer to Appendix D). Companies from the banking sector were also excluded as their accounting classifications differ substantially from the other companies. This resulted in the analysis of 93 companies in total.

Two Microsoft Excel® worksheets (also known as spreadsheets) were created for each sector of the selected companies, making use of the balance sheets and income statements published on the McGregor BFA database. Whilst developing the worksheets, it became clear that these would be much more user-friendly if the companies were displayed in columns and the different line items were displayed in rows. All the line items which refer to the same item but are named differently by the various companies were given the same colour code.

In the balance sheet a green border was used to display the assets of a company and a red border used to display equity and liabilities. In the income statement a green border was used to outline the items *above the line*, i.e. items that contribute directly to the generation of revenue and are matched with the revenue, while a red border was used to outline the items classified *below the line*, i.e. items that do not contribute directly to the generation of revenue and/or items which are allocated. Taxation was indicated in blue as an *on the line* item since there is uncertainty whether taxation contributes to the generation of revenue or not. Initially an asterisk (*) was used to indicate where a company allocated an item. However, while finalising the worksheets it became apparent that the use of a numbering system instead of the asterisk would be much more effective as companies tend to change the order of the items around. The first company and the first year of analysis (as described in the previous and current paragraphs) for that company in a sector were used as an indicator of the sequence of the line items for that sector.

Next the primary instrument used in this thesis to collect information, namely the questionnaire, is discussed.

5.3.2 Questionnaire

A questionnaire is a valuable research tool in the gathering of information. To compile a comprehensive questionnaire is potentially a very time consuming, yet rewarding, exercise. Once it has been compiled, methods of disseminating a questionnaire include:

1. hard copies using the postal services;
2. facsimile; and
3. electronic mail (i.e. email).

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Each of these methods has its own advantages and disadvantages. The advantage of sending a hard copy using the postal services is that it arrives in the same style and font as intended by the sender. This advantage may be a deciding factor for a researcher whose questionnaire contains a considerable number of mathematical symbols or specialised fonts, and where the preservation of the original style and format is, therefore, crucial. Obvious disadvantages of ordinary mail are that it is slow and mail may be misplaced, destroyed or lost. The questionnaire used in this thesis did not contain a substantial amount of mathematical text or specialised fonts, hence the advantage mentioned would not apply to the questionnaire in this study. The author therefore decided against this option.

One of the advantages of a facsimile is that it is faster than ordinary mail and will in most cases preserve mathematical text and specialised fonts, but a disadvantage is that it may be unreadable because of a break in the transmission or a paper jam that occurred on the receiver's side. Another disadvantage is that the print quality may be poor and the sender would not be able to establish this. Sending a facsimile may also be a time-consuming process since the number dialled may be engaged or out of order and every number must be dialled separately. Because of these disadvantages, the author also decided against the use of faxes.

Based on the high rate of email responses received during the author's MCom research project (van der Poll 2003), it was decided to make use of email again. When an email is sent, the potential respondent receives it almost immediately, making it easier to respond, and thereby making this method one of the fastest available. The disadvantages of email are: the server could be down, the e-mail address may be invalid, or (a primary disadvantage) a company might have a general email address where the email may get lost because nobody takes ownership of it. Unless the sender has the name or specific email address of the potential respondent, the mail may be misplaced or simply ignored. It should be noted that some of these disadvantages apply to ordinary mail and faxes as well.

A questionnaire was compiled using MS Word 2003® in order to determine the problems relating to the classification of information in the financial statements of companies as well as classification in general in accounting.

The following sequence of events was followed to prepare, send and then analyse the responses from the questionnaire:

Step 1: Setting up the questionnaire

The questionnaire was built around 32 statements, with five agreement-disagreement levels for each statement. The levels on which respondents had to decide were 'strongly agree', 'agree', 'uncertain', 'disagree' and 'strongly disagree'. The 32 statements were compiled on the basis of the literature survey done in Chapters 2, 3 and 4 of this study. It was sometimes difficult to convey the real meaning of a statement without leading to misinterpretation of the statement by potential respondents. The questionnaire is presented in Appendix B, and a discussion and analysis of the responses from the questionnaire is presented in Chapter 6.

Step 2: Preparing an electronic mailing list

In order to send the questionnaire to all the listed companies, a database was exported from the McGregor BFA database to Microsoft Excel®. It contained the names, addresses, telephone numbers, fax numbers and e-mail addresses of 398 listed companies. Matching this list with that from the JSE revealed some differences. Unlisted companies had to be removed from the list after being compared with the JSE list. Despite the electronic age, only 317 companies had e-mail addresses listed on the database, hence these companies were selected as respondents. Some of the listed companies are analyst companies (i.e. companies employing analysts). The opinions of financial managers and analysts of financial statements were requested from the 317 companies. Questionnaires were also sent to 190 academics at major universities in South Africa in order to test the viewpoint of the academic sector.

Step 3: Sending out the questionnaire

A total of 507 electronic questionnaires was sent out, 317 to companies and 190 to academics. In the case of companies, the names of the financial managers were obtained from the websites of the different companies. A generic message was

compiled to direct the mail to the financial manager of a company. The email addresses of the academics were received in electronic format, copied to the Novell GroupWise® email facility used at UNISA, and a generic message was sent together with the attached questionnaire after permission from the respective deans had been obtained.

Step 4: Receiving the responses

The first completed questionnaire was received less than 12 hours later. A number of questionnaires were not delivered. Forty (40) emails bounced back because the e-mail addresses did not exist. This left 467 responses that could be expected.

Step 5: Recording of the responses

A record of all responses was kept on the MS Excel address list. Some companies replied to the e-mail, a process which facilitated matching the reply with the original e-mail message. Some companies, however, replied by fax and this complicated the matching process somewhat. On some faxes no company name or fax number was indicated. The reason why a record had to be kept was that a follow-up email was sent to all companies who did not respond to the first email. Naturally, reminding a company that had already responded would be extremely unprofessional.

Step 6: Follow up

Eight weeks after the first e-mails were sent out a reminder was sent to all those who had not yet responded. At that stage a total of 54 completed questionnaires had already been received. The cut-off date was set as 31 January 2006, and by that time a total of 71 completed questionnaires had been received. However, the last questionnaire was received on 14 March 2006. A total of 72 completed questionnaires were received for this study and all of them were incorporated in the results presented in Chapter 6.

5.4 Summary

In this chapter the various research methods used in this work were described. These methods include a literature survey, analytical research and the use of a questionnaire. In total, 95 companies listed on the JSE were analysed and 72 questionnaires were discussed.

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In the next chapter the results of the literature survey, the questionnaire and the analytical research are analysed.