CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

Marketing researchers and practitioners often make use of index construction as a means of measuring some hypothetical construct. There are several reasons for this. Firstly, despite the efforts of researchers to design studies that can provide valid and reliable measurements of variables, it is seldom possible to develop single indicators of complex concepts in advance. Consideration of several data items as a composite measure might therefore provide a more comprehensive and accurate indication of the construct being studied contributing towards the validity and reliability of measurement (Babbie, 2011:168). Secondly, data items that form the basis of an index are typically scaled or ordinal in nature. As such, an index variable takes advantage of any intensity structure that may exist among attributes. Thirdly, indexes are efficient at reducing data, as several inter-related items may be summarised in a single numerical score. Yet, despite these reasons, the application of index construction as a method of market segmentation seems to have been neglected in the field of marketing.

This study focuses primarily on this process, namely that of constructing an index as a means of measuring a hypothetical construct that can typically not be measured by a single question or item in a survey study and applying it as a method of market segmentation. This approach addresses a crucial focal point in any market segmentation study, namely that of identifying and selecting a relevant segmentation base that can differentiate successfully between segments (Lin, 2002:249). Ultimately, the role of market segmentation is to inform the development of a marketing strategy (Freathy & O'Connell, 2000:102), which contributes towards business success.

When considering the essence of market segmentation it seems quite simple in its rationale, namely to divide a diverse market into several homogeneous sub-markets (Lin, 2002:249) based on similar needs and buying behaviour, and which would be likely to respond very similarly to a particular marketing programme (Dibb & Wensley, 2002:234). Canever, Van Trijp and Van der Lans (2007:512) describe market segmentation as a process of matching the needs and wants of buyers, on the one hand, with the offerings of the business, on the other hand. This relates back to the economic school of finding equilibrium between the demand (of buyers) and the supply (of the business). This process should ultimately result in the accomplishment of the goals of both sides. Market segmentation is therefore regarded the same irrespective of the buyer or product (Dibb & Wensley, 2002:233). The key assumptions and intended outcomes of market segmentation hold for both business and consumer markets for two main reasons (Goller, Hogg & Kalafatis, 2002:256). Firstly, these markets consist of a diverse number of end-users. Secondly, because the application of products can vary considerably, buyers seek different product benefits.

However, despite being described as simple in its rationale, the process of segmentation is not necessarily easy, but requires a thorough and detailed understanding of the market (McDonald & Dunbar, 2004:xv). In addition, various considerations should be taken into account as part of the segmentation process, including that of defining the aim of performing market segmentation; defining the market; selecting of segmentation variables and a suitable segmentation approach; and determining the research design.

The literature provides ample examples of variables used as bases or descriptors in segmentation studies (Canever *et al.*, 2007:512; Ferrell & Hartline, 2005:142; Lin, 2002:250; McDonald & Dunbar, 2004:185; Weinstein, 1994:159). However, these variables do not always provide in the necessary descriptions required by marketing practitioners. This results in researchers defining and developing new constructs for measurement. Leedy and Ormrod

(2010:92) refer to a construct as a variable that cannot be directly observed, but is assumed to exist, based on some pattern of behaviour or combination of characteristics.

Secondary data gathered during 2009 amongst commercial farming businesses in South Africa by an independent research house, provided recent data to illustrate the process and application of index construction as a method of market segmentation. The commercial farming market is therefore regarded incidental within the specific context of this study. However, it is believed that numerous other opportunities exist across different business markets where similar processes of index construction and segmentation can be applied.

1.2 PROBLEM STATEMENT

Market segmentation is regarded essential by marketing practitioners amongst other for targeting, proposition development, price formulation and developing of mass communication (Bailey, Baines, Wilson & Clark, 2009:227). However, tension exists between theory and practice in the field of market segmentation, with many marketers expressing concern about implementation and the integration of segmentation into marketing strategy (Dibb & Simkin, 2009:219). To address this, priorities in the area of future segmentation research include the selection and incorporation of new variables into segmentation models, as well as developing new and innovative segmentation strategies (Dibb & Simkin, 2009:222).

A specific area of segmentation development that has been neglected in the academic literature but holds particular pragmatic relevance for marketing practitioners is the process of index construction as a method of market segmentation. The vast array of possible variables available for segmentation purposes often complicates the process, particularly in cases when these variables measure a single underlying construct. In addition, traditional external segmentation variables do not necessarily provide insight into buying behaviour, and as a result contribute little in the formulation of marketing strategies. Furthermore, segmentation studies often rely on a cluster-based approach, utilising data that are rarely well structured. This leads to different segment solutions when changes are made to the clustering algorithm. Replication of segmentation solutions becomes a challenge.

Alexander, Wilson and Foley (2005:113) note an additional challenge that agribusiness managers and salespeople face. While an understanding of current buying behaviour is valuable, this information becomes much more valuable if new or potential buyers can be classified by buying behaviour segment. Furthermore, classification rules are most useful if it is based on characteristics that can easily observe or elicit by asking a few key questions.

Lastly, an extensive search of leading electronic journal databases, including EBSCOHost, Emerald, Google Scholar, Proquest, ScienceDirect, SpringerLing and SA ePublications has also provided little evidence of academic efforts to investigate and illustrate this process and method of market segmentation.

The stated priorities in the area of future segmentation research, the gap in the academic literature as well as the limited pragmatic evidence of this process provides arguments for the need of this study.

1.3 PURPOSE STATEMENT

The purpose of this study is to investigate and illustrate the process of index construction as a means of measuring a hypothetical construct that can typically not be measured by a single question or item in a survey study and applying it as a method of market segmentation. This process is illustrated by the construction of a commercial farming sophistication index for South Africa and applying it as a method of market segmentation. While the commercial farming market and the availability of secondary data utilised should be regarded as incidental, it provides within the specific context of this study a relevant and recent quantitative basis to illustrate this process. Lastly, through all of this to assess the use of index construction as a market segmentation method.

1.4 RESEARCH OBJECTIVES

The following research objectives guide the study:

- To investigate the process of index construction as a means of measuring a hypothetical construct that can typically not be measured by a single question or item in a survey study and applying it as a method of market segmentation.
- To illustrate this process by means of constructing a commercial farming sophistication index for South Africa and applying it as a method of market segmentation.
- Through all of the above, to assess the use of index construction as a market segmentation method.

1.5 IMPORTANCE AND BENEFITS OF THE STUDY

This study contributes to the academic literature by addressing important priorities in the area of future segmentation research, namely that of investigating the application of new variables into segmentation models, as well as investigating new segmentation strategies. Incorporating innovative segmentation approaches, processes and methods that can improve one's understanding of the market is valued by marketing practitioners. This contributes towards realising the advantages of market segmentation, which are promoted extensively in the literature (Dibb, Stern & Wensley, 2002:113; Ferrell & Hartline, 2005:134; Freathy & O'Connel, 2000:102; Goller *et al.*, 2002:263; McDonald & Dunbar, 2004:34). These include homogenising market heterogeneity, improving an understanding of buyers, the identification of new market opportunities, better allocation of business resources and skills, and improved performance and competitive advantage.

From a practical perspective, understanding how such a method of segmentation can be applied holds significant value for researchers and marketing practitioners that will be engaging in future segmentation studies.

It also contributes towards applying a new and creative segmentation base that offers more discriminating power in explaining market behaviour, than the often very limited explanatory value offered by traditional external variables. In addition, offering rules to construct such a new and creative segmentation base that is based on characteristics that can easily be observed or elicited by asking a few key questions, hold significant value for conducting future segmentation studies.

Furthermore, illustration of the process also has wider application value in other business-to-business markets, locally and internationally, where index variables can be constructed from both primary and secondary sources and used as a method of segmentation following a similar multi-step approach proposed in this study.

Lastly, despite commercial farming businesses being an incidental market focussed upon in this study to illustrate the process under consideration, the construction of a commercial farming sophistication index and presenting of rules for segment formation holds significant immediate and practical value for marketing practitioners and input suppliers that plan to conduct market segmentation studies where commercial farming businesses are targeted.

1.6 RESEARCH RESOURCES AND METHODS

To investigate and illustrate the process of index construction as means of measuring a hypothetical construct and applying it as a method of market segmentation, this study utilised secondary data that were originally gathered during a survey in 2009 by an independent market research organisation amongst a sample of commercial farming businesses in South Africa. A structured questionnaire was used as data gathering instrument. From the questionnaire, items were identified that on face value were believed could contribute to constructing a particular index of commercial farming sophistication. In the context of this study the availability of the data, as well as the original questionnaire used and sampling frame targeted during the survey, are therefore considered incidental and serves solely to illustrate the process of index construction as a method of market segmentation.

A sample of 876 was derived from the 2009 study, and used in the subsequent analysis. This sample size was judged to be sufficiently large enough given guidelines from the literature when embarking on index construction.

The quantitative approach that was followed in this study is supported by other research projects that have also employed similar underlying approaches for index construction (African Response, 2006:20; Jensen, Krishan, Spittal & Sathiyandra, 2003:79; South African Advertising Research Foundation, 2009:92). More importantly, these studies have all applied index construction as a method of market segmentation.

This study followed a multi-step approach in the construction of the commercial farming sophistication index, namely: (1) Selection of items and definition of variables that are most likely to be indicators of commercial farming sophistication; (2) combining of variables into an index; and (3) segmentation and index validation. The research design and methods will be discussed in more detail in Chapter 4.

1.7 STUDY DELIMITATIONS AND ASSUMPTIONS

The delimitations and assumptions that relates to this study is discussed in the sections that follow.

1.7.1 Delimitations

This study has several delimitations relating to its context, constructs and theoretical perspectives. Firstly, the study's literature review is primarily limited to literature from the discipline of market segmentation. Literature from related disciplines, such as strategy development and strategy implementation has only been consulted in passing.

Secondly, the primary purpose of this study is to investigate and illustrate the process of index construction and applying it as a method of market segmentation. Though numerous different indices can be constructed to illustrate this approach, this study considers the process of constructing a commercial farming sophistication index utilising accidental secondary data available that was originally gathered in 2009. The construct of commercial farming sophistication can be generally conceptualised as the relative degree of complexity of structures, systems, strategies and practices employed across various functional areas in a commercial farming business.

Thirdly, the literature makes reference to various approaches and methods that can be followed to construct an index as a means of measuring some hypothetical construct. This study followed a multi-step approach that was adopted from that followed in the construction of the African Response Business Sophistication Measure (BSM), namely: (1) Selection of items and definition of variables that are most likely to be indicators of commercial farming sophistication; (2) combining of variables into an index; and (3) segmentation and index validation.

Fourthly, while various statistical techniques can be considered to derive or construct an index, this study employed principal component analysis as part of the process. This technique is similar to that used during the construction of the African Response BSM.

Fifthly, this study it is not concerned about measuring the relationship – be it direct, or as a moderating influence – between the levels of business sophistication and performance, although this relationship is hypothesised in the literature (Hahn, 1999:20).

Lastly, the original data were gathered by means of a structured questionnaire and a mail survey. From this secondary data were derived, which provided a relevant quantitative base that could be used for the construction of the commercial farming sophistication index. It is acknowledged that numerous other possible questions could be formulated and considered as potential predictors of commercial farming sophistication, however, the availability of the secondary data and items derived are considered incidental in the context of this study.

1.7.2 Assumptions

The following basic assumptions underlie the research study. It is assumed that:

- Commercial farming sophistication is a hypothetical but measurable construct that can be measured in the form of an index.
- The process of index construction as a method of market segmentation can be investigated and illustrated through the construction of a commercial farming sophistication index.
- The secondary data derived from the 2009 MSSA study, despite being considered incidental in the context of this study, provide a relevant

measurement base that could be used for the construction of a commercial farming sophistication index.

1.8 DEFINITION OF KEY TERMS

This study involves a number of key concepts. The manner in which these key terms are defined for the purpose of this study is considered below.

Business sophistication: Business sophistication can be generally conceptualised as the relative degree of complexity of structures, systems, strategies and practices employed across various functional areas in a business.

Commercial farming sophistication: Building on the definition of business sophistication, commercial farming sophistication can be generally conceptualised as the relative degree of complexity of structures, systems, strategies and practices employed across various functional areas in a commercial farming business.

Commercial farming business: For this study, the definition of Statistics South Africa is used, namely: any farming business within the boundaries of South Africa that produces agricultural products intended for the market (Statistics South Africa, 2007:19).

Index: Babbie (2011:68) notes that a single data item sometimes only gives us a rough indication of a given variable, while the consideration of several data items might give us a more comprehensive and accurate indication. Index variables are composite measures of variables; and they are typically scaled or ordinal in nature. In other words, index variables take advantage of any intensity structure that may exist among attributes.

Market: A market is a collection of buyers and sellers (Ferrell & Hartline, 2005:134).

Market segmentation: Although a number of definitions of market segmentation are referred to in the literature, this study views market segmentation conceptually as a process that aims to homogenize a heterogenic market by identifying market segments that are similar with regard to particular characteristics, be these behaviour, demographics, needs or any other, but distinctly different between the segments. It is also anticipated that buyers within a segment would respond similarly to a particular marketing mix, leading to more effective allocation of a business's resources and thereby to an increase in competitive advantage.

Table 1 shows a list of the acronyms used in this document.

Table 1: Acronyms used in this document

Abbreviation	**Meaning**
AMPS	All Media and Products Survey
ANOVA	Analysis of variance
B-to-B	Business to business
B-to-C	Business to consumer
BSM	Business Sophistication Measure
CFA	Confirmatory factor analysis
ELSI	Economic Living Standard Index
ha	Hectare
ICT	Information and Communications Technology
IT	Information technology
KMO	Kaiser-Meyer-Olkin
LSM	Living Standards Measure
PC	Personal computer
SAARF	South African Advertising Research Foundation
VAT	Value added tax

1.9 STRUCTURE OF THE THESIS

Chapter 1 provides an introduction to the study by presenting the background, problem statement, purpose statements, research objectives, the importance and benefits of the study, the delimitations and assumptions, as well as the definitions of key terms.

Chapter 2 provides a focused review of the literature pertaining to the theoretical foundation of market segmentation.

Chapter 3 provides a review of the literature on index construction. Specific attention falls on the processes that have been followed in past studies moving from index constructing to applying it as a method of market segmentation.

Chapter 4 provides a discussion of the research design and methods employed, including source of data, sampling and details of the data analysis plan.

Chapter 5 presents the results derived from the analysis of the secondary data, index construction and market segmentation.

Chapter 6 offers conclusions emanating from the research findings. The implications that the findings hold for researchers and marketing practitioners are discussed. Areas for future research are noted.

CHAPTER 2: MARKET SEGMENTATION

2.1 INTRODUCTION

This study focuses primarily on the process of index construction as a method of market segmentation. This process is illustrated by making use of the availability of incidental, but recent and valid secondary data to construct a commercial farming sophistication index for South Africa and using the index to segment the market. Investigating and assessing this process contributes towards the value of what a market segmentation logic can offer the marketing theory. As such, it is deemed important to first establish and review the foundations of market segmentation by reflecting, amongst other issues, on the various definitions, what a market segmentation logic could offer marketing theory, the processes involved, the antecedents, the key success factors, various approaches, and some typical bases of market segmentation.

2.2 MARKET SEGMENTATION AS PART OF MARKETING MANAGEMENT

Marshall (in McDonald & Dunbar, 2004:xi) postulated that to know your market is one of the abiding principles of sound business practice. The use of market segmentation, as part of the strategic marketing process, is however not new (Freathy & O'Connell, 2000:102); and it has been widely used in practice by businesses as part of their marketing management process (Dibb, 2005:13; Ferrell & Hartline, 2005:134; Freathy & O'Connell, 2000:102; Lin, 2002:249). The extensive use and application of market segmentation in the market demonstrate its importance and value as being an integral part of marketing management. In fact, Dibb (1998:394) noted that market segmentation has even been described as the panacea, or cure-all, of modern marketing.

McDonald and Dunbar (2004:14) emphasised the importance of market segmentation, as part of marketing management, by arguing that together with a correct definition of the market and the subsequent product and service positioning, it forms three of the fundamental determinants of corporate success.

For the majority of businesses operating in competitive markets, consistently meeting the needs and wants of clients and buyers is a daunting task. This is, furthermore, complicated by having limited resources and skills, thereby restricting the abilities to pursue a broad-based marketing perspective. Market segmentation provides a process of combining groups of buyers into larger buying units, which makes the marketing activities of companies both cost-effective and manageable (McDonald & Dunbar, 2004:xv).

In other words, market segmentation provides a means of homogenising a diverse market (Dibb, 2005:13). The essence of market segmentation is, therefore, quite simple in its rationale, namely, to divide a diverse market into several homogeneous sub-markets (Lin, 2002:249) – based on similar needs and buying behaviour, and which would be likely to respond very similarly to a particular marketing programme (Dibb, 1999:108).

However, despite being described as simple in its rationale, the process of segmentation is not necessarily easy; it requires a thorough and detailed understanding of the market (McDonald & Dunbar, 2004:xv), which includes the selection of relevant segmentation bases and descriptors (Lin, 2002:249).

According to Dibb and Simkin (2009:220), Wind's (1978) seminal review of research in market segmentation culminated in a research agenda for the subject area. Four main priority areas were mentioned, namely: the development of segmentation bases and models across varied products and contexts; the development of more relevant research methodologies and in particular in relation to data requirements and collection methods; the development of advanced and flexible statistical analysis tools; and lastly, the development of new conceptualisations of the segmentation problem, integrating segmentation research into strategic decision-making, and evaluating its effectiveness.

The development of a particular segmentation base forms a focus element of this study, with the emphasis falling more specifically on the process of index construction as a method of market segmentation.

2.3 DEFINING MARKET SEGMENTATION

Since first being introduced in the literature by Frederick more than 75 years ago, the concept of market segmentation has seen growing importance amongst marketing practitioners (Goller *et al*., 2002:252). Looking even further back, the underlying principles of market segmentation are rooted in the theory of economic pricing, which suggests that price discrimination could be used to maximise profits amongst different buyer groups (Quinn *et al.*, 2007:440). However, the seminal paper by Smith (1956) is widely acknowledged as having firmly introduced the concept of market segmentation to the marketing domain (Quinn *et al.*, 2007:440).

A number of authors have proposed definitions of market segmentation, most of which bear a similar underlying understanding of the process. Smith (1956:6) noted that “market segmentation consists of viewing a heterogeneous market (one characterised by divergent demand) as a number of smaller homogeneous markets in response to differing product preferences among important market segments”. Ferrell and Hartline (2005:135) define it as a process that divides a total market into a number of smaller, more homogeneous submarkets, termed market segments.

Foedermayr and Diamantopoulus (2008:223) define it as the process of subdividing a market into distinct subsets of buyers who all behave in the same way or have similar needs. Lin (2002:249) states that a market segment is a group within a market that is assumed to be quite similar in their needs, characteristics and behaviours.

Freathy and O'Connell (2000:102) postulate that the credibility of market segmentation is based on two key assumptions. The first of these assumptions is conceptually aligned to that which is generally proposed by the authors mentioned above, namely that buyers can be grouped into segments that display homogeneous preferences when compared with the other segments. The second assumption, however, addresses an outcome-related aspect of market segmentation, namely, that returns which emanate from the process are likely to be greater when companies match their products and marketing mixes to particular segments within the market.

Canever *et al.* (2007:513) also made mention of this latter aspect, noting that segmenting a market implies that various segments could be distinguished. This allows a business to select one or more segments to target. The fundamental requirement is to formulate relevant marketing strategies and mixes, which are tailored to the needs and wants of each of the segments targeted. According to Canever *et al.* (2007:513), this process of segmenting, targeting and positioning "has been shown to improve a seller's capacity to identify market opportunities, and to make fine adjustments to their products, prices, distribution channels and promotional mixes."

Comparing the noted definitions with the one originally formulated by Smith (1956:6), it is evident that market segmentation is conceptually a process that aims to homogenize a heterogenic market by identifying market segments that are similar with regard to particular characteristics, be these behaviour, demographics, needs or any other, but distinctly different between the segments. It is also anticipated that buyers within a segment would respond similarly to a particular marketing mix, leading to more effective allocation of a business's resources and thereby to an increase in competitive advantage.

In essence, segmentation may be viewed as a means of imposing a structure on the market, in order to simplify the formulation and implementation of marketing strategies (Dibb, 1999:107).

Smith's (1956) rationale for market segmentation was based on the matching of changing market needs on the demand side, with more precise adjustments of products and marketing needs on the supply side of a market (Quinn *et al.*, 2007:440). This rationale again confirms the strong link that the concept of market segmentation has with macro- and micro-economic principles. According to Smith (1956:4), a lack of homogeneity on the demand side of the market may be based on different behaviour, habits, desire for variety, or desire for exclusiveness or differences in user needs.

While the various definitions of market segmentation describe it as a means of homogenising a diverse market (Dibb, 2005:13), it is this process that puts companies in a position to more effectively manage their resources and marketing efforts. The subsequent positive outcomes and returns evident from the market segmentation process therefore provide the rationale for arguing its importance as a critical part of the strategic marketing-management process.

The consequences resulting from the process of market segmentation include aspects, such as a better understanding of the market (Dibb, 1998:394), assistance in the designing of more suitable marketing strategies and programmes (Canever *et al.*, 2007:513; Dibb *et al.*, 2002:113; Quinn *et al.*, 2007:440), helping businesses focus on those buyers that have the greatest chance of being satisfied, as well as identifying new marketing opportunities (Dibb, 2005:14; Quinn *et al.*, 2007:440), and the more effective allocation of financial and other resources (McDonald & Dunbar, 2004:55; Quinn *et al.*, 2007:440).

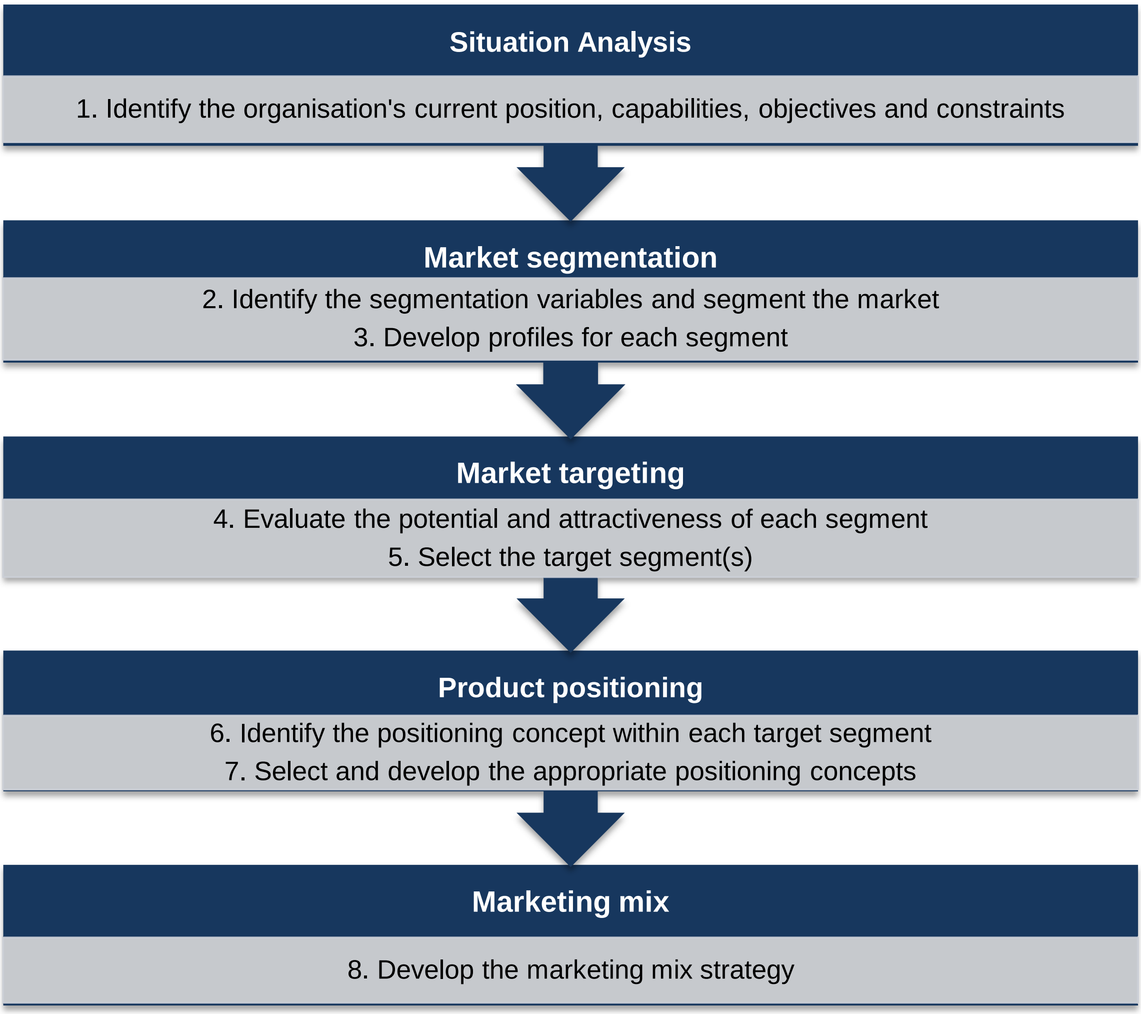
2.4 THE MARKET SEGMENTATION PROCESS

Marketing practitioners are faced with the challenge of serving an often diverse buyer market. The development of a marketing strategy is, therefore, aimed at designing a marketing mix and marketing actions to serve identified segments (Ferrell & Hartline, 2005:134). Actions, for example, include the choice of brand profile to be offered to the various segments (Mazanec & Strasser, 2000:11), as well as the tailoring of existing services and products.

Mazanec and Strasser (2000:11) are, however, adamant that segmentation and positioning decisions should be interrelated and cannot be optimised independently of each other. These two decisions are strategic in nature and precede action planning for individual marketing instruments, such as designing promotional messages or choosing advertising media and distribution channels (Mazanec & Strasser, 2000:11).

The market segmentation process is described by Noel (2009:113) as a conceptual and analytical process that is critical for developing and implementing effective market strategy. In addition to this, the segmentation process, together with targeting and positioning are regarded by many authors as the essence of strategic marketing (Cant, Strydom, Jooste & Du Plessis, 2006:104). Eight stages are distinguished by Cant *et al*. (2006:104) along the segmentation, targeting and positioning phases. These are listed in Figure 1. A situation analysis provides a basis for identifying the current position, capabilities, objectives and constraints of the business. This stage is followed by market segmentation, which includes identifying those variables needed to segment the market. For each segment a profile is henceforth developed. Next the potential and attractiveness of each segment are evaluated as part of market targeting. Based on this evaluation, a single segment or a number of segments are selected. Product positioning follows and comprises of identifying, selecting and developing positioning concepts for each target segment. Lastly, a marketing mix strategy is developed.

Figure 1: Eight stages along the segmentation, targeting and positioning phases (Cant *et al.*, 2006:104)



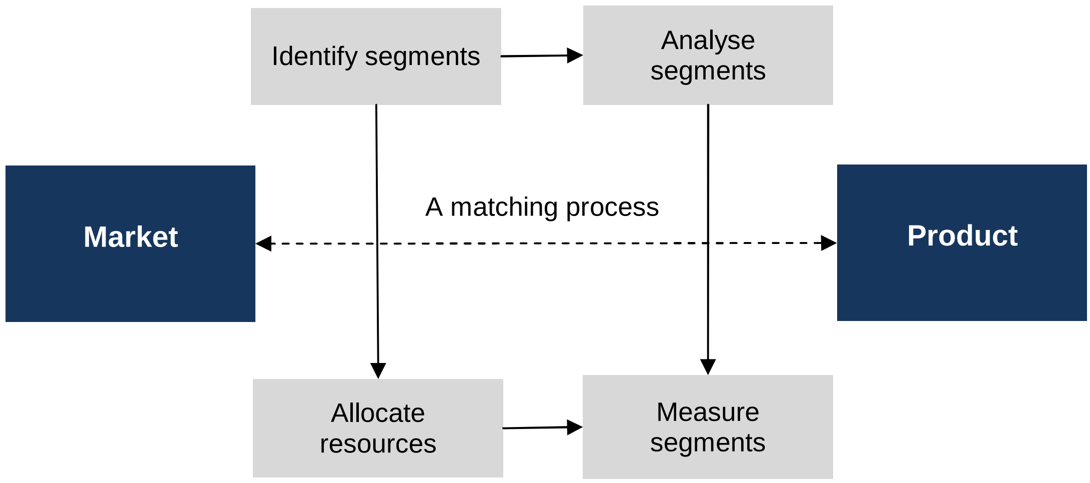
Danneels (1996:36) and Canever *et al.* (2007:511) acknowledge very similar processes as Noel (2009:114). Danneels (1996:36) lists market segmentation as the first step, followed by a decision on which segment or segments to target. Lastly, a suitable marketing strategy must be developed, in order to position the product and service offering of the business in the market. Canever *et al.* (2007:511) remark that current marketing practice first proposes an investigation of the customers' needs, and then segmenting them in groups with similar needs.

This is followed by the targeting of segment(s) with differentiated products and services.

Quinn *et al.* (2007:445) present segmentation as part of the process linking the market with the product offering and *vice versa*. This process is shown graphically in Figure 2. In order to inform the specific adaptation of product and marketing efforts, the process begins with the identification of the different market segments. This is followed by a review of the profitability of each segment. Volumes of sales, market shares, brand awareness and other relevant indicators can be used as part of this step.

Lastly, those segments judged to be the most attractive – given the effectiveness of the anticipated resource allocation – are targeted.

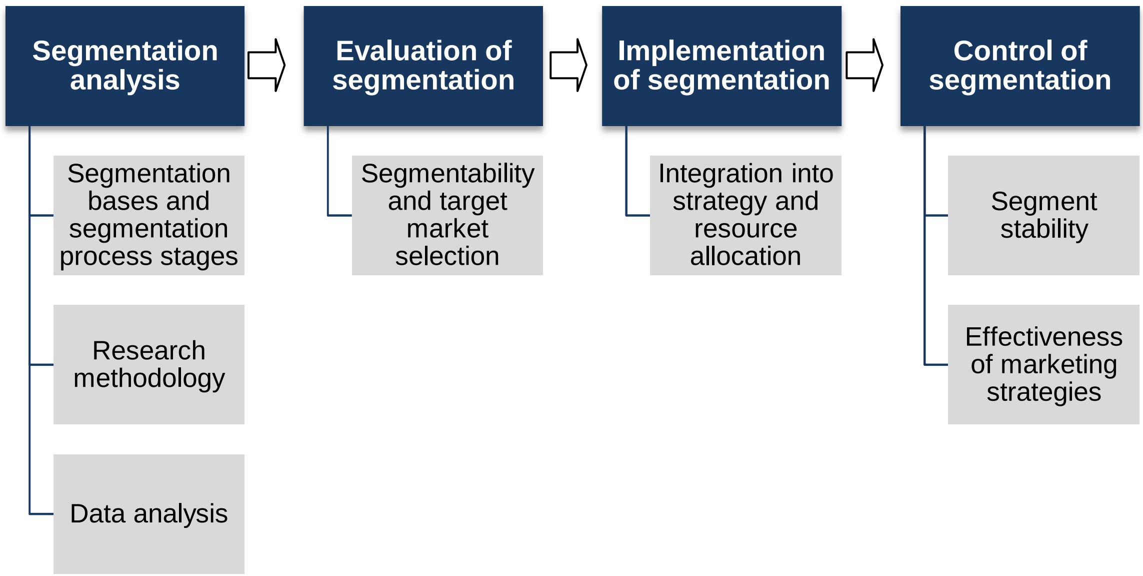
Figure 2: A summary of the strategic segmentation process (Quinn *et al.*, 2007:445)



Dibb (2005:14) indicates that segmenting involves the grouping of customers into segments, based on similar needs, wants and characteristics. Targeting involves an evaluation of the relative attraction of the segments, and then deciding where the resources should be allocated. The last step involves the development of a marketing mix that can meet the needs and requirements of the targeted segments.

Goller *et al.* (2002:254) propose an integrated framework of business segmentation, consisting of four main phases as part of the segmentation process. These phases are: segmentation analysis, evaluation of segmentation, implementation of segmentation, and lastly, the control of segmentation. This process is shown graphically in Figure 3.

Figure 3: Framework for business segmentation (Goller *et al.*, 2002:254)



Segmentation analysis consists of all the activities involved in dividing a heterogeneous market into homogeneous sub-markets. The selection of segmentation bases, research methodologies, as well as data analysis plans constitutes important pillars of the segmentation analysis.

The evaluation of the segmentation looks at the effectiveness of the segmentation procedure. Effectiveness is determined against various segmentation criteria, which include measurability, substantiality, accessibility and actionability. These are discussed in more detail in Section 2.6. Target-market selection criteria are mostly associated with strategy drivers, in other words, key factors that determine the choice of a strategy. These would include: segment size and growth, expected market share, compatibility with the business's objectives, as well as resources.

Goller *et al.* (2002:263) postulate the existence of three levels of implementation of segmentation, namely: the strategic, the managerial, and the operational. Strategic segmentation is concerned with the choice of those industry markets that are compatible with the core competencies of the business. Managerial segmentation is concerned with the identification of sub-industries within markets. Operational segmentation is concerned with the targeting of sub-markets with marketing programmes.

Lastly, Goller *et al.* (2002:264) identified two specific issues relating to the control of segmentation. The first issue deals with the monitoring of segmentation in terms of segment stability, in other words, the degree to which segments remain homogeneous over time on one or more key characteristics that define the segment. And secondly, exerting control by monitoring market effectiveness in the various segments.

McDonald and Dunbar (2004:56) present the process of market segmentation consisting of seven steps. Step one to five deals with the development of segments and is regarded as a first phase of the process. These five steps are furthermore grouped into three stages (stage one to three). Step six and seven deals with prioritising and selecting the correct segments and is regarded as phase two, comprising of only one stage (stage four). The process can be summarised graphically, as shown in Figure 4.

The first phase covers what they refer to as the essential steps that should be followed in developing a segment structure of the market. This applies to the whole market the business operates in and not just that portion of the market in which they are successful. In the first phase, three stages are distinguished.

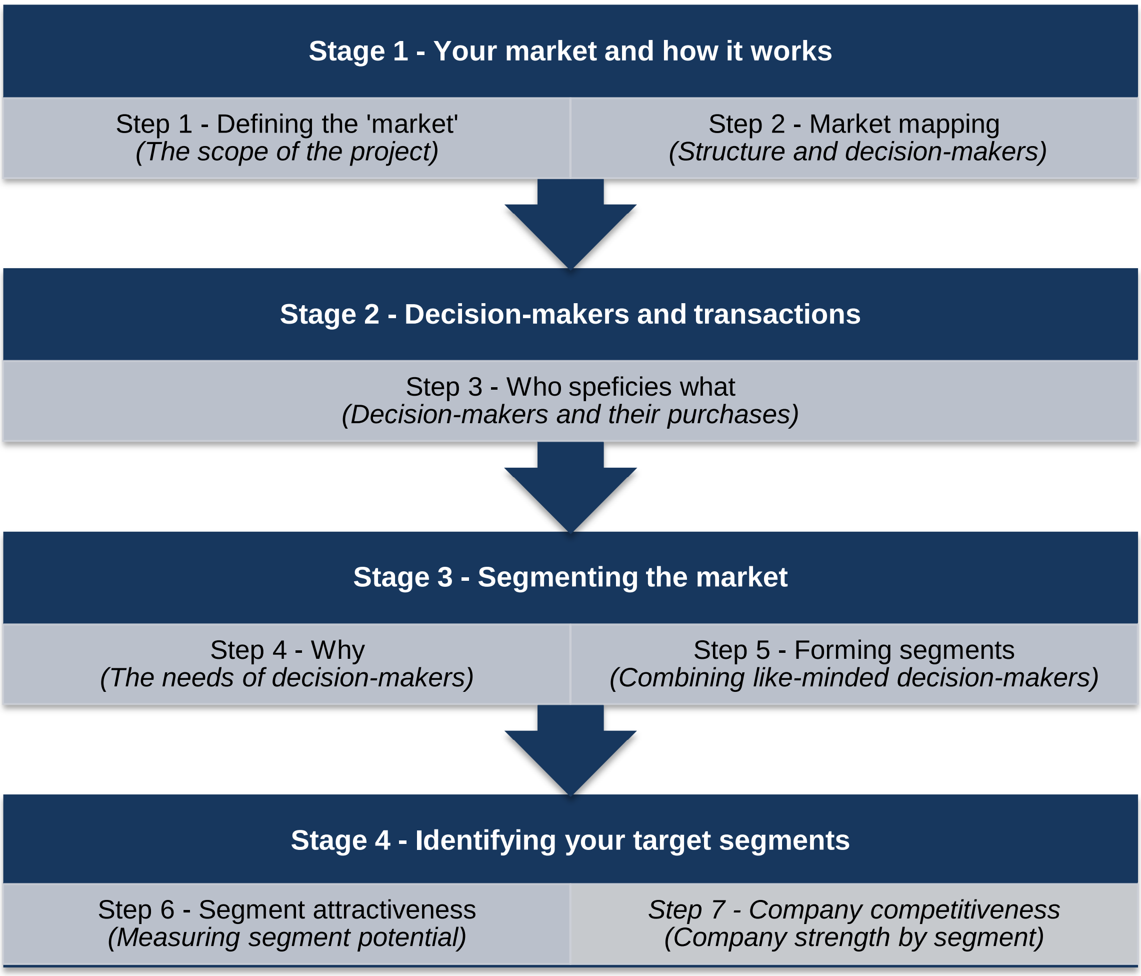
The first stage involves gaining an understanding of the market, and how it works. Step one in this stage is to define the market; with step two the mapping of the market. The latter step involves presenting the market as a diagram, mapping the flow of cash from the final end-users to the business and its competitors. Once this map is complete, it is then required to determine at which points along it decisions are made about competing products or services, as it is at these points that segmentation should occur.

The second stage comprises one step, namely, to look at the different buyers found at any of the decision-making points on the market map, as well as the transactions they make. This step forces the business to record the key features sought by the market. It is also during this step that information is recorded about buyers, which in turn may be used to identify them in the market.

The third stage consists of two steps: moving from the transactional view of the market to considering the reasons why buyers value certain features over others: in other words, when deciding between alternative offers. Once the actual needs of buyers are understood, their relative value can be assessed. The last step describes the actual techniques required for grouping similar buyers together into segments.

Phase two, namely prioritising and segment selection, can be broken down into two steps. Firstly, the criteria that the business will be using to determine the attraction of each segment are defined. Then, the relative importance of these criteria to each other is established; this is followed by a means of quantifying them. An overall attraction score is subsequently calculated and evaluated against how well the business can service these segments. By combining segment attraction with the relative competence of the business provides a strategic picture of the market, which can then be used for segment selection.

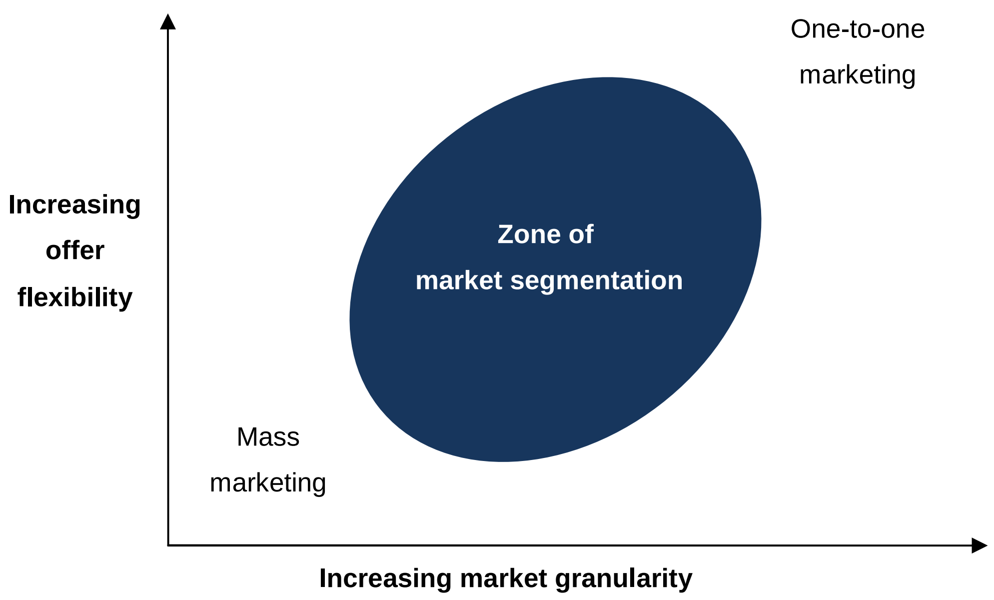
Figure 4: The seven steps in the market segmentation process (McDonald & Dunbar, 2004:56)



However, McDonald and Dunbar (2004:48) advise that a number of factors must be considered by a business before embarking on the stepwise process of market segmentation. The first relates to the degree to which a proposition can be tailored to meet the needs of all the different groups of buyers. This could range from offering a fixed product to one where each buyer is offered a unique product or service. Furthermore, the degree of resource flexibility of the business should also be evaluated. For example, businesses with large fixed/capital assets might be limited in the degree to which they can adjust to market needs, which makes segmentation less operational.

The second consideration relates to the issue of market granularity. This is the degree to which buyers' needs and motivations differ within the defined market. This could range on a continuum from being totally homogeneous on one end of the scale, to being totally heterogeneous on the other end. The potential for market segmentation lies then, according to McDonald and Dunbar (2004:49), in the space between increasing offer flexibility and market granularity. This space is presented in Figure 5.

Figure 5: Area of potential for market segmentation (McDonald & Dunbar, 2004:49)



The third and last consideration mentioned by McDonald and Dunbar (2004:49) relates to business factors. These include:

- Geographic location;
- Functions such as, but not limited to, finance, research and development, human resources and marketing;
- Products;
- Markets; and
- Channels.

The business needs to take cognisance of these factors, and to ensure that the business structure is able to accommodate and facilitate market segmentation.

In summary: from the literature, it is therefore evident that various considerations can be identified as part of the segmentation process. These are:

- Defining the aim of performing market segmentation;
- Market definition;
- The selection of segmentation variables (base and descriptors);
- The selection of segmentation approach;
- Determining the research design;
- Identifying the units of analysis;
- Sampling design
- Selecting the data-collection method;
- Segment identification;
- The selection of the target segment; and
- Positioning.

The next sub-sections provide more detailed reflections on these considerations.

2.4.1 Defining the purpose of market segmentation

The first consideration involves clarifying the aims and objectives of performing market segmentation. Yankelovich and Meer (2006:125) postulate that different segmentations are needed for different purposes. According to these authors, one of the common errors that marketers make is applying segmentations designed to address on one kind of issue to some other purpose for which they were not designed. It is therefore important to take cognisance of the questions asked by management or the decisions they need to make, be it about advertising, product innovation, pricing, choice of distribution channels, and the like. Addressing the specific information needs of management will guide the gathering of relevant data needed for the segmentation exercise. Difficulty also arises when there is a lack of distinction between segmentation for operational and strategic levels and the effect strategic and operational levels have on managers and their efforts to implement the segments (Clarke & Freytag, 2008:1024). These aspects should, where possible, be addressed during the early phases of embarking on market segmentation.

For Sausen, Tomczak and Herrmann (2005:151) the objective of performing market segmentation deals directly with the strategic importance of market segmentation in a business. They regard strategic market segmentation as the intention "...to ensure that the objective of market segmentation is consistent with the firm's overall business and marketing strategy".

At the same time, it ensures that a business's operational capabilities in marketing, sales and market research would be able to fulfil the strategic intention of market segmentation. Therefore, strategic market segmentation could be considered as the glue between the business marketing strategy of the business and the operational segmentation. It should ensure a fit between the segmentation objectives and a business's competencies, facilitating a successful implementation of market segmentation. (Sausen *et al.*, 2005:152). The aim of market segmentation should therefore be to align it with the strategic goals of the business, with a consideration of the availability of resources and skills.

From the literature it is evident that the intention of segmentation can be related to strategy development, to new product and service decisions, or to the existing products and services. The first intention, namely, that of strategy development involves the identification of new target markets. The second intention, namely product and service decisions, pertains to aspects, such as design, pricing, distribution and advertising. The last intention is concerned with the alteration and adaptation to existing product and service offerings (Sausen *et al.*, 2005:157).

2.4.2 <u>Defining the market</u>

One of the more crucial decisions that marketers face in the crafting of a market segmentation strategy is that of defining the market (Foedermayr & Diamantopoulus, 2008:248). McDonald and Dunbar (2004:74), therefore, advise that a meaningful balance should be struck between a broad and a manageable market definition. A too-narrow definition might restrict the range of new opportunities segmentation could identify, while a too-broad definition might result in overwhelming the segmentation exercise.

Emerging from this, a market should integrate several dimensions, such as buyer needs, buyer groups, competition, products and technologies. It should not simply be viewed in terms of a specific geographical area, product, industry, state-of-action or state-of-mind.

Weinstein (2006:115) also acknowledges the importance of establishing a clear definition of the market. Without a precise definition of the market, segmentation and positioning cannot be adequately implemented. A prerequisite for accurately defining the market is a clear understanding of the markets in which a business competes. In other words, the definition should be meaningful to the business. However, Hamel and Prahalad (in Weinstein, 2006:115) state that it is often difficult to precisely define where an industry begins and ends.

In addition, many untapped opportunities that exist in the market are based on buyer types that have not yet been served, or which have not been clearly articulated.

2.4.3 Selection of segmentation variables

A third consideration, as part of the segmentation process, involves the selection of relevant segmentation bases and descriptors (Lin, 2002:249). Bases are regarded by many researchers as dependent variables, and descriptors as independent variables. These variables guide the grouping of buyers with similar needs and characteristics into segments (Dibb, 2005:13).

The selection of base and descriptor variables is often complicated by the vast array of possible variables available for segmentation purposes (Tonks, 2009:341). This challenge is experienced by many marketing practitioners and researchers when conducting segmentation studies. Another reason is the underlying link between base and descriptor variables. Despite the identification of segments in the market derived from the base variables, descriptor variables do not necessarily contribute further in explaining the reasons for variation in segment behaviour; but they merely provide a profile of segment members. Part of this problem originates with the disjuncture between the strategic goals of the business and the selection of relevant variables to address the goals and objectives of performing a segmentation study (Sausen *et al.*, 2005:157; Yankelovich & Meer 2006:129). This could inhibit the formulation of effective marketing strategies.

Lastly, the availability of business records originating from day-to-day transactional activities or data that has previously been collected internally or externally could provide a platform for the definition and selection of segmentation variables. These data are known as secondary data; and they represent data that were originally collected for some other purpose (Saunders, Lewis & Thornhill, 2009:600), and then serve as identified and incidental sources for segmentation. Tustin, Ligthelm, Martins, and Van Wyk (2005:89) also list public and university libraries, government institutions – such as Statistics South Africa, specialist research institutes like the Unisa Bureau of Market Research, and the Internet – as other sources of secondary data.

However, in some instances, segmentation variables might be operationally defined in such a way that existing secondary sources do not provide relevant data that could be used for the segmentation study. A need therefore exists for the gathering of primary data.

2.4.4 Selection of a segmentation approach

Following a consideration of the aim of market segmentation, having defined the market, and selected the segmentation variables, the approach is now to divide the heterogeneous market into homogeneous sub-markets. From the literature, various approaches are identified. A review of the literature that was undertaken by Canever *et al.* (2007:513) showed that the a-priori scheme and cluster-based segmentation approaches are regarded as two major strategies used in practice. A combination of these two approaches is also widely used. Both the a-priori and cluster-based approach follow a stepwise sequence. The next sub-sections, therefore, reflect more specifically on these two major approaches, as well as on combinations of these two approaches, given that this study, in particular, employed a cluster-based algorithm in facilitating the derivation of the index scores for measuring commercial farming sophistication.

2.4.4.1 A-priori segmentation

With this approach, the selection of a base or dependent variable for segmentation is determined in advance (Foedermayr & Diamantopoulus, 2008:252). The number and type of segments are, therefore, also known in advance. The decision is mainly based on judgement, prior experience and/or on an analysis of the secondary data. Such an analysis could include the employment of basic statistical tools for data analysis, such as sorting and cross-tabulation.

Freathy and O'Connell (2000:103) refer to this as selecting base variables on a macro-level, such as geographical location or industry type. This approach can assist marketing practitioners; for example, targeting a specific group of potential buyers or decision-makers. According to Canever *et al.* (2007:513), the advantage of adopting this approach lies in its conceptual simplicity and limited methodological demands (Goller *et al.*, 2002:259). However, a disadvantage is that it often relies on descriptive factors rather than on specifically identifying causality. This, according to Canever *et al.* (2007:513), restricts the predictability with respect to purchasing behaviour.

Wind (1978:321) identified seven steps in the a-priori approach. These steps have much remained relevant in current segmentation studies. The steps are:

(1) Selection of the (a-priori) basis for segmentation;
(2) Selection of a set of segment descriptors (including hypotheses on the possible relationships between these descriptors and the basis for the segmentation);
(3) Design of the sample;
(4) Data collection;
(5) Sorting of respondents or sample units into segments;
(6) Conditional profiling of the segments; and
(7) The formulation of specific marketing strategies to target the segments.

Specifics on some of these steps are dealt with in more detail in Sections 2.4.5 to 2.4.9.

2.4.4.2 Cluster-based segmentation

The cluster-based segmentation approach is a popular method for exploring patterns in particular when dealing with complex populations (Franke, Reisinger & Hoppe, 2009:273). It differs from a-priori models only with respect to the way in which the basis for segmentation is selected. Instead of the a-priori defining of segmentation bases, the number and type of segments are determined post-hoc, with the formation of clusters of respondents or sample units – based on their similarities on some selected set of variables (Kalafatis & Cheston, 1997:521). Freathy and O'Connell (2000:103) refer to this as the selection of base variables on a micro-level. With regard to its extent of use by researchers and marketing practitioners, it is promoted as the most commonly used method to develop data-driven market segmentation solutions (Dolnicar & Lazarevski, 2009:360).

Foedermayr and Diamantopoulus (2008:252) note that the post-hoc approach can employ two methods of segment formation, namely: descriptive or predictive. Following a descriptive segmentation method, no distinction is made between dependent and independent variables because the aim is to identify the relations between the variables and the units of analysis. For example, this method would involve the grouping of buyers, according to similarities in business operational activities and/or purchasing behaviour.

On the other hand, a predictive method has as its objective the linking of a particular dependent variable to a set of independent variables. For example, linking the frequency of product use to a set of independent variables, such as industry or turnover levels, and then using the latter as segmentation criteria.

Advanced multivariate statistical techniques are often employed to assist in the formation of segments as part of this approach. Multivariate methods deal with the treatment of several variables simultaneously (Wiid & Diggines, 2009:240). Abeyasekera (2005:368) explains that when referring to multivariate techniques as "advanced", this is often associated with requiring a high level of statistical knowledge. The use of these techniques requires various decisions on the selection of a clustering algorithm, and the determination of the number of segments, in particular also if a descriptive or predictive method is used for segment formation. This method of segment formation is, however, in contrast with the views of market segmentation pioneers, as many researchers today acknowledge that data market segments are more often constructed than truly revealed (Dolnicar & Lazarevski, 2009:361). The reason is that the data are rarely very well structured, which can lead to different segment solutions when changes are made to the clustering algorithm. The more structured the data, the more similar repeated calculations of segmentation solutions with the same numbers of clusters. Dolnicar and Lazarevski (2009:361) therefore note that while the strategy of clustering may be structure-seeking, its operation is one that is structure-imposing. A successful segmentation exercise using cluster analysis therefore lies with recognising when segment groups are a true reflection of the market and not merely imposed on the data by the method.

Nonetheless, cluster-based segmentation is often considered more useful than a-priori segments, due to its ability to more directly reveal the attitudes, perceptions and behaviour portrait by buyers, including individual decision-makers within business and industrial markets (Canever *et al.,* 2007:513; Foedermayr & Diamantopoulus, 2008:252). More specifically, post-hoc predictive techniques allow for both simultaneous prediction and classification. With these advantages, however, comes the disadvantage that it is more difficult to apply (Canever *et al.*, 2007:513), and requires in some cases the collection of primary data, which is methodologically more demanding (Goller *et al.*, 2002:259).

Sections 2.4.5 to 2.4.9 address more specifically some of these considerations.

2.4.4.3 Sequential segmentation method

The combination of an a-priori segmentation approach with cluster-based segmentation models is also an option available to marketing practitioners. For example, buyers can first be grouped-based on the extent of product purchased or usage, in other words, heavy, medium and light users. This would constitute a-priori segmentation. Users within these a-priori formed segments could then be further clustered, based on some other relevant variables, such as brand perceptions.

Despite the conceptual attractiveness, the combination of approaches does require relatively large samples for analytical purposes. As noted in the previous section, the employment of any multivariate advanced statistical analysis in post-hoc segmentation requires various decisions about the selection of a clustering algorithm and the determination of the number of segments.

2.4.5 Determination of the research design

A fifth consideration is that of drafting an appropriate research design for the segmentation study. The formulation of the research design for a segmentation study is informed by the management requirements of the segmentation, the market definition, and the selection of segmentation variables, as well as the adoption of a particular approach. As noted in the previous section, different methodological demands are exerted, depending on the segmentation approach. For example, the use of base variables on a macro-level is considered less demanding, as it is based on judgement, prior experience and/or the analysis of secondary data (Goller *et al.*, 2002:259).

In contrast, following a cluster-based segmentation approach requires mostly the collection of primary data, as well as the employment of advanced multivariate statistical analysis in some instances. This is methodologically more demanding, however.

Saunders *et al.* (2009:136) refer to research design as the general plan of how to go about answering the research questions. In other words, it provides the blueprint for defining the units of analysis, sampling, data collection and the specific segmentation methods that are to be used, including any advanced statistical analysis techniques.

Foedermayr and Diamantopoulus (2008:225) evaluated the research designs employed in selective empirical segmentation studies, which they identified through a literature study. Nineteen studies were investigated. The research designs included: those that are exploratory in nature, descriptive and explanatory.

Saunders *et al.* (2009:139) describe exploratory studies as a valuable way of seeking new insights or assessing phenomena in a new light. This design, as found by Foedermayr and Diamantopoulus (2008:225), tended towards the gathering of qualitative data by means of in-depth interviews. Saunders *et al.* (2009:140) confirm that the gathering of qualitative data is common practice in this design. Of the 19 studies, eight were found to have employed this design approach.

The great advantage of this design is the flexibility and adaptability that it provides researchers, who must be willing to change direction, as a result of new data that appear and insights that might occur.

Of the 19 studies evaluated, five studies were descriptive by nature. This design was noted in the previous section as being one of the cluster-based segmentation methods, making no distinction between dependent and independent variables. Saunders *et al.* (2009:140) note that the objective of this type of design is to present an accurate profile of persons, events or situations.

Four of the 19 studies were found by Foedermayr and Diamantopoulus (2008:225) to have employed an explanatory design. This design aims to establish and explain causal relationships between the variables (Saunders *et al.*, 2009:140).

For the descriptive and explanatory studies, predominantly quantitative data were gathered by means of structured questionnaires and interviews. The remaining two studies employed a combination of designs and data-gathering methods.

Lastly, when developing a research design, it should also take cognisance of any constraints that might impact on the success of the study when dealing with issues relating to reliability and the validity of the results. This is, in particular, important when the selection of segmentation variables prescribes the employment of empirical research to gather the relevant primary data. Reliability is concerned with the accuracy and precision of a measurement procedure (Cooper & Schindler, 2003:231).

In other words, a measure is considered reliable only if it yields consistent results. A measure that is stable produces consistent results with repeated measurements of the same target population and same instrument. With regard to validity, Cooper and Schindler (2003:231) distinguish between two main forms, namely: external and internal validity.

External validity is concerned with the representativeness and generalisability of the results. This is predominantly addressed by the sampling. Internal validity looks at the ability of a survey instrument to measure what it is supposed to measure.

A review by Foedermayr and Diamantopoulus (2008:246), however, revealed a general lack of validity and reliability assessments in empirical research on segmentation practices. These researchers therefore called for greater attention to be paid to the different types of assessment in future segmentation-research designs. This includes, in particular, addressing content, criterion and construct validity, as well as the assessment of internal consistency.

2.4.6 <u>Identifying units of analysis</u>

Units of analysis refer to those elements that are examined, in order to create summary descriptions of all such units (Babbie, 2011:101). Specification of the units of analysis for segmentation studies should take into account the accessibility, as well as the availability, of information on them or that could be gathered from them. It is also important that the units of analysis be chosen in accordance with the operational capabilities of a business's marketing, sales, and market research units.

If the marketing practitioner or researcher is unable to gather any relevant data and information from the targeted units of analysis, or from a segmentation perspective, the business cannot serve these units through its operations and marketing activities; the application of market segmentation would inevitably fail.

Babbie (2011:101) also points out that, in some cases, the units of analysis do not coincide with the units of observation. For example, segmentation studies might be concerned with the adoption of information technology in large businesses (unit of analysis); yet the data have been gathered from the chief information officer (unit of observation).

2.4.7 <u>Sampling design</u>

Thompson (2012:1) defines sampling as the process of selecting some part of the population so that one may estimate something about the whole population. This definition accurately captures the essence of sampling in segmentation studies that was envisaged more than 30 years ago, namely: to not merely explain the differences amongst specific respondents or to segment the sample, but to project the results of the study to the relevant universe (Wind, 1978:325).

Important considerations in sampling are those of accuracy and precision; these are fundamental to all good sampling design (Baker, 2002:104). In essence, accuracy and precision deal with reliability; and they refer to freedom from random error, and to the degree to which repeated administration of a sample would lead to comparable results between the samples. In addition to reliability, sampling design must contribute to ensuring the validity of a measurement.

Validity is typically assessed and expressed in terms of the presence or absence of any bias (Baker, 2002:104).

The evaluation by Foedermayr and Diamantopoulus (2008:245) of some selective empirical segmentation studies found that mainly non-probability sampling designs were employed. The non-probability sampling methods ranged from the drawing of a quota, to purposive, judgemental and convenience samples. The major drawback of non-probability sampling methods is that they do not permit statistical evaluation of sampling error. However, they offer significant pragmatic advantages, including being more convenient, as well as less expensive and more accessible than probability methods.

Lastly, sample size should be considered. When employing any advanced multivariate statistical techniques as part of the cluster-based segmentation, sufficient sample size becomes an important factor. However, a balance should be struck between size and cost and time. A too-small sample would result in a lack of statistical power needed to conduct some of the analysis, while a too-large sample might take too long to realise – at a cost disadvantage.

2.4.8 <u>The data collection</u>

As noted, marketing practitioners and researchers have, in the past, relied on both secondary and primary data, as sources for market segmentation studies. The research design should, therefore, make provision for the identification and retrieval of secondary data, or for the collection of primary data, through the relevant research methods. These two data types will be discussed next.

2.4.8.1 Secondary data

Secondary data need to be evaluated in terms of quality, content, usability, presentation and cost (Wiid & Diggines, 2009:77). As secondary data were not collected originally with the aim of using them for segmentation purposes, it is important to evaluate the quality of such data. Wiid and Diggines (2009:79) list six aspects, which they regard as fundamental to consider when evaluating secondary data, namely:

(1) Purpose: The data must be evaluated by the researcher and marketing practitioner, in terms of their appropriateness for use.

(2) Accuracy: The data need to be evaluated in terms of their suitability and applicability to the marketing problem, in other words, when segmenting the market.

(3) Consistency: Where possible, the researcher must seek multiple sources of the same data, in order to ensure consistency.

(4) Credibility: The status of the publication and/or reputation of the supplier that originally collected the data should be evaluated.

(5) Methodology: The researcher should take into account and evaluate the methodology and methods that were employed in the collection of the original data. This includes, amongst other operational definitions used, sampling, measurement and data-collection instruments, as well as the recentness or freshness of the data.

(6) Bias: The researcher must identify the reasons why the data were originally collected, in order to establish any contextual factors that might impact on the secondary data.

Coyer and Gallo (2005:62) talk about both practical and methodological issues that should be evaluated when a researcher chooses to conduct an analysis of secondary data. Firstly, the investigator must check for the fit between the original data and the new research questions. Secondly, the operational definitions of the variables used in the original study should be applicable and relevant to the requirements of the current study. Thirdly, the original data should be evaluated in terms of sample selection bias.

In addition, the researcher should also take into account any data editing or conversion that need to take place, as preliminaries for getting the data into a suitable format for further analysis. This should be done without affecting the reliability or the validity of the data.

2.4.8.2 Primary data

Various methods may be distinguished that could aid in the collection of primary data, and more specifically quantitative data. One method that is used extensively in the marketing research environment is survey research. Wiid and Diggines (2009:107) note four methods for conducting such surveys, namely: personal interviews, telephone interviews, mail surveys and web-based surveys. It is not the intention of the author to describe each of these methods in detail, as these are adequately covered in most related marketing research textbooks, such as Saunders *et al.* (2009), Tustin *et al.* (2005) and Wiid and Digginess (2009). It should, however, be noted that each offers various advantages and disadvantages. It is the role of the researcher to weigh these in relation to the data needed for the segmentation study. Aspects that should be considered, as in the case of secondary data, include the cost and timing of gathering the data, sampling, reliability and the validity of measurement and data handling.

2.4.9 Segment identification method selection

This aspect deals with the actual formation of market segments. Guidelines for formation indicate that a segment must consist of "an economical minimum number of customers [buyers] to offer an economical value or volume of sales" (Foedermayr & Diamantopoulus, 2008:253). In addition, the number of segments formed must be such that it is manageable. The formation of too many segments could lead to difficulties in terms of inter-segment heterogeneity. In other words, the number of segments is too many and almost too granular. On the other hand, too few segments could lead to a lack of intra-segment homogeneity; in other words, the diversity between the members in a group being too great.

McDonald and Dunbar (2004:57) advise that each segment should be subjected to a "reality check" based on the size of each segment, the differentiation between the offers they require, the business's ability to identify and reach the different buyers found in each segment, and the compatibility of these segments with the business. However, this process takes place without any consideration of a segment's attractiveness (Foedermayr & Diamantopoulus, 2008:253).

The employment of statistical tools to aid in segment identification, and for the determination of membership in market segments ranges from the construction of basic cross-tabulation to advanced multivariate statistical techniques. The following sections describe some of the multivariate statistical techniques that could assist in segment identification. The researcher, however, realises that new statistical methods and tools emerge and evolve constantly and describing all of these would go beyond the scope of this study. The intention is merely to note, through a brief discussion, the value of the contributions that these types of techniques have made in assisting in market segmentation. The application and extent of techniques in practice go far beyond these descriptions.

Some of these techniques directly result in the formation of groups or segments, while others only provide insights into the existence of underlying relations that could be used by researchers and marketing practitioners in market segmentation studies. This suggests the combining of multivariate statistics techniques, as part of segmentation analysis. However, as noted, the use of statistical techniques requires various decisions about the selection of a clustering algorithm, and the determination of the number of segments, as well as the responsibility for these choices. This responsibility would lie with the researcher, the statistician and the marketing practitioner.

2.4.9.1 Cluster analysis

Wiid and Digginess (2009:250) describe cluster analysis as a multivariate technique that is used to group similar objects. Everitt, Landau and Leese (in Abeyasekera, 2005:370) describe it as identifying natural groupings among sampling units, for example, respondents, households or businesses, so that units within each group (cluster) are similar to one another, while being dissimilar from any other units, which are to be found in different groups. Alexander *et al.* (2005:113), for example, employed cluster analysis to identify five distinct buyer segments for expendable input purchases for crop and livestock commercial producers in the United States.

The goal of cluster analysis is, therefore, to explore patterns in complex population and to identify homogeneous groups of clusters (Alexander *et al.*, 2005:113; Franke *et al.*, 2009:273). Key considerations, therefore, include the selection of variables that could serve as a basis for cluster formation, the number of variables, the measurement level of data, as well as the criteria for combining cases into clusters. Dolnicar and Lazarevski (2009:359) noted specifically the challenge associated with having too many variables in the segmentation base, given the sample size. A common approach that researchers have used to address this challenge is to first subject the variables to an exploratory factor analysis or principal component analysis as a data reduction technique, before clustering the resulting factor scores. A potential disadvantage of this approach is when the factor analytical solution explains a very low percentage of the variance in the raw data. Consequently, a large proportion of the information contained in the data is essentially discarded. Optimally, researchers should measure only a small number of conceptually well-developed items from the start.

2.4.9.2 Classification trees

A classification tree procedure classifies objects into groups, based on the values of independent or predictor variables (SPSS, 2007:1). This technique is, therefore, based on the specifications of a dependent variable, as well those variables that would serve as a basis for classification. This technique is particularly suited for segmentation studies.

One of the methods most often employed in classification trees is CHAID (Chi-squared Automatic Interaction Detector). With CHAID, each independent variable is split into smaller subgroups – until no more significant independent variables (predictors) can be found. The segments that are derived from CHAID consist of uniquely classified members; and therefore, they do not overlap. Each case can be classified into its appropriate segment by knowing the categories of these predictors.

2.4.9.3 Discriminant analysis

Discriminant analysis provides classification rules that enable two or more groups of objects to be separated (Abeyasekera, 2005:370). It is a dependent variable technique, where initial group membership is known. The practical value of this technique from a segmentation perspective lies with the identification of those variables that contribute the most to explaining variation between the groups.

This provides insight and direction in the selection of segmentation bases, particularly when following a sequential segmentation approach. Secondly, the results from the analysis produce a statistical function indicating the linear combinations of the independent, or predictor, variables that could serve as the basis for classifying unknown cases into one of the groups (Leech, Barrett & Morgan, 2005:132). This could then be used in further procedures – to form groups or segments of cases.

2.4.9.4 Logistic regression

Similar to discriminant analysis, logistic regression provides rules for classifying objects into predefined groups. However, discriminant analysis is preferred when the dependent variable has three or more groups; whereas logistic regression is used when the dependent variable has only two possible values (Pallant, 2010:168). In addition, logistic regression requires far fewer assumptions than does discriminant analysis.

The value of this technique for segmentation purposes, as with discriminant analysis, lies with the identification of those variables that contribute most to explaining the variation between the dichotomous groups, as well as enabling researchers to classify unknown cases into one of the groups.

2.4.9.5 Multidimensional scaling

This technique is a method for measuring the relationship between objects in a multidimensional space (Wiid & Digginess, 2009:251). In survey research it is often applied on the basis of the respondents' corresponding opinions, perceptions or attitudes regarding the objects.

The purpose of multidimensional scaling is to construct a map of the location of objects relative to each other from the data that specify how different the objects are.

Although this technique does not directly result in the formation of homogeneous groups, based on the measured similarity (or dissimilarity) of objects, the findings could assist researchers and marketing practitioners to identify the existence of significant relationships that could inform market segmentation. As with cluster analysis, this is a technique that does not rely on specifying any dependent variables. Key considerations, therefore, include the selection of variables, the measurement level of data, and the algorithm for identifying similarity (or dissimilarity) amongst objects.

2.4.9.6 A note on the use of multivariate statistical analysis techniques

The widespread availability of statistical software makes multivariate analysis more accessible to most managers and marketing practitioners, but many lack the capacity and knowledge to deal with the complexities of statistical analysis (Dibb, 1998:397). When planning, market segmentation and multivariate statistical techniques are to be considered as part of the process. The segmentation team should be aware of the pitfalls associated with its inappropriate use in guiding the identification of segments.

This is particularly important when choosing segmentation variables and bases to be used in the multivariate statistical analyses, since it is a fairly subjective process (Tonks, 2009:342) directed largely by the marketing practitioner in collaboration with the researcher and the statistician. Wedel and Kamakura (in Quinn *et al.,* 2007:443) offer an important reminder in this regard, stating that "...every [segmentation] model is at best an approximation of reality. One cannot claim that segments really exist, or that the distributional form of unobserved heterogeneity is known."

This point is often overlooked in the literature, according to Wedel and Kamakura (in Quinn *et al.,* 2007:443), as identified market segments are not necessarily homogeneous groupings of customers naturally occurring in the marketplace, but rather the outcome imposed by a multivariate statistical technique that inform segment formation. This relates to the challenge of structure-seeking versus structure-imposing. This aspect was noted in Section 2.4.4.2. Marketing practitioners should, therefore, never rely exclusively on tools, such as multivariate statistical techniques to inform the identification of segments, but should take cognisance of their knowledge of the market.

Another major challenge that should be noted when using multivariate techniques is the lack of creating similar segment solutions when using a new set of data, despite having been collected from a similar target population. The reason is, as already noted in the previous sections, that these techniques rely on certain algorithms as part of statistical computations, and changes in either the algorithms or raw data can lead to different segment solutions. The challenge of presenting, for example, a method that allows researchers and marketing practitioners to calculate and present an index that can be applied in repeated segmentation studies is addressed in this study.

2.4.10 Target segment selection

Following the identification of segments, the relative attraction of each segment must be determined (Dibb, 2005:13), together with the subsequent selection of segment(s) to target. This should be done with consideration of the available resources, skills and capabilities of the business (Freathy & O'Connell, 2000:103). The evaluation of the strengths and weaknesses is a crucial step in the process.

While a marketing opportunity might be identified with a particular segment, without the necessary strengths, resources and skills, such an opportunity cannot be pursued.

Goller *et al.* (2002:261) list a number of factors identified from a review of the strategic management literature, as suggested criteria for target segment selection. These factors include segment size and growth, expected market shares, compatibility with the objectives and resources of the business, as well as structural segment attraction. They also mention the evaluation of business capabilities *vis-à-vis* competitors, as being an important criterion, in order to assess whether competitive advantage can be achieved in potential target segments.

Foedermayr and Diamantopoulus (2008:255) similarly note seven criteria that are often used by US managers to evaluate and select target segments, namely: segment size, compatibility with the objectives and resources of the business, profitability, growth expectations, the ability to reach buyers in the segment, the competitive position of the business in the segment, in addition to the cost of reaching the buyers.

2.4.11 Positioning

The last step in the process involves product and service positioning (Dibb, 2005:13). It is also at this step that a precise adjustment of product and marketing mix programmes needs to be made. The profitability of segments can further guide adjustments and the success of the segmentation process (Quinn *et al.*, 2007:445). This step Danneels (1996:36) referred to as the implementation phase of the segmentation process.

It is within the context of this step that concerns have been raised in the literature of a theory/practice divide in market segmentation. The various concerns will be addressed in more detail in Section 2.7.3, but it is important to briefly acknowledge them here. The two main arguments and reasons for this divide emerge from the literature. The first argument relates to the practical difficulties in implementing segmentation approaches; and secondly, the often limited explanatory value offered from traditional segmentation bases.

These two problems largely manifest during the positioning phase of the segmentation process. Various possible impediments to the implementation process can be identified, including underlying problems in a business's infrastructure, the mechanics of the segmentation process, as well as the incorrect handling of the implementation phase (Dibb, 2005:14). While these are serious concerns that warrant further research and attention, they fall outside the scope of this study.

2.5 THE PURPOSE AND ANTECEDENTS OF MARKET SEGMENTATION

The purpose and benefits of market segmentation have been extensively debated in the literature (Dibb, 2005:13; Freathy & O'Connell, 2000:102). The sub-sections that follow review some of the purposes and resultant antecedents noted in the literature.

2.5.1 Homogenising market heterogeneity

McDonald and Dunbar (2004:29) rightfully state that the central idea of marketing is to match the needs and wants of buyers to the competences of the business, in such a way as to accomplish the goals of both parties. This is, however, not an easy task.

As a result of an increase in the diversity of markets, it has become impossible for many businesses, such as agricultural input suppliers and service providers, to follow a mass marketing approach. Goller *et al.* (2002:256) argue that for many markets this is particularly true, as the application of products can vary considerably amongst users, meaning that buyers could seek different product benefits. By employing market segmentation, these businesses can cope with this heterogeneity by grouping buyers, like commercial farming businesses, with similar needs and characteristics together into several homogeneous sub-markets (Dibb, 2005:13; Canever *et al.*, 2007:511; Ferrell & Hartline, 2005:135; Lin, 2002:249).

Freathy and O'Connell (2000:102) similarly argue that owing to the increasing introduction of products to the market, businesses are, furthermore, challenged by variations in buyer characteristics and the growing fragmentation of advertising media. Segmentation is then frequently used as a method of categorising buyers into discrete and manageable classifications. The aim is, therefore, to identify groups where the members have similar likes, tastes, needs, wants, preferences or behaviour, but where the groups themselves are dissimilar from each other (Ferrell & Hartline, 2005:135). Decisions about which segments are most attractive for the business can now be made (Canever *et al.*, 2007:511), thereby making the best use of finite resources (Freathy & O'Connell, 2000:102; Goller *et al.*, 2002:256).

Furthermore, group members that have been segmented, according to similar likes, tastes, needs, wants, preferences or behaviour would tend to demonstrate a more homogeneous response to marketing programmes (Dibb *et al.*, 2002:113). Segments can be targeted – with marketers expecting them to demonstrate a more homogeneous response to marketing programmes. Marketers can formulate product strategies, or product positions, tailored specifically to the demands of these homogeneous sub-markets (Goller *et al.*, 2002:266; Lin, 2002:249).

2.5.2 Improved understanding of buyers

One of the abiding principles of sound business practice is to know the buyer market of your products and services (McDonald & Dunbar, 2004:xi). Marketers, therefore, use segmentation to more precisely define and understand buyers' needs and wants (Dibb *et al.*, 2002:113; Ferrell & Hartline, 2005:134; Sausen *et al.*, 2005:157).

Smith (1956:7), for example, argued more than half a century ago that the exploitation of market segments provides for greater maximisation of buyer or user satisfactions; and this tends to build a more secure market position and leads to greater over-all stability.

Segmentation, therefore, allows marketers to tailor products and services to better suit market needs (Dibb *et al.*, 2002:113; Canever *et al.*, 2007:513), thereby leading to more suitable marketing programmes and enhanced marketing effectiveness (Foedermayr & Diamantopoulus, 2008:223; Rotfeld, 2007:333). This again might lead to an increase in member satisfaction and brand loyalty (Dibb, 2005:13). It also leads to an understanding of the competitive environment and fewer direct confrontations with competitors (Dibb *et al.*, 2002:113).

Lastly, as a result of being grouped together, according to similar buying needs and behaviours, buyers tend to demonstrate a more homogeneous response to marketing programmes, thereby assisting the predictive capabilities of marketing (Freathy & O'Connell, 2000:102; Rotfeld, 2007:332).

2.5.3 The identification of new opportunities

Dibb *et al.* (2002:113) postulate that market segmentation improves marketing practitioners' ability to identify marketing opportunities. This notion was also acknowledged by Canever *et al.* (2007:513). These authors stated that segmentation and targeting have been shown to improve the sellers' capacity to identify market opportunities. Dibb (2005:13) adds that segmentation might also lead to gaining valuable insight into competitor behaviour and market position, which could then be used in building and sustaining a differential advantage.

2.5.4 The allocation of resources

Wind (1978:317) acknowledged some 30 years ago that market segmentation plays a guiding role in strategic marketing planning and resource allocation. Hooley, Greenley, Cadogan and Fahy (2005:19) make reference to marketing resources as comprising any resources that create value in the market place. Marketing resources are, therefore, defined as any attribute, tangible or intangible, physical or human, intellectual or relational, that can be deployed by the business to achieve a competitive advantage in the marketplace.

Hooley *et al.* (2005:19) make a further distinction between market-based resources and marketing-support resources. Market-based resources are those resources that can be immediately deployed in the market place to directly create or maintain a competitive advantage. Marketing support resources, on the other hand, serve primarily to support marketing activities, and hence contribute indirectly to the competitive advantage.

Four main sets constitute market-based resources. Firstly, there are the customer-linking capabilities of the business, and these would include the ability to identify the wants and requirements of buyers, together with the capabilities to create and build appropriate relationships with them. A second set of market-based resources encapsulate the reputation and credibility of the business among its buyers, customers, suppliers, and distributors. Hooley *et al.* (2005:19) term these as reputational assets.

A third set of resources is the ability to successfully innovate in the marketplace. The last set of market-based resources is the human resources of the business.

Marketing support resources are made up of the marketing culture of the business and the capabilities of its managers to lead, manage, motivate, and coordinate activities. Hooley *et al.* (2005:20) link managerial capabilities to areas, such as human-resource management, operation management and financial management.

The principle of market segmentation is, therefore, that because of limited resources and skills, businesses cannot service all buyers in a diverse market. Segmentation, therefore, helps businesses to match their limited resources and strategies to the buyers' needs and wants (Canever *et al.*, 2007:512). This antecedent of market segmentation was also acknowledged by researchers, such as Dibb *et al.* (2002:113), Freathy and O'Connell (2000:102) and Goller *et al.* (2002:263).

By focusing the business's limited resources on the most attractive segments, segmentation encourages businesses to play to their strengths (Dibb *et al.*, 2002:113). When referring to resources, Goller *et al.* (2002:263) also note that segmentation aids in establishing guidelines for more effective resource allocation, not only among products, but also among markets.

2.5.5 Improved business performance and competitive advantage

It is postulated that market segmentation aids businesses in meeting the demands of buyers, the building of a more secure market position, which ultimately leads to greater overall stability, improved performance and competitive advantage (Dibb, 2002:114; Freathy & O'Connell, 2000:102; Goller *et al.*, 2002:266). The demand of buyers is, for example, addressed through the marketing mix (Goller *et al.,* 2002:266). Goller *et al.* (2002:266) note that once a target market has been chosen, the marketing mix must be developed and tailored with the aim of creating a sustainable competitive advantage.

Dibb (2005:13) referred to the "analytical process involved in achieving these ends encourages organisations to emphasise [their] competitive strengths and to be customer focused". She further postulated that the chance of developing suitable products and marketing programmes is thereby enhanced, with the potential of increasing satisfaction and brand loyalty. However, market segmentation serves as a means for improving business performance and achieving competitive advantage, rather than as an outcome in itself. In other words, market segmentation serves as a moderating effect.

2.6 THE KEY SUCCESS FACTORS OF MARKET SEGMENTATION

The effectiveness of market segmentation is regarded as crucial in creating buyer value and a competitive advantage (Canever *et al.*, 2007:514). Contributing factors attributed to effective market segmentation include having clear segmentation objectives, senior-level commitment and a well-designed plan (Dibb, 2005:15). In the literature, reference is also commonly made to eight criteria for market segmentation, in order to be regarded as successful (Canever *et al.*, 2007:514; Ferrell & Hartline, 2005:142; Freathy & O'Connell, 2000:102; Goller *et al.*, 2002:261; Lin, 2002:250).

These criteria are: segmentability, measurability, accessibility, substantiality, sustainability, actionability, responsiveness and stability.

2.6.1 Segmentability

The first criterion refers to segmentability or identifiability. Successful segmentation can only take place if buyers can be grouped together, based on particular criteria. In other words, segmentation must lead to homogeneity within and heterogeneity between the various segments (Goller *et al.*, 2002:261). Furthermore, the characteristics of the segment's members should be easily identifiable (Lin, 2002:250). The key to meeting this criterion is the careful selection of bases for market segmentation. That is, identifying the variables whereby the market is to be segmented, as well as those variables that will be used as descriptors.

A good market segmentation research study should, therefore, provide operational data that Woo (1998:418) describes as practical, usable and readily translatable into strategy.

Goller *et al.* (2002:261) claim that only four aspects actually point toward segmentability criteria, namely homogeneity within, heterogeneity between, measurability and accessibility. They support their argument by stating that these four aspects are the only ones that actually screen segmentation schemes for usefulness and relevance. However, these aspects do not inform the choice of marketing strategy itself. As such, Goller *et al.* (2002:261) assert that marketing practitioners regard segmentability criteria as a step in the evaluation process prior to assessing segments further by means of target-market evaluation.

2.6.2 Measurability

The second criterion, measurability, refers to the degree that the size, purchasing power and profits of a market segment can be identified (Canever *et al.*, 2007:514; Freathy & O'Connell, 2000:103).

2.6.3 Accessibility

The third criterion states that segments should be accessible in terms of communication and distributional efforts (Canever *et al.*, 2007:514; Ferrell & Hartline, 2005:142). Freathy and O'Connell (2000:103) emphasised that a segment is only accessible if it can be served in a cost-effective manner.

2.6.4 Substantiality

Substantiality is the degree to which a segment is considered sufficiently large to warrant the cost of a targeted-market programme (Canever *et al.*, 2007:514; Freathy & O'Connell, 2000:103). The potential for profit should, therefore, exceed the cost involved in developing a specific marketing mix for the segment (Ferrell & Hartline, 2005:142).

2.6.5 Actionability

The fifth criterion, actionability, refers to the internal capability of the business to effectively target its chosen segment within its own financial and structural resource constraints, on the one hand, and the values and culture of the business, on the other hand (Canever *et al.*, 2007:514; Freathy & O'Connell, 2000:103). Both Foedermayr and Diamantopoulus (2008:254), as well as Goller *et al.* (2002:261) assert it as essential that a sustained and competitive differentiation can be attained within a target segment.

2.6.6 Responsiveness

Responsiveness considers the degree to which a segment is responsive to marketing efforts, including changes to the marketing mix over time (Ferrell & Hartline, 2005:142). This means that members of a segment must be willing, ready and able to engage in exchange transactions. At the same time, segments should potentially respond differently to marketing communication.

2.6.7 Stability

The last criterion, stability, is a judgement of the extent to which a market segment is durable enough to justify the investment in targeted marketing programmes (Canever *et al.*, 2007:514). A stable segment also contributes to more reliable behavioural predictions over time (Van Raaij & Verhallen, 1994:49).

2.7 WHAT A MARKET SEGMENTATION LOGIC OFFERS MARKETING THEORY

The next sections consider, firstly, the importance of theory for researchers and practitioners. However, concerns have been raised about a theory/practice divide within marketing, which also relates to market segmentation. These aspects are discussed in relation to the essence of market segmentation.

2.7.1 The importance of theory

Theory is considered important for both researchers and practitioners, for three reasons (Wacker, 1998:361). Firstly, theory provides a framework for analysis.

In other words, elements relating to the definition of terms of variables, the exact settings or circumstances where the theory can be applied, the set of relationships and the specific predictions or factual claims that emerge from the theory are described. This provides points of reference for cases where differences in opinion exists amongst scholars, theorists and practitioners.

Secondly, theory provides an efficient method for field development. While a theory can never be proven right (Borgatti, 2005:1), since it is impossible to conduct all the necessary tests to verify the theory, the actual testing of a theory provides opportunity to build upon what is already known. Borgatti (2005:1) describes this process as equivalent to incorporating all that is known from the current literature: theoretical, mathematical, empirical, and practitioner research into a single, integrated consistent body of knowledge.

This provides researchers and practitioners with a deeper theoretical meaning, allowing them to differentiate between competing theories.

Thirdly, theory provides clear explanations for the pragmatic world. In other words, the value we gain from a practical point of view in terms of assisting in making predictions and interpreting the present in understanding what is happening and why (Christensen & Raynor, 2003:68).

Despite the value of theory in explaining and predicting behaviour and phenomena, a review of the literature reveals concerns about the slow progress of theory development in the marketing domain. This leads to a theory/practice divide (Burton, 2005:5). In fact, this concern is, however, not new and was noted by Wind (1978:317) more than 30 years ago, when he acknowledged the discrepancy between academic developments and real-world practice.

One of the main questions, therefore, asked in the renewed focus on marketing theory, is: What does marketing offer? – both academically as well as from a practitioner's point of view (Sausen *et al*., 2005:151).

2.7.2 The theory/practice divide in marketing

Cornelissen (2002: 133) remarks that the relationship between academia, the conduct of scientific research, and the professional fields of practice has continuously been a subject of debate. Cornelissen (2002:134) cites Holbrook, who argued that academic and practitioner orientations to marketing problems are fundamentally distinct, and should for that matter remain separate. Jacoby (1985) replied to Holbrook, stating that although there are general differences in the orientation of academics and practitioners, these orientations should be seen as complementary, rather than competitive or mutually exclusive.

The theory/practice divide stems from the general premise that, on the one hand, marketing practitioners tends to engage in marketing research for more pragmatic reasons. The focus falls on addressing a single problem under investigation – with the aim of designing action strategies for dealing with it. In other words, trying to develop low-level theories based on empirical generalisations. They, therefore, often find themselves less concerned with adding to the theoretical body of knowledge and substantive marketing theory (Cornelissen, 2002:134).

On the other hand, an academic researcher “sacrifices a detailed description and analysis of the features of the phenomenon, in order to illustrate the relations among the concepts (rather than to provide a comprehensive understanding of the phenomenon), while the practitioner focuses on a single problem under study, with the purpose of designing strategies and courses of action for dealing with it” (Cornelissen, 2002:135).

In focusing on developing grand theories, academics thus aim to capture observed reality in a more general sense, rather than providing a full and comprehensive description of a particular phenomenon.

As a result of the different focus areas, marketing practitioners tend to ignore the research findings published in academic journals, primarily due to the fact that the formulation of these theories occurs at such a high level of generality that they provide little similarity to the day-to-day marketing challenges faced by managers. In this duality, the theory/practice divide manifests itself.

2.7.3 Concerns of a theory/practice divide in market segmentation

Concerns of a theory/practice divide are also raised in the market segmentation literature. Dibb and Simkin (2009:219) talk about the existence of a tension between theory and practice. This tension continuously shapes and influence research priorities for the field. Questions about effectiveness and productivity, however, remain, namely: (i) concerns about the link between segmentation and performance, and its measurement; and (ii) the notion that productivity improvements arising from segmentation are only achievable if the segmentation process is effectively implemented.

Kalafatis and Cheston (1997:520) described the theory/practice divide as having, on the one hand, deviations between theoretical concepts, while, on the other hand, having applications of market segmentation in ‘real world’ situations. Two main arguments and reasons for this divide emerge from the literature. The first relates to the practical difficulties in implementing segmentation approaches; and secondly, to the often-limited explanatory value offered from traditional segmentation bases.

These concerns are to be more broadly discussed in the following sections.

2.7.3.1 Difficulties in the practical implementation of market segmentation

Dibb (2005:14) ascribes the theory/practice divide to the difficulties often experienced by businesses in implementing segmentation approaches. In earlier published work of Dibb (1999:108), the author also argued that much of the research literature focuses on the selection of base variables and on the validation of segmentation output, rather than on the more practical implementation issues experienced by marketing practitioners. Freathy and O'Connell (2000:103) argue along similar lines that much of the work in segmentation has focused on the various methods and techniques used in the process, rather than on the evaluation and selection of coherent market segments.

As a result, marketing practitioners having conducted segmentation studies that fail to generate usable segmentation solutions.

Dibb (2005:14) cites, from the literature, various impediments of the implementation process, including the underlying problems in a business's infrastructure, the mechanics of the segmentation process, as well as the incorrect handling of the implementation phase. Dibb (2005:14) goes further and categorises these impediments into two groups, namely: hard or tangible, and soft or intangible. These barriers emerge at the outset of the process, and are referred to as infrastructure barriers; during the segmentation analysis, they are referred to as process barriers; and after any segments have been determined, they are referred to as implementation barriers.

While hard or tangible issues refer to data, financial, human resource and time resource constraints, soft or intangible issues are linked with the business culture, inter-functional coordination and leadership style.

Dibb (2005:14) stresses the importance of overcoming these impediments, since they are critical to the success of the segmentation process. This is ultimately so, when homogeneous customer segments for which suitable marketing programmes could be developed, can be identified.

Sausen *et al.* (2005:152), citing Dibb *et al.*, find the reason for the failure of implementation in the lack of strategic embedding at corporate level. Contributing further to the problem are shortfalls in operational capabilities in marketing, sales, and market research.

Lastly, Foedermayr and Diamantopoulus (2008:224) make a very important observation that the researcher believes largely underlies the concerns of marketing practitioners in moving from market segmentation to implementation. According to Foedermayr and Diamantopoulus (2008:224), most literature on the topic of market segmentation has been conceptual or normative in nature, dealing with how market segmentation should be conducted, rather than with how segmentation is actually performed in practice.

This is despite the general acknowledgement of the importance of market segmentation for the general success of a business. The researchers also note that it is evident that previous literature reviews have dealt more with the choice of segmentation variables and bases at the expense of other stages of the segmentation process, such as market definition, segment formation and evaluation.

2.7.3.2 Offering of limited explanatory value

Another aspect raised in the literature relating to market segmentation problems is that of the often very limited explanatory value offered by traditional demographic variables (such as gender, age, income, educational level and socio-economic status) and firmographic variables (such as size, turnover and geographic area) in explaining the reasons and motivations behind buying behaviour. These also contribute to the difficulties in the practical implementation of market segmentation approaches.

El-Adly (2007:938), for example, remarks that some market segmentation studies, in particular those that have adopted an a-priori approach, would typically use the traditional external characteristics of buyers, like turnover, size and geographical location in business markets and gender, age and social class in consumer markets, to describe the differences between segments' behaviour. However, these external variables are not necessarily determinants of buying behaviour; and they usually provide little assistance to marketers in formulating marketing strategies.

Hollywood, Armstrong and Durkin (2007:691) share similar sentiments on the value of these types of traditional external variables in explaining buyer behaviour. They note that while a market segmentation exercise provides opportunity for marketers to better understand core consumers, traditional variables, such as geographics and demographics/firmographics no longer provide enough insight into how these buyers actually make their decisions.

Van Raaij and Verhallen (1994:52) not only single out the traditional external variables mentioned above; but they also include personality types as poor predictors of consumer behaviour. They mention the work of another researcher, Kassarjian, who postulated that only about two to five per cent, and at most 10 per cent of behavioural differences in consumers can be explained on the basis of general personality types.

Quinn (2009:254) raises similar concerns about consumer lifestyles as explanatory variables in segmentation studies. These researchers offer some explanation for this, postulating that as consumer lifestyles become increasingly fragmented, market segmentation studies using this as a base variable become less effective and efficient.

Powers and Sterling (2008:170) acknowledge the challenge faced by marketing practitioners to identify varied buyer needs, in order to build value segments. However, they argue that despite being able to identify the characteristics of buyers, the actual needs of these buyers cannot necessarily be deduced from these facts.

Lin (2002:249) also argued that traditional external variables cannot identify the complete characteristics of the various sub-markets targeted. For example, consumers in the same demographics group have varied psychographic make-ups. Psychographic research studies the lifestyles and personalities of consumers, and according to Lin (2002:250), products are the basic building blocks that describe a particular lifestyle. Consumers, therefore, define their lifestyles by the purchasing and consumption choices they make across available product and service categories.

The defining, quantification and subsequent understanding of this behaviour provides the foundation for market segmentation. But, despite Lin's (2002:250) strong argument that lifestyle and personality variables are effective segmentation variables for identifying sub-market profiles and targeting consumers, subsequent concerns were raised by Yankelovich and Meer (2006:124) about the actual explanatory value that this approach offers. Yankelovich and Meer (2006:124) observed that while psychographics go beyond mere demographics, and may capture some truth about real people's lifestyles, attitudes, self-image, and aspirations, this science is weak when predicting purchasing behaviour.

As in consumer segmentation studies, concerns have also been raised on the explanatory value of firmographics in explaining buying behaviour in business markets. Quinn *et al.* (2007:443) note the common use of descriptor variables, such as industry type, location and size in industrial segmentation studies. The reasons for the use of these variables lie in their clarity, convenience and ease of implementation. However, they do not necessarily provide insight into buying behaviour.

In conclusion, and having considered the various views from the literature, it would seem that the value of demographics and firmographic variables in segmentation studies lies largely in their descriptive capabilities. In other words, these variables provide information on the selective characteristics of consumers in a particular segment of the market. From a statistical perspective, they might even explain some variation that is evident in measured levels of buying behaviour. However, explaining behaviour from a purely statistical perspective does not necessarily provide insight into the reasons or motivations for buying or consumption; and they, therefore, provide only limited value to marketers in the formulation of marketing strategies.

This sentiment was already raised by Sharma and Lambert some 18 years ago. Sharma and Lambert (in Woo, 1998:418) noted that demographic variables pose two problems in market segmentation studies. “The first one is that the demographic profile is assumed to reflect consumption patterns. Another problem is in implementing segmentation strategies. This can be illustrated by the fact that segmentation based on age variables and gender variables does not suggest how the marketing strategies should be formulated.”

2.7.4 <u>The essence of market segmentation</u>

It is, consequently, evident that while traditional demographic and firmographic variables can be used to explain the characteristics of the sub-markets and to classify the key factors of a market segment, they cannot identify the complete characteristics of the sub-markets. Members of a business segment may, for example, all purchase a certain product brand, and although being very homogeneous in their firmographics, these businesses might purchase the brand for different reasons, and as such, they would be very heterogeneous in their operational requirements.

In consumer markets, general personality characteristics are considered by many practitioners as being ill-suited to clearly explain specific behavioural differences (Van Raaij & Verhallen, 1994:52). Segmentation based on any of these variables alone is inadequate in providing clear guidance on how marketing strategies should be formulated (Woo, 1998:418). Similarly, some general firmographic characteristics might not be explanatory in terms of the purchasing behaviour of business.

Alternative directions in segmentation research have, for example, explored the effectiveness of segmenting markets based on the needs and/or benefits sought by the buyer (Woo, 1998:418). The underlying benefit of this approach is to enable a service provider to implement different marketing strategies for different segments – by offering unique benefits sought by the members of each market segment.

Identifying new bases for market segmentation, therefore, remains an important point on the development agenda of the business. Tonks (2009:342) acknowledges that choosing segmentation bases is a fairly subjective process, and it is rarely possible to assert categorically that there is only one best way to segment a particular market.

Despite the fact then that market segmentation remains a well-documented and commonly used method of targeting buyer groups (Ferrell & Hartline, 2005:135; Freathy & O'Connell, 2000:102), the question could well be posed: What does a segmentation logic offer marketing theory? From a theoretical and normative point of view then, market segmentation derives directly from the marketing concept (Tonks, 2009:342). Marketing theory stipulates that a market segmentation approach being adopted by a business should enhance its performance (Ferrell & Hartline, 2005:134; Freathy & O'Connel, 2000:102; Goller *et al.*, 2002:263; McDonald & Dunbar, 2004:34; Wensley, 2002:113).

Freathy *et al*. (2000:102), however, noted that despite the suggestion that pursuing a segmentation approach should enhance a business's performance, and the notion of competitive advantage, there appears to be little practical advice as to how this result could be achieved. The essence of market segmentation lies, therefore, in the notion that it has a moderating effect on performance, rather than having any direct effect (Dibb *et al.*, 2002:114; Quinn *et al.*, 2007:444).

The assertion of market segmentation is, therefore, regarded as basic in its rational, namely: to divide a diverse market into several homogeneous sub-markets (Lin, 2002:249) based on similar needs and buying behaviour, and which would be likely to respond very similarly to a particular marketing programme (Dibb, 1999:108). If properly applied, it should also guide marketing practitioners in tailoring product and service offerings to the groups that are most likely to purchase them (Yankelovich & Meer, 2006:122).

This notion forms the underlying foundation of a theory, namely, that of simplifying the way in which things operate, to understand how and why the phenomena occur, and to provide an explanation that generalises beyond the specific circumstances (Sturman, 2006:6). This, in turn, allows for a means of predicting any future segment behaviour (Dibb *et al.*, 2002:113).

2.8 BASES USED IN MARKET SEGMENTATION STUDIES

An area of focus in the field of market segmentation that has received considerable interest in the academic literature over the past 60 years is that of segmenting business-to-business markets (Goller *et al*., 2002:252). However, it should be noted that the key premise that prompts market segmentation in business markets remains similar to that of consumer markets. In fact, considering the evidence from the literature, many bases and applications used are equally applied in both markets - the only difference is that some variables differ in particular dimensions. For example, demographic variables such as age, gender, educational background have been used as base or descriptor variables in consumer segmentation studies. These variables also apply to individual buyers in a business or industrial market. Similarly, behavioural variables, market communication, positioning and pricing variables can equally apply to business and consumer markets. Goller *et al.* (2002:256) further motivates this premised arguing that segmentation in business markets is possible for two reasons. Firstly, because business markets constitute a diverse number of end-users; and secondly, because the application of products can vary considerably, and as a result consumers seek different product benefits.

The next sections consider bases that have been used in past business segmentation studies as well the use of index variable as segmentation bases.

2.8.1 Bases used in business segmentation studies

The selection of variables to divide and describe a market needs to coincide with the decisions that management face in serving a diverse market (Clarke & Freytag, 2008:1024; Yankelovich & Meer, 2006:125). For example, if management is faced with product development aimed towards small businesses, the target market might be segmented, based on the perceived values and benefits sought by owners of small businesses. On the other hand, sales managers might find a market segmented that is based on sales potential or profitability more useful. Thus, segments are formed, based on a single or a set of variables, so that entities that are grouped together exhibit similar characteristics along the chosen segmentation base(s) (Foedermayr & Diamantopoulus, 2008:248).

The expectation would also be that entities within a segment would show relatively similar responses to marketing stimuli (Dibb, 2005:13). As different variables would cause different segmentation models to emerge, the selection of appropriate segmentation variables is therefore critical (Foedermayr & Diamantopoulus, 2008:248).

A review of the literature and some past studies reveals the emergence of two main streams of segmentation bases used in business studies. These streams were also highlighted by Sudharshan and Winter (1998:8). The first stream focuses on the characteristics of the business, also referred to as firmographics; while the second stream focuses on the characteristics and behaviour portrayed by decision-makers in the business. Some variables could also be more easily observed than others (Bonoma & Shapiro in Sudharshan & Winter, 1998:9).

For example, firmographics are more easily observed than the personal characteristics of decision-makers. However, as pointed out in Section 2.7.3, acknowledgement should be given to the concerns raised about the limited explanatory value offered by some of these variables.

A study might also utilise a single base variable to segment the market, or several variables can be combined. In most cases the segmentation solution relies on a combination of clusters of variables, which together provide a more complete profile of buyers. This, according to Neal (in Ungerer, 2009:55) is beneficial, because the creative use of a selection of bases for segmentation can lead to a strategic advantage. Ungerer (2009:74) advises that given the range and variety of marketing decisions that marketing practitioners need to make, markets should preferably not be segmented according to single segmentation bases. The approach of combining segmentation bases and using it to segment the market is referred to as multivariate segmentation (Haupt, 2006:1).

Table 2 summarises some of the segmentation variables identified from the literature that could be used as bases in business-segmentation studies (Canever *et al.*, 2007:512; Ferrell & Hartline, 2005:142; Lin, 2002:250; McDonald & Dunbar, 2004:185; Weinstein, 1994:159; Wind, 1978:320). These variables are categorised by two dimensions, namely: physical and behavioural. In both these dimensions, a further distinction can be drawn on the business and the decision-maker as units of analysis. Segmentation variables that are applied to B-to-C markets might, in some instances, also be adopted to serve B-to-B markets.

Table 2: Bases for business-to-business segmentation

Physical - Business	**Behavioural - Business**
Years in operation Stage in life cycle Type of business Geographic location Standard Industrial Classification Size of business by number of employees Turnover Ownership Business unit or department	Usage patterns Brand loyalty Switching pattern
Physical – Decision-maker	**Behavioural – Decision-maker**
Position in business Demographics of decision-maker (for example age and gender)	Psychographics Purchase decision Benefits sought/Importance of a set of benefits Product preferences/Importance of product features Reaction to new concepts (intention to buy, preference over current brand, etcetera) Price sensitivity Media usage Attitude (for example risk taker, risk avoiders)

Source: Canever *et al.* (2007:512); Ferrell & Hartline (2005:142); Lin (2002:250); McDonald & Dunbar (2004:185); Weinstein (1994:159); Wind (1978:320)

2.8.2 Use of index variables as segmentation base

Another type of base used in segmentation studies is that of index variables. This type of base forms a central focus area of this study. An index variable often serves as an indicator or proxy for a particular construct. A single data item sometimes only gives a rough indication of a given variable, while the consideration of several data items might give a more comprehensive and accurate indication (Babbie, 2011:168). Index variables in specific are composite measures of variables and typically scale or ordinal in nature. In other words, index variables take advantage of any intensity structure that may exist among the attributes.

Considering the use of index variables in business-to-business studies, and more specifically, as measures of business sophistication, a number of studies can be identified from the literature. These studies are listed in Table 3. All of the studies, with the exception of one, focused on measuring sophistication within business entities by concentrating on a specific functional area of the business, such as finance, strategic management, information technology, logistics and human resources. The study by African Response (2006:20), however, covered various functional areas in measuring business sophistication.

Table 3: Measures of business sophistication

Functional area	Author/s
Finance	Lewis (1998:233)
Business and strategic planning	Hahn (1999:19); Phillips (2000:541); Rudd, Greenley, Beatson & Lings (2008:99); Rue & Ibrahim (1998:24)
Information technology	De Búrca, Fynes & Brannick (2006:1240)
Logistics	Wanke, Arkader & Hijjar (2007:542)
Human resources	Heffernan & Flood (2000:128); Koch & McGrath (1996:344)
Various	African Response (2006:20)

Table 4 lists the various items considered in each of the studies, as well as the index scoring method. The measurement scales used are also specified. It is evident that a number of options exist for index scoring; and they vary between computationally simplistic, and statistically demanding.

Table 4: Items considered in the construction of various business sophistication indexes

Functional area	Author/s	Items considered for index construction and measurement scales used	Index scoring
Finance	Lewis (1998:233)	Adoption of the following methods and systems in the business (where 'Not adopted' = 0; 'Adopted' = 1): - Establishment of a financial record keeping system. - Extraction and use of financial information provided by the system. - Adoption and use of a personal computer (PC) in support of the system.	Four levels of financial sophistication defined, namely: (1) No financial record keeping system (2) Financial record keeping system adopted (3) Use system as management information system (manually) (4) Use system as management information system (computerised)
Business and strategic planning	Rue & Ibrahim (1998:24)	Adoption of the following in the business (where 'Not adopted' = 0; 'Adopted' = 1): - Prepares a written strategic plan - Plan includes quantified objectives in sales earnings, return on investment, capital growth, share of the market, sales/earnings ratio, and international expansion. - Plan includes budgets for hiring and training of key management personnel, plant expansion, new product development, succession plans, corporate acquisitions, equipment acquisition, research and development, advertising, entering/expanding internationally. - Plan specifically attempts to identify population trends, political developments, family incomes, social currents, non-product technological breakthroughs, labour-management attitudes, national economic trends. - Plan contains procedures for anticipating or detecting differences between the plan and actual performance. - Plan contains procedures for preventing/correcting difference.	Composite scores calculated based on number of activities adopted in a business. The more activities adopted, the higher the level of sophistication.

Functional area	Author/s	Items considered for index construction and measurement scales used	Index scoring
Business and strategic planning	Phillips (2000:541)	Extent of importance placed within the business on the following (where 'Of no importance' = 1; to 'Extremely important' = 7): - Market segment analysis - Annual budgets - Strength, weakness, opportunities and threats analysis - Yield management - Variance analysis - Standard costing - Statistical techniques - Flexible budgets - Rolling budgets - Payback - Break-even analysis - Activity-based costing - Benchmarking - Internal rate of return - Profit-sensitivity-analysis - Cost-volume-profit analysis and uncertainty - Accounting rate of return - Net present value - Zero-based costing	Index represented by average overall evaluation. Higher average scores are associated with higher levels of sophistication.
	Hahn (1999:19)	Used in business (where 'Yes' = 1; and 'No' = 0): - Environmental analysis that assesses business's internal strengths and weaknesses as well as external threats and opportunities - Developed a mission statement - Defined objectives and strategies for the business covering at least three years - The strategic plan included an implementation process - The strategic plan included control/follow-up methods	Composite scores calculated based on number of activities adopted in a business. The more activities adopted, the higher the level of sophistication.

Functional area	Author/s	Items considered for index construction and measurement scales used	Index scoring
Business and strategic planning	Rudd, Greenley, Beatson & Lings (2008:99)	Extent of emphasis placed within the business on (where 'No emphasis' = 1; to 'Very strong emphasis' = 5): - Mission statement - Analysis of competitor trends - Analysis of supplier trends - Analysis of market trends - Internal analysis - Long-term, corporate level strategies - Medium term, business level strategies - Short term, functional level strategies - Barriers to strategy implementation. - Analysis of contingencies - On-going evaluation and control	Index represented by average overall evaluation. Higher average scores are associated with higher levels of sophistication.
Information technology	De Búrca, Fynes & Brannick (2006:1240)	Perceived sophistication of information technology equipment relative to competitors (where 'In need of replacement' = 1; to 'State-of-the-art' = 5).	Index represented by average overall evaluation. Higher average scores are associated with higher levels of sophistication.

Functional area	Author/s	Items considered for index construction and measurement scales used	Index scoring
Logistic	Wanke, Arkader & Hijjar (2007:542)	Used in business (where 'Yes' = 1; and 'No' = 0): - Vehicle tracking - Routing - Delivery scheduling - Radio frequency - Bar codes - Picking - Labelling - Freight audit - Sales forecasting - Purchase scheduling - Supplier management - Shipment status - Electronic data interchange - Enterprise resource planning system - Inventory management in customer	Factor analysis used to identify emerging sophistication constructs. Index calculated from standardised variables.
Human resources	Koch & McGrath (1996:344)	Business engages in (where 'Yes' = 1; and 'No' = 0): - Human resources planning - Formally evaluates hiring practices on a regular basis - Utilisation of aptitude testing - Utilisation of drug testing Sum of: - Number of interviews per hire. - Number of recruiting sources per hire. - Number of formal training programs. - Extent of use of promotion-from-within	Composite scores calculated based on business's engagements and sum values. Higher scores associated with higher levels of sophistication.

Functional area	Author/s	Items considered for index construction and measurement scales used	Index scoring
	Heffernan & Flood (2000:128)	Adoption of competency human resources processes in the business (where 'Yes' = 1; and 'No' = 0): - Recruitment and selection - Training and development - Performance management - Succession planning remuneration - Promotion	Composite scores calculated based on number of activities adopted in a business. The more activities adopted, the higher the level of sophistication.

Functional area	Author/s	Items considered for index construction and measurement scales used	Index scoring
Various	African Response (2006:20)	The final set of questions used in index construction. Nominal measurement scales used. - Type of business (legal form)? - Sell goods as you buy them or add value or both? - Have a written employment contract for employees? - Type of premises that business operates from? - Own, rent or just use the place where you trade / run your business from? - Services and equipment? - Partners or shareholders? - Do you have a written shareholders/partnership/ members agreement? - Keep financial records or accounts? - Do you keep these financial records yourself/internally or do someone from outside help you? - Are your financial records audited? - Is this business a franchise? - Are your company / business a subsidiary / part of another company? - Do you have any affiliations with international companies? - Do you do any business / trade with anyone outside South Africa? - Import/ export/both? - Offer goods or services on credit? - Type of credit? - Pay taxes? - Comply with acts? - Professional services handled by staff? - Banks used? - Type of banking services utilised? - Do you have any loans for your business? - From where did you get the loan? - Types of insurance paid for by the business?	Iterative process of principle component analysis and stepwise regression to calculate and refine index score.

2.9 CHAPTER SUMMARY

This study deals in essence with the process of index construction as a means of measuring a hypothetical construct, and applying it as a method of market segmentation. This chapter has, therefore, considered some of the main principles of market segmentation. Attention has been given to the segmentation process, with the purpose and antecedents of market segmentation emphasised, as well as the factors that are deemed critical for segmentation success.

It is evident from the literature review that market practitioners use an array of bases for segmentation. The application of index variables as segmentation bases was therefore also highlighted from the literature. Of importance was also noting some of methods that can be applied for index construction and segment formation.

In the next chapter, aspects relating more specifically to index construction are to be addressed.