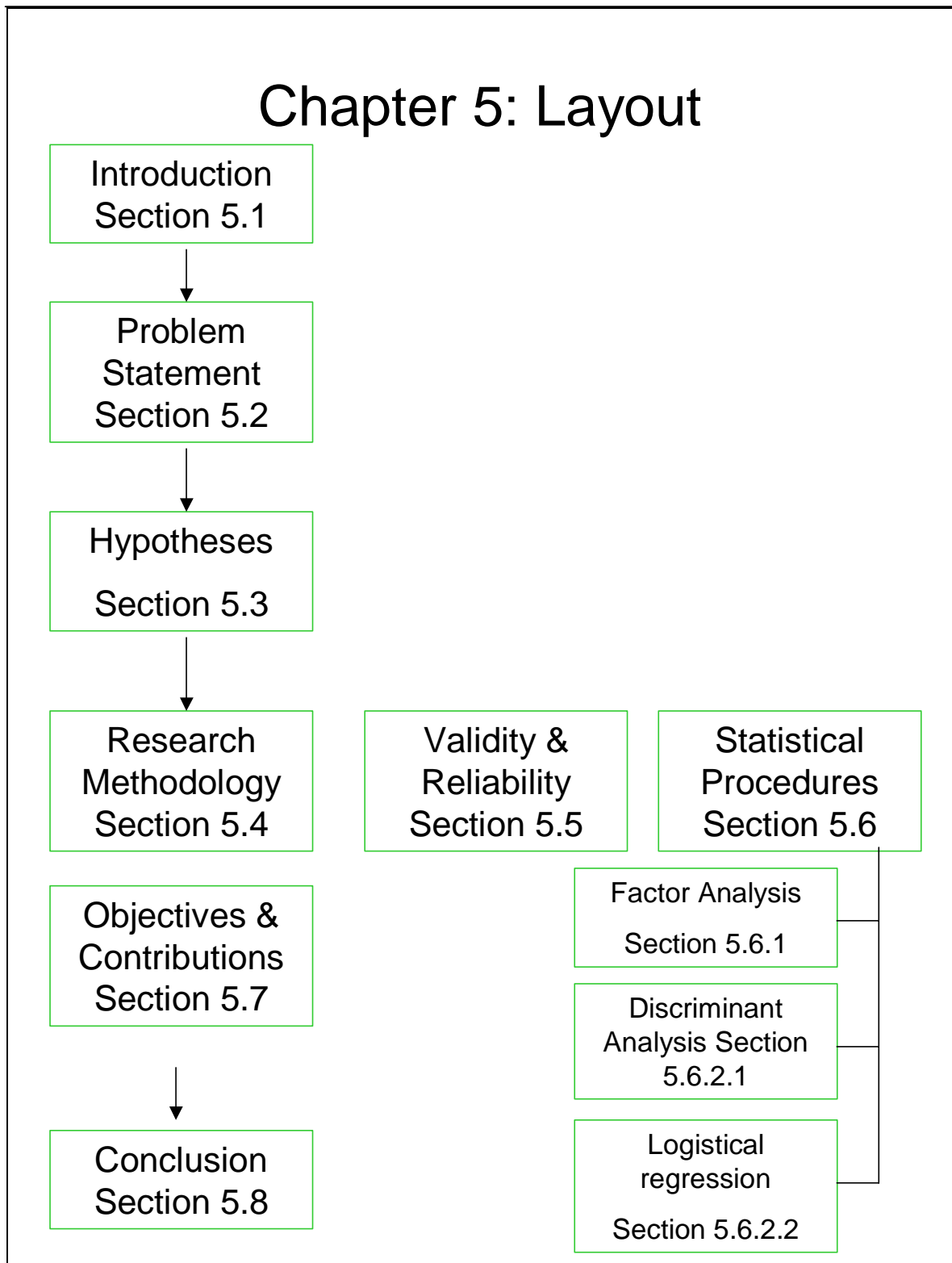


Chapter 5: Research Methodology



5.1 Introduction

“A plan well defined is half solved”

(Churchill, 1996:80)

As discussed in the literature section of the study, the major investigation evolves round the entrepreneurial process, dealing specifically with the decision whether or not to start a venture opportunity. An attempt is made to determine whether any of the constructs under discussion acts as a heuristic or bias and therefore influences the decision to exploit the opportunity.

The aim of this chapter is to explain the research process followed in the empirical part of the study. The elements of the research process are discussed below.

5.2 Problem Statement

The definition of the problem to be researched is, according to the AMA (the American Marketing Association), the most important step in any research project (Martin, Loubcher & van Wyk, 1996: 82). Trochim (1997) also mentions the problem definition as one of the most difficult and least discussed aspects of research.

The problem to be addressed in this study is:

- To clarify the potential impact of thinking preferences, heuristics and biases, specifically the illusion of control bias, self-efficacy, misconceptions and risk perception (independent variables) on the decision to exploit a business opportunity (dependent variable)

The following specific constructs are investigated:

- Thinking or information preferences as determined by HBDI

- Illusion of control bias
- Misconceptions – the following concepts were included under misconceptions associated with the decision to start:
 - Overestimation of long-term profit
 - Underestimation of competitive response
 - Managerial fit
 - Overestimation of short-term cash flow
 - Misjudgement of asset requirements
 - Overestimation of demand
- Business risk perception
- Self efficacy effect

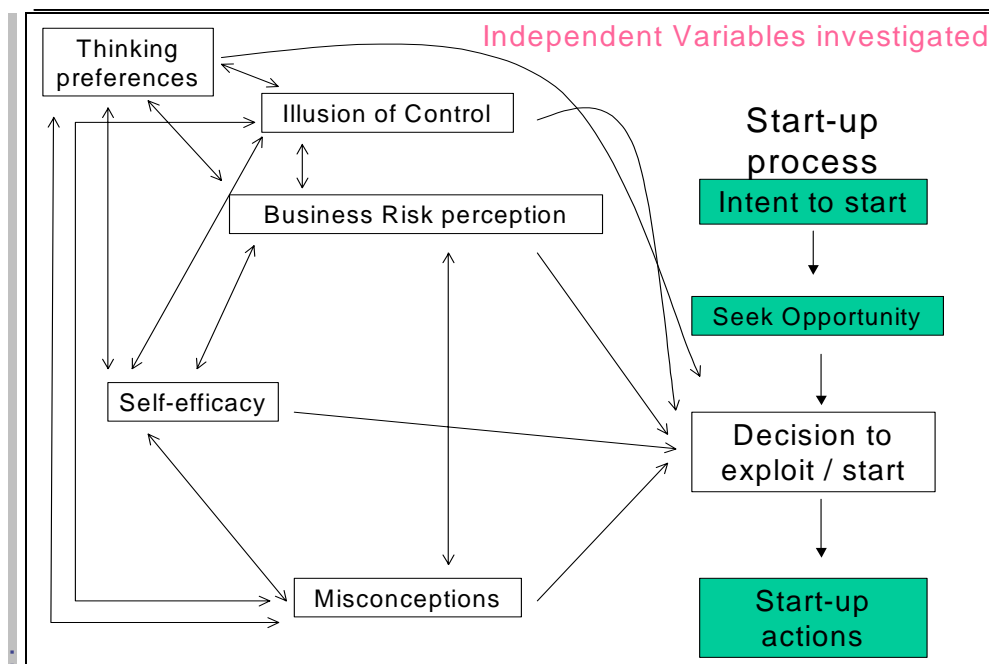


Figure 5.1 Independent variables investigated

5.3 Hypothesis

When a proposition is formulated as a statement for empirical testing, it is referred to as a hypothesis. According to Terre Blanche & Durrheim (2002: 117), Cooper & Schindler (1998: 43), and Sekaran (1992: 72), hypotheses are educated guesses about a problem's solution, or expectations about groups in a population expressed in empirical testing. A hypothesis is of a tentative and conjectural nature. Hypotheses serve several important functions. They provide a framework for working within certain boundaries / limits and also give direction to the study.

The null hypothesis (H_0) indicates that there are no differences between groups or no relationship between measured variables. The alternative hypothesis (H_a) indicates a difference or relationship between measured variables.

The following hypotheses were stated for this study:

- H1o Business risk perception does not influence the decision to exploit a venture opportunity.
- H1a Business risk perception influences the decision to exploit a venture opportunity.

- H2o Misconceptions do not influence the decision to exploit a venture opportunity
- H2a Misconceptions influence the decision to exploit a venture opportunity.

- H3o Illusion of control does not influence the decision to exploit a venture opportunity.
- H3a Illusion of control influences the decision to exploit a venture opportunity.

H4o Self-efficacy does not influence the decision to exploit a venture opportunity.

H4a Self-efficacy influences the decision to exploit a venture opportunity.

H5o Information preferences as determined by HBDI do not influence the decision to exploit a venture opportunity.

H5a Information preferences as determined by HBDI influence the decision to exploit a venture opportunity.

5.4 Research Methodology

The term methodology refers to the system of methods and principles used in a particular discipline (*Collins Dictionary*, 1995). If the definition is applied to this specific study it refers to the methodology and principles used in the research.

While methodology is also concerned with how we come to know, it is much more practical in nature and refers to the specific ways or the methods that we can use to better understand our world. According to Trochim (1997), epistemology and methodology are intimately related: the former involves the philosophy of how we come to know the world and the latter involves the practice.

The aim of this section is to provide an insight into the practical ways and methods that were used in gathering the information necessary for the empirical part of this study. The universe and sample frame will be discussed, as well as the sample method and size. The method of data collection and questionnaire design will be described, while the last part of the chapter will deal with the data processing, analysis and evaluation of results.

5.4.1 Data required

- The population (universe)

Defining the universe or relevant population is the first and very critical step in the sampling process and indicates the total collection of all elements about which inference is to be made. The universe or population in this study is typical entrepreneurs that face a decision to start or not to start a venture. The sample therefore includes students, managers and entrepreneurs that may face such a decision. Respondents with an HBDI profile were a prerequisite for research of hypothesis 5 (information preferences). However, the availability of respondents with an HBDI profile was a limiting factor, owing to the cost of an assessment.

- The sample frame

Once the population is defined, the next step is to obtain a frame of the sample (Sudman & Blair, 1998: 338; Cooper & Schindler 2001: 163). The sampling frame is closely related to the population and is a list of elements from which the sample is actually drawn.

Approximately 305 questionnaires were distributed to the following selected sample of respondents:

- B Com students majoring in Entrepreneurship
- B Com students not majoring in Entrepreneurship but with a business focus
- Students from Humanities majors (non business focus)
- M Phil Entrepreneurship and PhD students
- Managers at creativity and thinking preference training sessions
- Practising entrepreneurs (selected randomly in the Johannesburg / Pretoria area).

The respondents have completed HBDI profiles (see Appendix C). Therefore the study makes use of convenience sampling.

5.4.2 Data collection methods

There is no simple answer to which of the available methods of data collection the researcher should use when collecting primary data. It all depends on the purpose and nature of its use (Blankenship & Breen, 1993: 122).

A decision was taken to base the questionnaire on a case study (Appendix A), to eliminate previous industry experience that might influence the respondents' decision to start in one way or another. The case study deals with the animal-feed industry; a business opportunity is introduced for using cut grass from lawns to be turned into animal fodder. This is not a well-known industry to many people. No business-specific industries with which the respondents might be familiar could therefore play a part.

Mitchell et al (2002: 113) postulate that the entrepreneur's conclusion would be somewhat influenced by the fact that his or her venture shared relevant characteristics with other new ventures. They also argue that using personal sources of information may generate rich and detailed information about a given subject. The case-study content used in this study is therefore ideally chosen in this regard, because no such example exists in the market, and respondents would not have personal experience of such a venture to influence their decisions.

The case study introduces a business opportunity for using cut grass from lawns to be turned into animal fodder. Information was selected to cover different thinking preferences, misconceptions, self-efficacy, heuristics and biases as well as the respondents' risk perception, in an attempt to determine whether these have an influence on the entrepreneur's decision to start a business. The respondents made a decision on the viability or otherwise of the opportunity, whether to sell the concept or start the business or definitely not start the business. The respondents also needed to indicate at what stage of reading through the case they made the decision to start or not start the venture.

The case study was followed by an eight-page questionnaire (Appendix B) that was developed with structured questions to be completed by the respondents.

- Questionnaire design

The first step was to develop a questionnaire with structured questions to cover all constructs involved, namely:

- Misconceptions
- Business risk perception
- Illusion of control
- Self-efficacy
- HBDI thinking profiles–part of sample selection

The questions for self-efficacy were obtained from Markman, Baron & Balkin (2003: 103).

- Rating scale

A standard 7-point Likert scale (Cooper & Schindler 2001: 240) was used, in which 7 is good and 1 is poor.

- Testing of questionnaire

According to Sudman & Blair (1998: 300), there is always a chance that some questions could cause problems and questionnaire testing is needed to identify and eliminate these problems.

To identify and eliminate such problems, the questionnaire (in the pilot phase) was given to knowledgeable respondents in the field for testing. The questionnaire was then adapted and some unclear statements were changed or replaced.

The questionnaire consisted of positive and negative questions in order to ensure that no underlying weakness existed and to eliminate pattern forming on the part of respondents while completing the questionnaire.

- Data processing, basic analysis and evaluation of results

The case study and questionnaire were handed out in class (for students and trainees) to create a controlled environment. An hour was allowed for reading the questionnaire and answering the questions. The reason for the controlled environment was to create a “pressure situation” to ensure the respondents made use of their first thinking impressions to decide whether to start or not to start the proposed opportunity.

The entrepreneurs were grouped or dealt with individually.

The responses were captured directly from the questionnaire by data processors and imported into the SAS software package at the Department of Statistics at the University of Pretoria. Some basic calculations were made to check the reliability of the data.

The final analysis and cross-tabulations were then made.

- Response rate

The number of questionnaires handed out was 305, of which 300 could be used. One was defaulted and 4 entrepreneurs did not complete the questionnaire. The response rate obtained was 98,7%.

- Editing and coding

According to Martins et al (1996), “editing entails a thorough and critical examination of a completed questionnaire in terms of compliance with the criteria for collecting meaningful data and in order to deal with questionnaires not duly completed”. All questionnaires, once received, were edited and checked for

completeness and accuracy. After questionnaires with missing and incomplete data had been discarded, 300 workable questionnaires were obtained.

Coding refers to the process whereby codes are assigned to the answers of respondents (Martin et al, 1996: 299). A coding frame was drawn up according to which every answer was coded in order to simplify the data capturing.

- Data transformations

Once the data has been entered it is almost always necessary to transform the raw data into variables that are usable in the analysis (Trochim 1997). The following transformations were performed in this study:

- Reversal items

Were used in the questionnaire in some instances to help reduce the possibility of a response set. In order for all scores for scale items to be in the same direction, the ratings were reversed for the specific items.

5.5 Validity and Reliability

According to Durrheim & Terre Blanche (2002: 83); Schindler & Cooper (2001: 210) and Des Vos, Strydom, Fouche & Delport (2002: 166), many forms of validity exist. The two major ones are external validity and internal validity. The ensuring of validity and reliability is a prerequisite for research data in order to circumvent possible shortcomings and pitfalls in research results (Ehlers 2000: 136). Each will be explored separately.

5.5.1 Validity

- Internal validity refers to the extent to which a test measures what it is intended to measure.

- External validity refers to the extent of generalisability of the results of a study across persons, settings or events.

5.5.2 Reliability

- In most contexts the notion of consistency emerges. Reliability is a necessary contributor to validity, but is not a sufficient condition for validity (Cooper & Schindler, 2001: 215). In other words, high reliability does not guarantee validity (Des Vos et al, 2002: 168).
- Reliability is concerned with estimates of the degree to which a measurement is free of random or unstable error.
- One of the most commonly used measures of reliability is the Cronbach alpha coefficient (Bagozzi 1994: 18), which provides a measure of internal consistency.

5.6 Statistical Analysis

The primary purpose of collecting data in any research is to answer questions. To be able to fulfil this obligation, data needs to be analysed and interpreted, in other words explained and given meaning.

In quantitative research, data analysis is normally used to refer to the process of breaking down collected data into constituent parts in order to obtain answers to research questions. According to Des Vos et al (2002: 223), data analysis involves the process of reducing data into intelligible and interpretable form so that the relations of research problems can be studied, tested and conclusions drawn. Data can be presented as descriptive statistics and inferential statistics.

Descriptive statistics is the method used to describe characteristics of a population or a sample. It therefore aims at describing data by investigating the distribution of scores for each variable and by determining whether the scores on

different variables are related to each other (Terre Blanche & Durrheim, 2002: 101). In other words, descriptive analysis allows the researcher to represent data in a manner that is easily interpretable. Frequency tables using percentages were used to display demographic data (see Tables 6.1–6.6).

Inferential (confirmatory) statistics was the method used to draw conclusions about the population itself. In other words, while the descriptive analysis allows the researcher to generalise from the sample to the population, inferential analysis allows the researcher to draw conclusions about the population on the basis of data obtained from samples (Terre Blanche & Durrheim, 2002: 117).

Based on the distribution of the descriptive statistics obtained from the study that showed a normal distribution, parametric analytic techniques were used to perform the inferential analysis. These included factor analysis, item analysis, ANOVA and discriminant analysis.

5.6.1 Factor Analysis

The term “factor analysis” was first introduced by Thurstone (1931) and is a generic name for a group of multivariate statistical methods whose primary purpose is to define the underlying structures of a set of variables and to reduce a set of variables, measures and items to a smaller set of common factors (Hair, Anderson, Tatham & Black, 1995: 366). It examines the relationship of each of a large series of variables to every other one, to determine which are highly correlated with others. The process ends with a reduced number or packages of variables (Blankenship & Breen, 1993: 266).

The main application of factor analysis techniques is, firstly, to reduce the number of variables and, secondly, to detect structure in the relationship between variables: that is, to classify variables. Therefore, factor analysis is applied as a data reduction or structure detection method. The most common market research application is principal component analysis (Sudman & Blair, 1998: 557), which is explained briefly.

The extraction of principal components amounts to a variance maximising (varimax) rotation of the original variable space. For example, in a scatterplot one can think of the regression line as the original x-axis rotated so that it approximates to the regression line. This type of rotation is called variance (variability) of the new variables (factor), while minimising the variance around the new variable (Statsoft, 1997).

According to Sudman & Blair (1998: 548), the key descriptive results obtained from a factor analysis are the eigenvalues and factor loadings, while in some instances factor scores are calculated.

When a satisfactory factor solution has been derived, some meaning is assigned to each factor, which involves substantive interpretation of the pattern of factor loading for the variables (Hair et al, 1995: 397). While all significant factor loadings are usually used in the interpretation process, it is suggested that, as a rule of thumb, one should ignore variables with loadings less than 0.50.

According to Sudman & Blair (1998: 549), the overall factor analysis can generally be considered effective if the total variance explained by the selected factors exceeds 70%. If this is not the case, it should be noted in the report.

The factor analysis done in this study determined the following factors:

- Business risk perception
- Illusion of control
- Misconceptions
- Self-efficacy
- Information used as determined by the HBDI quadrant scores

These factors are discussed in Chapter 6.

5.6.2 Statistical Modelling

Two statistical models were fitted to the data in order to make a prediction of the decision to start. The fitted models were:

- A linear discriminant model to predict the respondents who would start or not start the venture based on business risk perception and misconceptions
- A logistical regression model in order to predict the probability of respondents who would start or not start the venture based on the business risk perception and misconceptions

5.6.2.1 Logistical regression approach

A logistical regression approach is typically used to model a binary outcome variable (Start / Do not start). The following regression function was used:

$$\text{With } P(\text{Start}) = \frac{1}{1 + e^{-(\beta_1 + \beta_2 X_2 + \beta_3 X_3)}},$$

with

$\beta_1, \beta_2, \text{ and } \beta_3$ regression parameters measuring the impact of the explanatory variables on the probability of starting the business

X_2 , a measurement of the **misconception** construct

X_3 , a measurement of the **risk** construct

The estimated model is:

$$\hat{P}(\text{Start}) = \frac{1}{1 + e^{-(2.413 + 0.956 X_2 - 1.094 X_3)}} \quad (\text{p-value} < 0.0001),$$

yielding a classification table as discussed in Chapter 6.

5.6.2.2 Discriminant analysis

Discriminant analysis can be defined as a statistical technique for predicting the probability that an object will belong in one of two or more mutually exclusive categories (dependent variable) based on several independent variables.

Discriminant analysis in this study was performed to determine how well the determined factors (misconception and risk) could predict the decision to start the business. Self-efficacy and illusion of control did not contribute to the calculated function.

A discriminant analysis models the outcome variable (Start / Do not start) by estimating a linear discriminant function. The estimated discriminant function is then used for classification purposes. The following discriminant function was estimated:

$D = -1.688 - 0.920X_2 + 1.304X_3$, where positive values will classify an individual case in the Do not start group, and negative values will classify the individual in the Start group.

5.7 Objectives, outcomes and contributions of the research

5.7.1 Objectives and outcomes of the study

The primary objective of the study endeavours to investigate whether and how the decision to pursue a business opportunity is influenced by factors from the entrepreneurial cognition domain. Many authors (Mitchell, Shepherd, Simon and Houghton, to name only a few) are currently investigating the entrepreneurial cognition domain.

The major objective leads to the following secondary objectives:

- To contribute to the body of knowledge regarding the entrepreneurial cognition domain
- To investigate factors influencing the decision to start a new venture opportunity
- To develop an understanding of the specific factors contributing to the decision to start a new venture opportunity

The primary outcomes of this study are to establish strengths of relationships between (see Figure 5.1):

- Decision to exploit / start the new venture opportunity and
- Business risk perception
- Misconceptions
- Illusion of control
- Self-efficacy
- Information preferences as determined by HBDI.

The secondary outcomes of this study are:

- To determine whether HBDI preferences function as a heuristic
- To determine whether differences exist between the different constructs

5.7.2 Contribution of study

The study attempts to contribute to the following;

- The multidisciplinary view of the entrepreneur and the entrepreneur's role in new venture creation
- Gaining insight into the cognitive processes used by the entrepreneur in making the decision to start a new venture opportunity, based on findings from empirical research conducted
- The cognitive field and the already existing body of knowledge in the entrepreneurial cognition field, and in addition

- To empirically report on the relations that exist between the dependent variable, namely the decision to start, and the many factors that can influence the decision to start

The focus of the study was specifically on the entrepreneurs and the decision to start a new venture opportunity, as well as the cognitive processes used.

5.8 Conclusion

The chapter provided a description of the methodology applied in this study. It began by providing an overview of the research process, research questions, hypotheses and the sampling process. The measuring instruments used were specified and finally the type of data analysis was mentioned.

Chapter 6 will report the results of the empirical investigation.