

CHAPTER 6

Research methodology

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CHAPTER 6 RESEARCH METHODOLOGY

“There are seven key signs that may indicate you are in trouble: declining sales, reduced market penetration, falling margins, thin earnings before income taxes, high employee turnover rate, increasing customer complaints and high-level employee defection. If you checked off one of these key indicators, you need to dig deeper.”

McRann (2005:38)

6.1 INTRODUCTION

The concept of verifier determinants is to confirm the existence of problems within the business or the business environment. Environmental scanning units seem to be unable to respond to what Ansoff (1975:25) calls “weak signals”. Stubbart (1982:143) concludes “we have too many places to look and too few theories of how significant environmental change can be linked to the business’s plans”.

The previous chapters shaped the foundation for an academic framework. In order to achieve the research objective of identifying verifier determinants, various opinions of the role players in a business environment must be presented.

The ideal research design will be of such a character that it articulates to all the role players (bankers, entrepreneurs, creditors, consultants and courts) in the performance cycle, as illustrated in figure 6.1. The performance cycle incorporates four performance areas of importance: underperform, decline, distress and failure.

The aim of this chapter is to explain the research problem and the objectives of the study and to give some background for the case selection and questionnaire design. Reasons for selecting the methods used to gather data for the empirical analysis will be explained.

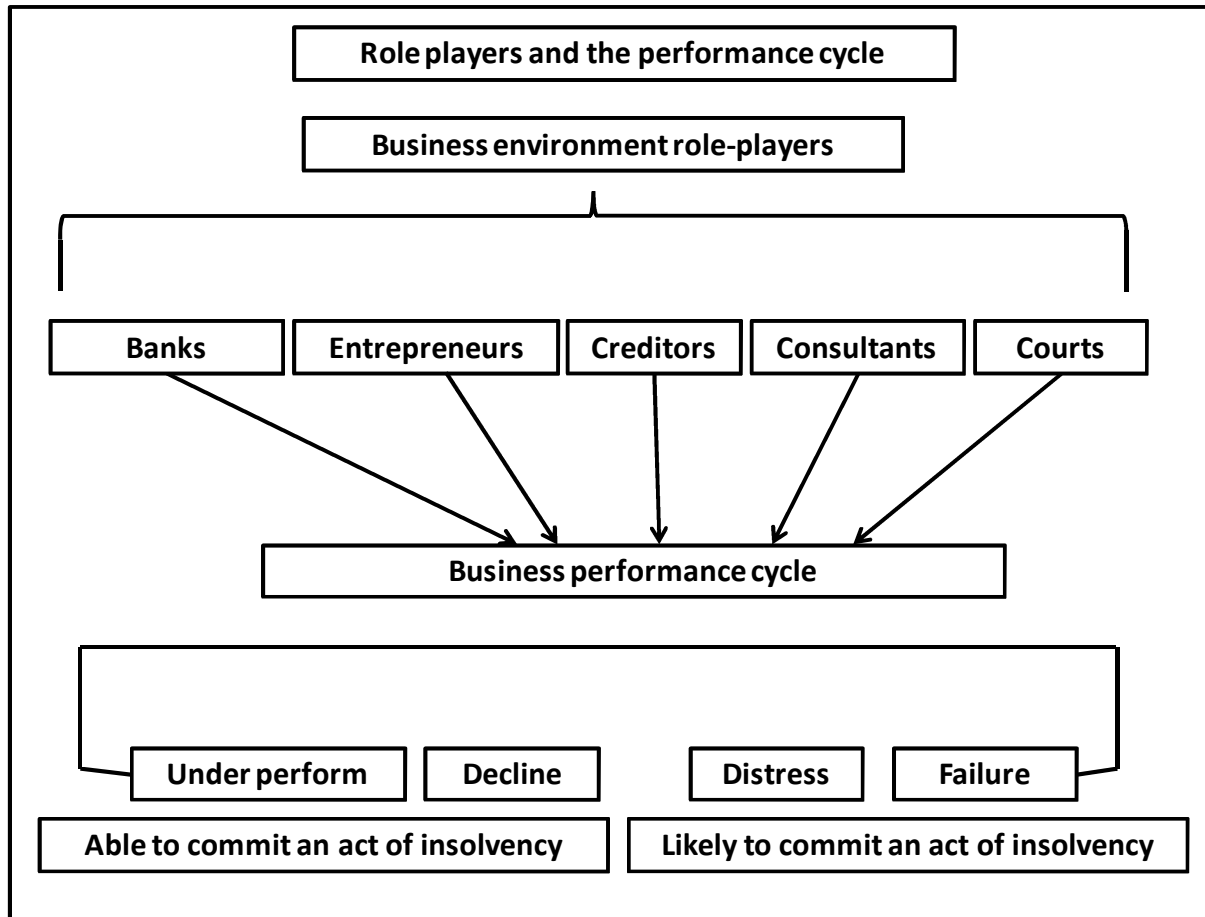


Figure 6.1 Interaction between role players and the performance cycle

Cooper and Schindler (2003:13) maintain that good research generates dependable data, which are derived from investigative practices that are conducted and recorded professionally. They also suggest that "methodology" refers to the theory on the research undertaken and the various steps taken to ensure the dependability of the data. These would be systematic, detailed and transparent. They postulate that research must be driven by ethics to ensure credibility. According to Mouton (2001:56), research methodology focuses on the "individual steps" that make up the processes and procedures to be engaged. Of importance is that while methodology consists of these various methods, techniques and principles, it must be borne in mind that they are interrelated. Thus "methodology" is not only concerned with the manner in which information is acquired, but fundamental to this is the type of study being undertaken. Mouton (2001:122) summarises this when he concludes that research methodology describes the research procedure as including the overall research design, the plan or structure and the sampling procedures, the data collection, the field study methods and the analysis procedures.

This chapter explicates the research approach to the study design and methodology. Various research methodologies were used to ensure the validity and reliability of data sets used.

6.1.1 PROBLEM DEFINITION

Cooper and Schindler (2003:69) argue that in formulating the research problem, the first step will be to identify and fully describe the management dilemma and translate the dilemma into a management question. According to Welman and Kruger (2004:12), the research problem refers to some conjectural or practical difficulty for which a resolution is desired. The research problem of this study is clearly formulated in section 1.7.

Problem: There are few or no guidelines for entrepreneurs on “verifier determinants” to confirm early warning signs and the specific turnaround faced by a venture.

The South African government, through the Department of Trade and Industry (DTI), directly endorsed business rescue by the introduction of the new Companies Act. This clearly indicates that the DTI is adamant about “getting it right”. In actual fact, however, the Act is still subject to amendments and testing by the courts.

In this study, the focus of the problem is:

- **The absence of guidelines (verifier determinants) to confirm early warning signs**
- **The absence of verifier determinants to assist in the specific turnaround situation**

This study intends to have the following outcomes:

- Identify main categories of early warning signs
- Identify verifier determinants linked to each category.

6.1.2 OBJECTIVES OF THE RESEARCH STUDY

6.1.2.1 Primary objective

- To identify and theoretically define early warning “verifier determinants”
- To design and include “verifier determinants” as an integral part of a turnaround framework that supports corrective action.

6.1.2.2 Secondary objectives

- To research the current formal turnaround practices for “verifiers”, which are applied in the United States of America, Canada, Australia and Africa and the informal practices evident in South Africa. These findings are aligned so as to include the changes in the applicable South African legislation.
- To design a framework for use by turnaround practitioners and entrepreneurs alike.
- To identify which verifier determinants will prompt the early warning signs to become visible, and apply this outcome to the design of a reliable turnaround framework that is accepted by all creditors and financial institutions.
- To contribute to the South African entrepreneurial, turnaround fraternity, and future formal studies in this academically ill-represented field.

6.1.3 PROPOSITIONS

Cooper and Schindler (2003:50) note that a "proposition" is a statement about observable phenomena that may be judged as "true" or "false". A proposition is called a hypothesis if it is formulated for empirical testing.

As a declarative statement, a hypothesis is of a tentative and conjectural nature (Cooper & Schindler, 1998:43). It was decided that research propositions would be used in this study rather than hypotheses, leading to an ex post facto study. The reason for this decision is that the data gathered by means of conducting personal interviews and gathering questionnaire responses are explanatory in nature. Conclusions drawn from the analysis will be more meaningful if approached from a pragmatic point of view, since no other model of the same nature exists. The study is very relevant and important, as South Africa is now entering the business turnaround field and a Rubicon change from a creditor-friendly to a debtor-friendly regime. The investigation ultimately aimed to provide a solution to the question whether to attempt a turnaround or not. The research also contributes to the elimination of Type 1 or Type 2 errors. In order to find these answers the research process in this study follows the path depicted in figure 6.2.

6.1.4 LITERATURE RESEARCH

Literature on turnarounds in developing countries such as South Africa is almost non-existent. Understandably, turnaround practitioners protect their strategies as intellectual property.

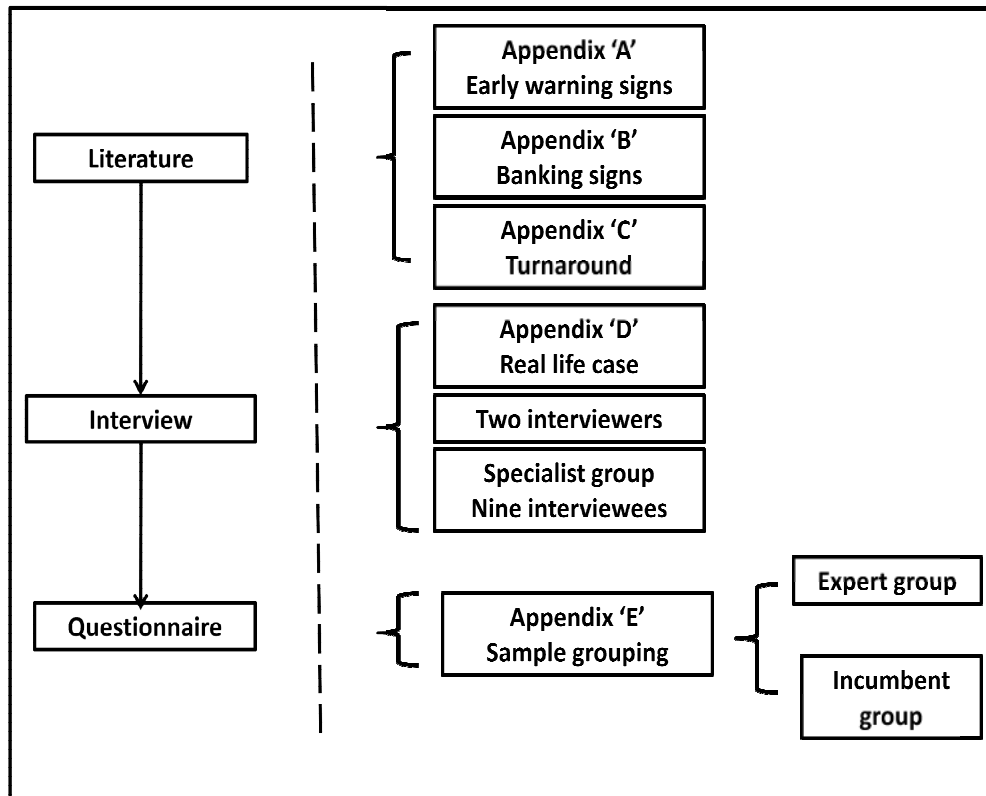


Figure 6.2 Broad research flow

The literature search in this study involved all scientific resources from the ABI-Inform, Ebsco-host, Proquest, ScienceDirect, Blackwell and other databases for titles published since 1985. For major works, the date was not a limitation, especially when an article was referenced widely. Age of publication was also not considered important, but relevance and contribution to the body of knowledge on failure prediction, early warning signs and turnaround strategy were paramount.

Each article was scrutinised for confirmation of concepts, as well as additional concepts and variances under different conditions and contexts. When analysed, this research identified key concepts using grounded theory research, which were divided into three main categories: firstly, “early warning signs” (see Appendix A), secondly, banking signs (see Appendix B), and lastly, turnaround strategies (see Appendix C), illustrated by figure 6.2.

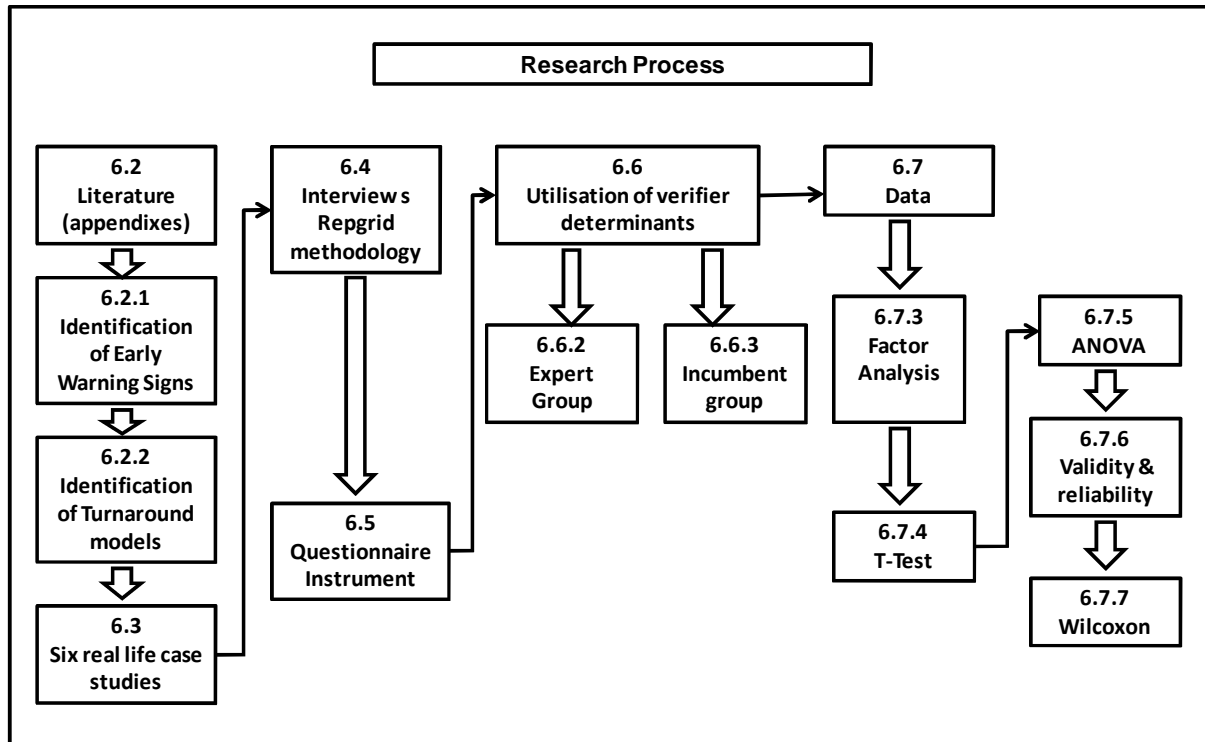


Figure 6.3 The detailed research process of this study

Figure 6.3 illustrates the flow of this chapter, starting with the literature research, then the interview process and, finally, the questionnaire design and instrument. The statistical analysis flow concludes the process.

6.1.5 IDENTIFICATION OF EARLY WARNING SIGNS

Early warning signs (see Appendix A) are regarded as all types of event in business that point to the potential demise of that business (refer to the definition of “early warning signs” arrived at in section 3.2). Warning signs are portrayed in various ways, as problems, challenges and poor performance indicators. Authors, such as use their own explanation, phraseology or designation when referring to early warning signs. This literature research classified early warning signs, in much the same way as Pousson (1991), into the following categories:

- financial warning signs identified by ratio analysis
- business and operational warning signs, such as administration, market and product analysis

- managerial signs, such as strategic value add and behavioural analysis
- banking signs, which are closely linked to behavioural signs
- other, behavioural signs.

The warning signs and their classification were tested and confirmed in the interview process (section 6.4).

6.1.6 IDENTIFICATION OF TURNAROUND STRATEGIES

Owing to the diverse sources of literature available, it was firstly deemed necessary and prudent to categorise secondary data sources into various key sources. Secondly, various practices and models that were regarded as being of assistance in compiling a South African entrepreneurial approach to rescue/turnaround were investigated.

After reading and analysing the abstracts of the articles, those papers that discussed turnaround-related issues were selected and tabled in Appendix C. Each article was assessed, and the key concepts identified and reported. Subsequently, concepts were categorised into sub-domains (categories) of turnaround-related issues and reported on individually. As the categories became clearer, each individual article was further explored for its key contributions.

Initially rejected articles were subsequently re-evaluated for potential contributions to the sub-domains, based on the new insights gathered from the process. During the grounded research process, the research identified conceptual linkages to use for categories. Then these steps were repeated until the key constructs ultimately crystallised. Eventually, a list of key references was assembled (see Appendix C). Finally, a conceptual framework for classifying the turnaround structure that was identified is proposed. Every article was scrutinised for confirmation of these concepts, as well as for additional concepts and variances in terms of the different turnaround approaches.

The most salient strategies, frameworks, steps and processes are highlighted in this study, during which the research concentrated on the process flow, strategies and

execution of turnaround strategies. All literature containing the words “rescue”, “turnaround”, “restructure”, “reorganisation”, “renewal” and “realignment” was identified within the context of turnaround management. The literature was summarised into the five distinct phases associated with the literature search. These are depicted in Appendix C as follows: investigative, planning, strategic, financial and operating phases.

6.1.7 SAMPLE SELECTION FOR THIS STUDY

The following sections provide details of the sample frame, the sample size, the sampling method used and the response rate. Diamantopoulos and Schlegelmilch (2000:10) describe a sample as “ a part of something larger”. Parasuraman, Grewal and Krishnan (2004:357) define "sampling" as the selection of a fraction of the total number of units of interest to decision makers for the ultimate purpose of being able to draw conclusions about the entire body of units.

This fraction is then known as the "sample", which Cooper and Schindler (2003:179) argue is part of the "target population", hence, the part or sample is carefully selected to represent that population. For the purposes of this study three groups were purposely selected. They are portrayed in table 6.4.

Table 6.1 Group categories

DEMOGRAPHIC	SPECIALIST	EXPERT	INCUMBENT
BANKING EXPERIENCE	20 Years	12 Years	5 Years
JOB FUNCTION EXPERIENCE	15 Years	10 Years	5 Years
AGE	40+ Years	30+ Years	20+ Years
QUALIFICATIONS	Post graduate degree and diploma	Graduate and diploma	Graduate
MANDATE	Ultimate directional mandate	Limited directional mandate	Advise decision makers

Note that the specialist group and the expert group are not the same, but consist of two distinct groups.

The 'specialist group' consists of banking industry specialists. An industry specialist can be described as an experienced banker with at least fifteen years' experience in the credit risk field, equipped with a relevant postgraduate qualification and mandated within the organisation to make decisions resulting in significant directional change in business such as turnaround. These individuals have been exposed to many informal turnaround situations during their tenure in these positions.

The 'expert group' consists of senior credit and credit risk incumbents in leadership roles within the organisation. An expert can be described as an experienced banker with at least ten years' experience in the credit risk field, equipped with a relevant postgraduate qualification and a limited mandate within the organisation to make decisions resulting in significant directional change in business such as turnaround. The expert group differs from the specialist group in that it has less experience and exposure to the business restructuring field.

The 'incumbent group' consisted of managers in the credit environment who have had exposure to the credit risk environment.

A manager is an experienced banker with at least five years' experience in the credit risk field equipped with a relevant graduate qualification and not mandated (higher authority will make final decision but this group can advise/propose direction) within the organisation to make decisions resulting in significant financial management change in a business. The incumbent group differs from the specialist group as it has less experience (5 years) and exposure to the business restructuring field.

6.2 SIX REAL-LIFE CASES

For the purposes of this study, real-life business profiles were used. The real-life cases comprised a stratified random selection drawn from existing businesses in a commercial banking environment. The businesses were geographically spread throughout South Africa and the selection was not limited to one province only. The choice of cases was of the utmost importance to ensure that selection bias was ruled out. Research was conducted in an organisation with a comprehensive database of business data, which made it relatively easy to randomly select the sample of real-life cases with three Basel rating categories.

6.2.1 CHOICE OF ORGANISATION

For this study, one of the leading commercial banks was selected as the organisation of choice, owing to the accessibility of information, research data and participants. For selecting case studies, the researcher relied on businesses that were already subjected to Basel II Accord categorisation criteria. For clarity on the Basel II Accord, a short explanatory discussion is required (see chapter 3 section 3.4). This research chose to select case studies with an in-depth longitudinal character. Cases were selected at random, ensuring that they had a couple of years' historical financial and other relevant data. This was important to ensure equal representation of the selected cases.

Research was conducted in an organisation with a comprehensive database of business data, which made it relatively easy to purposely select a sample of real-life case studies. Figure 6.4 illustrates why a banking institution is appropriately placed to conduct this study. In a turnaround situation, a commercial bank is 'both ways exposed', as the bank is a key component to any turnaround attempt, be it informal or formal. The pivotal role of the commercial banks in an informal attempt to turn a business around is a well-debated topic and the mere existence of the INSOL principles and the London Approach bears testimony to this. In order to protect the organisation, the business and individuals, all names, references to names, addresses and anything that could lead to the organisation being identified were

removed. In protecting the real identity of the businesses in terms of the critical data, such as financial statements, trends, management structures, history and actual events, all references to the actual businesses and individuals involved were either removed completely and/or given pseudonyms. This approach ensured that the case study maintained its real-life character.

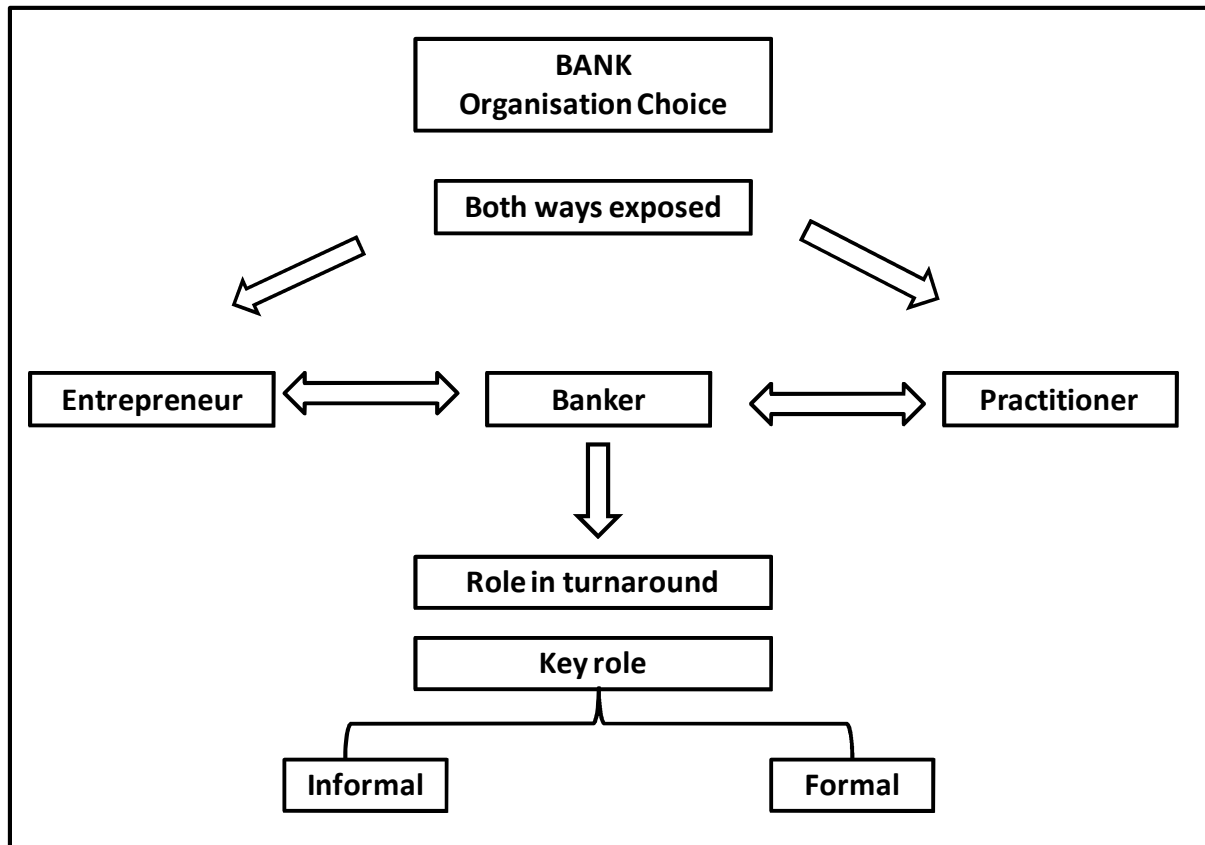


Figure 6.4 Structure informing the appropriate case selection

6.2.2 CASE SELECTION FOR THIS STUDY

Figure 6.5 illustrates the research design which comprised two phases: phase 1 comprised the case selection and the interview process, and phase 2 the questionnaire and field study process.

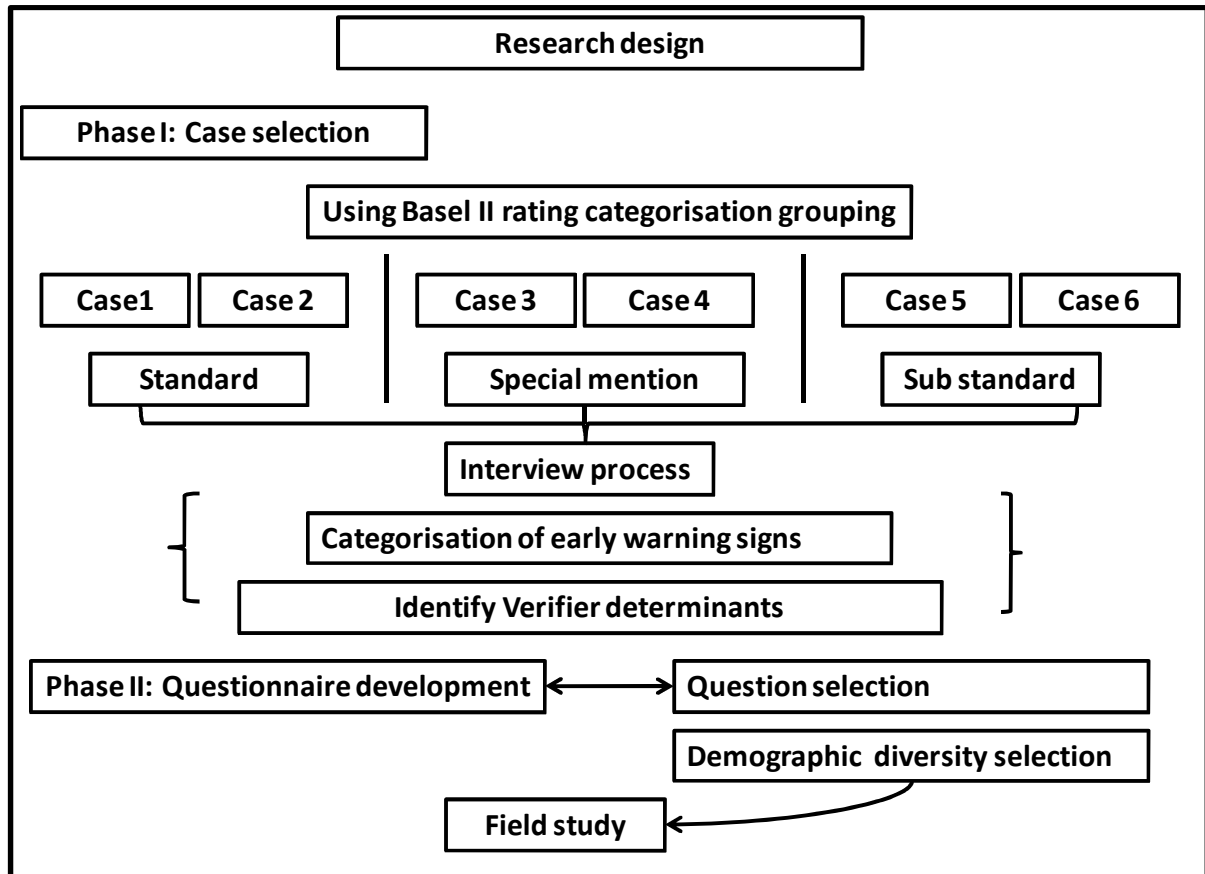


Figure 6.5 Research design showing stratified case selection

The Basel II risk rating was used in selecting two cases in each category. Within each case, the following information was obtained from the business:

- Curricula vitae of managerial staff
- Historical files consisting of
 - business background
 - management succession
 - market and product
 - staff growth and considerations
 - changes in industry type and business model
- Three years' audited financial statements to establish growth
- Cash flow projections.

Table 6.2 provides the demographic details of each of the cases selected for this study. The business cases are categorised into industry type, legal style, annual turnover, year of the latest financial information available, Basel II rating and, finally, age of the business in years. The primary aim of the case research linked and the interview process was to establish the perceptions of specialist management in identifying early warning signs, causes and verifiers determinants as risk factors. An example of one of the cases used in this study is available in Appendix D.

Table 6.2 Case demographics used in this study

CASE SELECTION DEMOGRAPHICS							
No	CASE IDENTIFICATION	TYPE	STYLE	ANN T/O	YEAR	BASEL II RATING	AGE YEARS
1	CASE A Kwa-Zulu Natal	Cable Management and Structural Support Specialist	Company Propriety Limited	105,718,000	2006	Standard	3
2	CASE B Limpopo	Transport & Civil Construction Sand Excavation & Washing Property owning and letting	Company Propriety Limited	91,200,000	2006	Standard	11
3	CASE C East Cauteng	Motor trade. New and second hand dealership, farming	Company Propriety Limited	157,239,000	2006	Special-mention	5
4	CASE D Western Cape	Coating, impregnating and laminating of foam and textiles. Convertors of textiles and non-woven fabricks for the footwear, motor and allied industries.	Company Propriety Limited	96,552,000	2005	Special-mention	11
5	CASE E Gauteng	Specialise in import and sale of Continental Fish and Delicacies	Company Propriety Limited	69,000,000	2005	Sub-standard	37
6	CASE F Gauteng and Free State	Transport, Logistics and warehousing	Closed Corporation	137,000,000	2006	Sub-standard	28

6.3 INTERVIEWS – REPGRID METHODOLOGY

6.3.1 INTERVIEW WITH PARTICIPANTS

An interview has the benefit of direct, face-to-face interaction, so any ambiguities can be clarified and explained in real time. The interview process was used to identify the main constructs of early warning signs.

Cooper and Schindler (2003:43) assert that a "construct" is a grouping of specific concepts for expressing a specific issue or reality under discussion. As the rationale for this stage was to ensure the optimum exploration of the specialists' knowledge and past credit experience (specialist cognitive survey); the research followed a case learning process followed up with a structured interview. According to Wright (2006), much can be learnt from the thinking of senior management on how they see, make sense and interpret their experiences. During the interview, the abstracts of the relevant case were analysed and those concepts that in fact represented early warning sign and verifier determinant issues were identified.

The interview process required a high level of interaction between the researcher and participants. This interaction was a significant prerequisite for proper understanding of the case under study and to clear data of all ambiguities. The interview process was based on the repertory grid method developed by Kelly in 1955, (Feixas, & Alvarez (2006)). This method was preferred above a conventional rating scale questionnaire, as it allows the interviewee to provide unique insights into constructs that are topic related. Consequently, the research design for this study entailed selecting cases with an in-depth longitudinal character. Cases were selected purposely, ensuring that they complied with the minimum requirements and other relevant data (see section 6.2). This was important to ensure equal representation of the cases selected. However, the critical data, such as the financial statements, trends, management structures, history and actual events, were not altered and factual events are presented in each case. This approach ensured that the cases maintained their real-life character. Each selected case was then discussed, and key concepts were identified and reported.

Concepts were categorised into sub-domains (categories) of early warning sign- and verifier determinant-related issues and reported individually, together with their specific contributions. As the categories became clearer, each individual case and interviewee insight was further explored for its key contributions. If the interviewees required any guidance during the interview process, this was provided by asking a series of leading questions. It was found that participants were relaxed when answering the questions since they were based on their field of expertise.

It is believed that these positive interview conditions led to unbiased conclusions being drawn from the managers' discussions of their perceptions and experience.

During the interview process, the interviewers looked for the conceptual linkages to be used for the various categories. These steps, questioning, clarifying and re-questioning, were followed during the interview methodology, where steps are repeatedly executed until the key constructs were ultimately crystallised. After the sixth interview, the interview process drifted towards a conclusion, as very little additional 'useful new information' was obtained; this was in accordance with the guidelines for the interview process. After the ninth interview the process ended.

This meant that the actual number of interviews became less important than initially anticipated when embarking on the study. In order to find patterns in the data, this research used the principles of neural networks to model relationships between inputs and outputs in the chosen environment. The research focused on a philosophical and cognitive analysis.

6.3.2 INTERVIEW PROCESS

As was indicated previously, the interview process was based on the repertory grid method. Sampson (1972:79) argues that the repertory grid is a technique used to identify the ways a person gives meaning to his or her experience. According to Gaines and Shaw (2005:5–2), the repertory grid method consists of four constructs: a topic, a set of elements, a set of constructs and a set of ratings of the elements and constructs.

This method was preferred above a conventional rating scale questionnaire as it allows the interviewee to provide unique insights into constructs, which are topic related. The interviews were designed around real-life cases, which were determined by the method described in section 6.3. The results were tested against a comprehensive secondary literature research(see section 6.2.1 and Appendix A).

6.3.3 INTERVIEW PREPARATION

Industry specialists with practical experience were identified in the target organisation (a commercial bank) and these specialists were selected to participate in the case study. Three case studies were selected at random for each specialist, which resulted in each participant having a sample in which at least two of the main categories of Basel II rating are represented. The case studies were distributed to the participants two weeks prior to the scheduled interview. During this period the interviewees were requested to prepare themselves adequately for the interview process. This preparation was estimated to take at least three hours. The interviewee was then invited to an interview and encouraged to bring the case studies and all preparatory notes with them.

In this study, the last three interviews proved to contribute the same information as the previous six interviews, with no new information being forthcoming, which suggested that nine interviews were enough.

Eisenhardt (1989b:545)

The estimated time allotted for the interview was four hours, although first interview took four and a half hours to complete. However, as the interviewers gained experience in the interview process, the time spent on the interviews was reduced. Subsequently, the average time per interview was calculated at three hours forty minutes. Refer to Appendix D for a copy of the letter and case example sent to the interviewee.

In order to keep the interview process unbiased, the interview content, such as the process to be followed and questions to be asked, was not disclosed to the participants prior to the interview. Interviewees were also reassured that there would be total anonymity and that the results would only be used for the research project.

6.3.4 IDENTIFICATION OF VERIFIER DETERMINANTS

Table 6.3 depicts the interviewer record sheet used during the interview. The three cases were identified on the sheet as case A, B, or C. The repertory-grid choice as to which two cases differ from the other one is clearly indicated in the column ‘link’.

Table 6.3 Case study interview record sheet

CASE INTERVIEW RECORD SHEET				
Case	Link	Key constructs identified	Main EWS category identified	Verifier determinant identified
A				
B				
C				
Comments				

The interviewee’s cognitive experience and knowledge of the business case was then recorded in the other three columns, the key constructs were identified, the main early warning sign category was identified and subsequently, most importantly, the verifier determinant was identified. This record sheet was used to annotate every discussion topic and/or interview question asked.

6.3.5 THE INTERVIEW PROTOCOL

The interviewers asked a series of questions to lead the conversation (Cooper & Schindler: 2003:325), for example:

In your opinion,

- which two cases are more similar (compared to the other one)?
- what early warning signs did you observe?
- why is the one different from the other two?
- what caused the signs?
- how did you verify the existence of the sign/cause?
- what is the main differentiating construct/s?
- does this construct fall into the category of an early warning sign or a verifier determinant?
- the case which was not selected – why was it not selected?

The constructs and early warning signs were subjected to rigorous interrogation. Interviewers focused the interviewee using additional questions to ensure that early warning signs, causes and verifiers were discussed. The result was a clear understanding of early warning signs in practice and the process identified a set of verifier determinants, which was informed for the resulting questionnaire.

6.4 QUESTIONNAIRE INSTRUMENT

The results obtained from the interview process, and building on the literature review, formed the basis of the questionnaire design (Appendix D). In order to ensure completeness, this study has been documented, firstly, in terms of the personal interviews based on the cases, and secondly, a questionnaire/or empirical testing.

The raw data from the questionnaire responses were analysed using SAS and BMDP1 software and included descriptive statistics, factor analysis, a t-test of significance, and the analysis of variance.

6.4.1 QUESTIONNAIRE DESIGN

The questionnaire was designed around the constructs determined by the interview process with the group of specialists. These results were reciprocally confirmed by a comprehensive secondary literature research (see section 6.2.1 and Appendix A). A comprehensive questionnaire was developed aimed at credit practitioners in the organisation. This resulted in a high level of agreement with the specialists, drawing from their experience and learning and based on a set of cases.

Saunders, Lewis and Thornhill (2007:362) postulate that questions can be distinguished in terms of "opinion", "behaviour" and "attribute", and this influences the way in which questions are worded. According to these authors, "opinion" variables record how respondents "feel" about something or what they "think" or "believe" is true or false. In contrast, data on behaviours and attributes record what the respondents "do" and "are".

The purpose of the questionnaire was to:

- involve the participant
- draw conclusions on managers' perceptions of warning signs and their evaluation of risk profiles
- establish respondents' use of verifier determinants.

The questionnaire (Appendix F) was broken up into two major sections: a demographic categorisation section (questions 51 to 60) and the actual Likert scale questions (Appendix F, questions 1–50). Questions 1 to 50 were intended to identify individual variables associated with each of the factor constructs identified by the literature and the interviews.

The questions in the questionnaire were derived from

- the primary objective of the research
- the specialist cognitive survey and the literature review on business failure and early warning signs.

Thus, the sections of the questionnaire centred on the outcomes of the two-tier preparatory research.

The questionnaire was sent to each manager in the incumbent group together with a covering letter. The letter requested them to participate fully and there is little doubt, although this cannot be verified except on the basis of the response rate, that the respondents participated voluntarily.

6.4.2 DETERMINATION OF VALUES FOR THE QUESTIONS

Cooper and Schindler (2008:308) rightly point out that the Likert scale has "in-built summated rating" and that the data are interval data, as illustrated in table 6.4.

Table 6.4 The summated Likert scale used in this study (adapted from Cooper & Schindler, 2003:308)

Strongly disagree	Disagree	Agree	Strongly agree
1	2	3	4

The reason a four-point scale was chosen lies in the fact that it forces the direction of the response. A four-point scale was preferred over a five-point one that gives an option of "unsure", as this was unwarranted in this study. A neutral option was underivable in the anticipated small sample. The 4 point scale allowed conversion scales into nominal scales.

The participant was asked to respond to each question by ticking the appropriate box. Each of the boxes is given a numerical value to reflect its degree of attitudinal favourableness and the scores may be totalled to measure the participant's opinion. Cooper and Schindler (2003:253) contend that between 20 and 25 well-constructed questions will be required for a reliable Likert-scale result. This study contained 50 questions to allow for the elimination of non-loading or double-loading variables in the factor analysis.

6.4.3 PILOT TESTING THE QUESTIONNAIRE

Preliminary questionnaires were sent to five managers in the credit and credit risk environment who were selected at random from the list of business units available in the organisation. The responses from the pilot test indicated that the respondents understood the questionnaire and that it therefore did not need further editing.

6.5 DETERMINATION OF VERIFIER DETERMINANTS

Fraenkel and Wallen (2005:38) emphasise the fact that dependent variables are those that the researcher chooses to study in order to assess the impact of other variables on them. The independent variable in this study is a dichotomous variable consisting out of an incumbent group and an expert group. The dependent variables comprised the verifier determinants (constructs), each with its contributing variables.

6.5.1 SAMPLING METHODS AND RESPONSE RATE

The sample of credit risk incumbents was selected purposely. Certain criteria applied in the selection process, making it a judgemental sample. In this case, the criterion was that incumbents selected as respondents had exposure to the credit environment. This is an example of non-probability sampling.

Cooper and Schindler (2003:201) also confirm that the use of purposive sampling is appropriate for this type of research.

Possible challenges that could have arisen while conducting the research included the following:

- Several research projects were launched simultaneously, which could have influenced the respondents' attitude to the research. (Moreover, the target institution experienced an unexpected and unplanned 'takeover' threat after the research commenced.)

- Questionnaire fatigue could have played a role in the total responses received.
- The research occurred mainly in the one banking institution to which the researcher had access.
- The questionnaires were not area coded, consequently, there could have been response bias, as one of the areas in the sample may have had proportionately more responses than another.

The above challenges could have an influence on the response rate.

6.5.2 EXPERT GROUP

6.5.2.1 Identification

The expert group consisted of experienced senior bankers with at least ten years' experience in the credit risk field with a relevant postgraduate qualification and a limited directional mandate for making decisions resulting in significant directional change in business, such as turnaround.

The fifty verifier determinants were subjected to the questionnaire process and the replies from the expert group were grouped in terms of five factors, which subsequently formed the independent variables from which data was drawn so that statistical inferences could be made. The dependent variable is referred to as the verifier determinant group.

6.5.2.2 Sample frame

The expert group sample frame consisted of senior credit risk experts in specifically related functions within the business.

6.5.2.3 Sample size

In this research, nine out of a possible 12 credit expert practitioners were willing to participate. Thus, a response rate of 75% was obtained, which was deemed adequate for the research.

6.5.3 INCUMBENT GROUP

6.5.3.1 Identification

The incumbent group consisted of managers in the credit environment who have had exposure to the credit risk environment. An incumbent is an experienced banker with at least five years' experience in the credit risk field who is equipped with a relevant postgraduate qualification, but is not mandated by the organisation to make decisions resulting in significant financial management change in a business.

6.5.3.2 Sample frame

The sample frame of credit risk practitioners included those practitioners who are currently working in business units in the field of credit risk.

6.5.3.3 Sample size

In this research, 200 out of a possible 245 credit risk incumbents fitted the criteria and hence a sample size of 200 was decided on. The 200 practitioners selected are trained and employed in the credit and credit risk division.

6.6 DATA

Before dealing with the units of analysis, it is important to find support for and to justify the form of research undertaken, as it influences the selection of the units of analysis. Babbie (2005:94) asserts that although it is useful to differentiate between types of research, most studies use several of them as they often converge.

Types of research include the explanatory, predictive, descriptive, exploratory and reporting approaches. Owing to the research resources available, this research is primarily focused on the explanatory approach and is accompanied by descriptive aspects. The research methodology described below provides details of the data required for the study and the methods used in collecting the data.

6.6.1 DATA COLLECTION

Blankenship and Breen (1993:122) state that there are certain fixed guidelines as to which methods a researcher should use for collecting primary data, the most important of which is that the researcher must collect data as accurately as possible. The most popular methods for data collection are usually observation, the interview and the questionnaire although these three methods are not necessarily mutually exclusive and can be interrelated. However, the questionnaire is the centrepiece of data collection as it stands on its own and the interview can be used as a basis for the other forms of data collection. In-depth interviews with the specialists formed the basis for the questionnaire development and design.

6.6.1.1 Data measurement and instruments

Parasuraman *et al.* (2004:266) define "measurement" as the assigning of numbers to responses based on a set of guidelines. They believe that this has two potential benefits: "First, one can summarise quantified responses from a sample more efficiently and economically. Secondly, it enables the manipulation of quantified responses by using a variety of mathematical techniques to get to a desired result."

The results then require different levels of measurement and interpretation which will also apply to the data. When measuring data, nominal, ordinal, interval and ratio data are considered owing to their unique characteristics. In this study, the four-point scale resulted in interval data that could be treated as ratio data during analysis.

6.6.2 DATA ANALYSIS AND INTERPRETATION

Diamantopoulos and Schlegelmilch (2000:63) note that a careful re-examination of the overall aim of the research provides an excellent point of departure for developing analysis objectives. The overall formulation, it can be argued, is also influenced by, among other issues, whether the data is univariate, bivariate or multivariate. Subsequently, the responses to the completed questionnaires were processed by the researcher. Data analysis includes checking the data for comprehensiveness and consistency. Welman and Kruger (2004:201) concur that one of the first tasks in analysing data is to formulate some kind of theoretical statistical model. They postulate that the selection of the appropriate statistical methods and/or software is dependent, among other things, on the level of measurement. The statistical analysis for this research, using SAS software, was performed by the Department of Statistics at the University of Pretoria.

6.6.3 FACTOR ANALYSIS

Exploratory factor analysis was used for interpreting the data in this research. Cooper and Schindler (2003:562) assert that when the variables that are being analysed are interrelated, some being dependent and others independent, then factor analysis is appropriate for analysing the data. In fact, Cooper and Schindler (2003:11) posit that factor analysis is one of the techniques applicable in multivariate analysis where many variables are involved. In this instance, there were fifty potential variables and thus this technique was used because the overall research is multivariate. There are several approaches to factor analysis and, in this instance, the model used was the maximum likelihood method. Kim and Mueller (1978:9) and Cooper and Schindler (2003:613) agree that factor analysis identifies patterns or underlying combinations in variables as potential factors. Thompson (2004:5) makes the point that there are two forms of factor analysis: confirmatory and exploratory. In this instance, exploratory factor analysis, as argued by Kim and Mueller (1978:9), was used as the factors were assumed to be “not known”.

Factor analysis is used for data reduction when patterns can be recognised in developing specific constructs. This occurs when there are too many variables and some reduction could benefit the exercise, with variables that belong together being grouped into factors. Kim and Mueller (1978:9) are incisive and insist that factor analysis is based on the fundamental assumption that some underlying factors, which are smaller in number than the number of observed variables, are responsible for the co-variation among the observed variables. Cronbach's alpha coefficients, which measure the reliability of a factor, are produced as a result of factor analysis. In this study, a Cronbach's alpha value of greater than 0,7 was an indication that the items within a factor are reliable and measure the same underlying construct.

6.6.4 TEST OF SIGNIFICANCE (t-TEST)

The t-test interrogates the differences in the mean of a scale and the mid-points of the factors in order to establish the level of significance of the difference, if any, between them. Cooper and Schindler (2003:588) assert that a t-test determines the significance of a sample distribution and a parameter.

6.6.5 ANALYSIS OF VARIANCE (ANOVA)

An analysis of variance (Anova) was performed using demographical data to see whether the manager's seniority, job experience and time in banking had any influence on the dependant variables. Cooper and Schindler (2003:588) concur that the Anova establishes whether means from different sets of data come from the same sample which, in this case, establishes whether there is any difference in the means of the factors. This would establish if there were any differences in the interpretation of the variables in the different categories or factors. An analysis of variance is also a test of significance between and within the different independent variables in the same factor. Saunders *et al.* (2007:448) and Cooper and Schindler (2003:552) agree that an Anova tests the similarity of several means or other measures by using the variances between and within groups of data.

If they are equal, it means that they come from the same population. Of major concern to all scientists is the credibility of research findings. The credibility of the research findings suggests the degree to which the research is reliable and valid. In fact, the two are key to authentic research. It is therefore, natural that this research must be tested for reliability and validity.

6.6.6 VALIDITY AND RELIABILITY

Cooper and Schindler (2003:232), Bordens and Abbot (2008:129), Saunders *et al.* (2007:614) and Fraenkel and Wallen (2005:150) are relevant here, as they assert that validity refers to the extent to which a test measures what we actually want to measure. Hence, Frankfort-Nachmias and Nachmias (2000:149) indicate that validity is concerned with the question: "am I measuring what I intend to measure?" Fraenkel and Wallen (2005:150) explain that validity refers to the appropriateness, usefulness, correctness and meaningfulness of the inferences.

Strube (2000:24) declares that "reliability" refers to the consistency of the results. Accordingly, tests are applied to check whether the results will be the same should the research be repeated by another scientist and in a different context or environment (Saunders *et al.*, 2003:101). Cooper and Schindler (2003:231) then assert that reliability refers to the extent to which the procedure gives consistent results as well as to the extent to which the results are free of random or unstable error. In this instance, reliability relates to the accuracy and consistency of the responses.

According to Saunders *et al.* (2007:149), reliability is assessed by posing the following three questions:

- Will the measures yield the same result on another occasion?
- Will similar conclusions be reached by other observers?
- Is there transparency in how sense was made of the raw data?

Saunders *et al.* (2007:149) further point out that the threat to reliability is bias, whether it is from the interviewer, participant or observer. This is aptly summarised by Frankfort-Nachmias and Nachmias (2000:154), who explain that when measuring intangibles more errors may be produced than when measuring physical instruments. They also point out that momentary distraction on the part of the participant could result in an error. Thus, it can be argued that reliability stresses the consistency of outcomes and this occurs when the threats to reliability (e.g. bias and distractions) are reduced, as elimination of all errors might not be possible. It should also be added here that, when talking about "consistency", it follows that even if the outcomes are wrong, for as long as they are consistent, they are reliable. Figure 6.6 illustrates the validity and reliability tests used in this study.

Face validity =	Agreement between expert and/or incumbent groups as to the suitability of the construct(s)	= Wilcoxon
Reliability Alpha =	Degree to which instruments are homogeneous and reflect the same underlying construct(s)	= Cronbach Alpha = 0,7

Figure 6.6 Face validity and reliability

There are three regular tests for reliability:

- The test-retest method, which requires administering the same instrument (i.e. the questionnaire) twice and comparing the results. It is common, for instance, to take a patient's temperature more than once in hospital. However, it differs from situation to situation and the in-between periods will differ (the length of time between testing) depending on the nature of the research.
- In terms of the equivalent forms method, two different measuring instruments are used for the same research or experimentation. For example, two different questionnaires could be used for the same sample.

- The Kuder-Richardson approach in terms of which the mean, standard deviation and the number of items are used to establish what is known as the reliability coefficient.
- Fraenkel and Wallen (2005:161) claim that a reliability coefficient of 0,00 suggests a complete absence of a relationship between values.

In this study, Cronbach's alpha coefficients for the verifier determinant factors were used. All the factors had a Cronbach's alpha of 0.7 or higher.

6.6.7 WILCOXON

To test whether the factors are influenced significantly by the independent variable 'group', the Wilcoxon two-sample test and Kruskal-Wallis test were used. Owing to the small sample size (21, that is, nine experts and 12 incumbents, see also table 7.20), a t-test and the Kruskal-Wallis test were conducted to confirm the results from the Wilcoxon two-sample tests.

In this study, validity was strived for during the interview process. The interviewers interrogated the constructs, their signs, causes, relationships and measurements as perceived, considered and applied by the specialists

6.7 CONCLUSION

The techniques described in this chapter ensure that the research is scientific and the findings are acceptable to the scientific community. The purposive and judgemental sampling procedures ensured that respondents had sufficient experience to respond meaningfully.

Significantly, exploratory factor analysis was described, and was used to reveal the underlying constructs and to test their reliability. The next chapter details the findings flowing from the above techniques as used on the raw data.